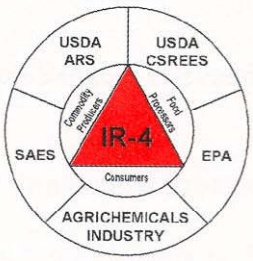

IR-4/USDA INTERNATIONAL CROP GROUPING SYMPOSIUM PROCEEDINGS

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PROCEEDINGS

IR-4/USDA International Crop Grouping Symposium

October 7-8, 2002
Arlington, Virginia

Foreword

IR-4 sponsored the Crop Grouping Symposium to propose the expansion of the established EPA crop groups (40 CFR 180.41). The concept is to include many orphan minor crops (both domestic and imported) in the established groups and subgroups and to propose new crop groups, e.g., oilseed, tropicals, etc. and subgroups, e.g., small grains, tropical edible peel, etc. Also the international harmonization of these and other new crop groups will be an important aspect of the process.

The timing is right to utilize the crop background knowledge of our IR-4 Commodity, USDA and University personnel and our cooperators in Canada, Mexico, the plant protection industry, etc, for the expansion of regulatory crop groups and subgroups, including the Codex Classification.

We asked participants to provide lists of orphan crops to include scientific and common names, portion consumed and suggested crop groups/subgroups placement.

Historical Perspective

Previous to regulatory crop groupings, tolerances were established on individual commodities, which made registrations of pest control agents on minor crops unlikely. In 1971, the first edition of the *Food and Feed Crops of the United States* (Magness, J.R., G.M. Markle, and C.C. Compton, New Jersey Agricultural Experiment Station Bulletin 828 and IR-4/USDA Bulletin No. 1) was published. This reference was the first attempt to classify all commercial food and feed crops grown in the United States based on a crop grouping scheme which depended on similar botanical characteristics and cultural practices. The "Duggan Classification" utilized the first edition of the *Food and Feed Crops of the United States* as its primary reference. The Duggan Classification report completed by Reo Duggan and M. Bonner Duggan was also utilized by both Codex - to establish the original Codex Classification of Food and Animal Feeds (CAC/PR 1-1978) - and by the U.S. to develop the EPA Crop Grouping Regulation in 1983. The 1983 crop group regulation expanded the number of crop groups to 19 specific groups, and used the

concept of representative commodities for each crop group that would typically have the highest residues or were the most economically important commodities in the crop group. In 1995 the EPA Crop Grouping Regulation (60 Federal Register, No. 95, 5/17/95, and 40 CFR 180.41), added more commodities and introduced the concept of Crop Subgroups, which are smaller, more closely related groups of commodities within a crop group with similar growth characteristics and residue potential. The U.S. Crop Grouping System has nineteen Crop Groups and 18 Crop Subgroups.

Canada had adopted the U.S. Crop Grouping system and included an additional Crop Group on oilseeds, which is currently under review by the U.S., and both systems are harmonized for tolerance purposes. Mexico has proposed to adopt the U.S. Crop Grouping System. We are working to harmonize international crops groups, commodity terminology, and scientific names throughout the world.

Professor George Markle
IR-4 Associate Director
Senior Author of *Food and Feed Crops of the United States*, 1998

Welcome

Dr. Robert Holm
IR-4 Executive Director

On behalf of the entire IR-4 Program, I would like to personally welcome each of you to the IR-4/USDA Crop Grouping Symposium. It is entirely fitting that we hold this important Symposium in the Washington, D.C. area where we will celebrate our 40th anniversary next February. IR-4 has been actively involved in the development of crop group lists the past 30 plus years by recognizing early that regulatory groupings for crops, especially minor or specialty crops, were a cost effective way of extending scarce research funds to provide the necessary data to establish safe tolerance levels or maximum residue limits (MRL's) for groups of related crops. The concept of developing residue data on a smaller set of representative crops and thus extrapolating the information to a larger number of related crops instead of developing residue data on every food or feed crop for every chemical use was quite revolutionary 30 years ago. This concept was pioneered by IR-4 and Professor George Markle who was one of the authors of the first edition of "*Food and Feed Crops in the United States*". This book, commonly referred to as "*The Greenbook*" included over 300 crops divided into large crop groups such as vegetables, tree fruits, tree nuts, oil crops, spices, grasses, grains, etc. Specific crops were subdivided or subgrouped within these large crop groups by like parts such as roots, tubers, fruit, leaves, pods, etc. The first "*Greenbook*" edition was used in the development of the international FAO/WHO-Codex Alimentarius crop groups classification in 1978 and by the United States Environmental Protection Agency (EPA) in 1983. IR-4 played a key role in the EPA's updated crop grouping and subgrouping scheme issued in 1995.

The second edition of the "*Greenbook*" in 1998 coauthored by Professor Markle and Dr. Jerry Baron of IR-4 and Dr. Bernie Schneider of the EPA continued the earlier standardization and included over 1000 scientific crop names. The second edition currently serves as a significant part of the EPA's current regulatory guidelines for food safety. It includes not only many additional minor crops but also their crop groupings with large consumption representative crops. The publication provides a standardization of preferred or principal commodity names and common crop names used supported by their scientific names and synonyms making it easier to reference and cross reference the information.

IR-4 hopes that this Symposium will provide the basis for the third edition of "*Food and Feed Crops of the United States*" to include additional orphan crops and expand opportunities to continue international harmonization efforts for specialty crop residue tolerances.

EPA's Perspective

Jim Jones
Deputy Director, Office of Pesticide Programs
U.S. Environmental Protection Agency

Jim Jones discussed the productive relationship with IR-4 and the need to update the existing Crop Grouping regulations to help the growers and increase the number of successes. He noted that the IR-4/USDA International Crop Grouping Symposium would be a large part of the review process in updating the Crop Grouping Systems.

He thanked the many EPA scientists that were part of the Symposium and knew that their expert input would help shape this event. He especially thanked Bernie Schneider (HED/EPA) and Hoyt Jamerson(RD/EPA) for being a large part in making this Symposium happen, and of course George Markle (IR-4) and Jerry Baron (IR-4) for its initiation.

He noted that food safety is a top priority for EPA; therefore, everyone at the Symposium needs to make scientifically sound judgments on updating the existing crop grouping system. He thanked the attendees and asked everyone to keep up the good work!

(Recorded and summarized by G.M. Markle)

Goals of the Symposium

George Markle
IR-4 Associate Director

Good afternoon and welcome to the first International Regulatory Crop Grouping Symposium.

We are impressed with the outstanding cross section of attendees to include regulatory experts, crop experts, universities, USDA, states, Canadian and Mexican representatives, growers, grower organizations, agrichemical and biopesticide pest management industries, and the minor crops experts from IR-4/USDA. We thank you for your support and interest. We realized that you all know the importance of this meeting, especially our Workgroup chairs and co-chairs who you will be meeting later today and tomorrow.

Our primary goal for this Symposium is to add to the established crop grouping system as many orphan crops (crops presently not in the established crop grouping system) as possible. These will be orphan crops that are grown in North America or are imported. The evaluation /validation process will include the addition of new crops to existing crop groups, the additions of new crop groups and subgroups to streamline the system, and to add representative crops or move crops between crop groups as needed.

Today's speakers will provide valuable input into the importance of the food safety, plant health, and crop grouping systems:

- The introductory report by Bob Holm, Neal Thompson, Nancy Ragsdale and Jim Jones, notes the teamwork approach of this Symposium.
- The goal of the Symposium is outlined by George Markle.
- The regulatory process to revise the crop grouping system by Hoyt Jamerson.
- The development and use of the crop groups by Bernie Schneider.
- Management's view of crop groupings as incorporated with research and GLP's by Dan Kunkel. (An example of where 100 studies on representative crops equals 400 to 500 uses.)
- Research efficiencies of crop groupings by Michael Braverman
- Challenges to improving the crop grouping system by Jerry Baron.
- University, ARS and grower approach to crop groups with Rick Melnicoe as panel chair.
- Industry's view by Jay Holmdal and Tom Gilding.
- Enforcement's view by Terry Schmer.
- Views from the regulatory agencies to include the U.S and Canada in respect to harmonization, and Codex update with Steve Funk, Luis Suguiyama and Ariff Ally.

We thank them for their input.

Finally, at the end of the day tomorrow, we plan to have a revised crop grouping document as complete as possible in order to move ahead with petitioning the regulatory agencies.

Our ultimate goal with updating the regulatory crop grouping system is to help provide our growers with the necessary reduced risk pest management tools as rapidly as possible. This will

be the only opportunity that we will have in the next 10 years to update the whole regulatory Crop Grouping system with a group of experts (both crop and regulatory) in the same room.

This will be another IR-4 accomplishment, as this Symposium will have a significant impact on Research, Resources, Plant Health and Food Safety with increased benefits for both growers and consumers. Thank you.

The Regulatory Process – The Process for Revising the Crop Group Regulations

Hoyt Jamerson
Minor Use Officer, Registration Division
Office of Pesticide Programs
U.S. Environmental Protection Agency

My objective is to give you a general overview of how EPA is likely to process the proposal to revise the crop group regulations that will be prepared from the proceedings from this symposium. I will not attempt to describe EPA rulemaking process in detail. It may be instructive, however, to describe in very broad strokes the regulatory process that EPA used to revise the crop grouping regulations in 1995. I will also try to highlight some of issues and options that were discussed at that time.

One of the first steps in rulemaking is to select and convene a workgroup. Workgroups are EPA-wide, staff level groups formed to develop regulatory actions and supporting materials. The workgroup identifies policy issues and options, resolves issues, and ensures the quality and completeness of regulatory packages. Typically the lead office (Office of Pesticide Programs) will place several people on the workgroup. The Office of General Counsel, the Office of Policy, Economics, and Innovation, and the Office of Research and Development often participate in the workgroups. The workgroup prepares the regulatory decision package for review by senior EPA management, other Federal Agencies (USDA, FDA) and the Office of Management and Budget (OMB).

Final rules, unless exempted, must be sent to the Office of Management and Budget (OMB). The purpose of OMB review is to assure that agencies consider the costs and benefits associated with the regulation. For purposes of OMB review, there are two categories of rules: major and non-major. Major rules are those having a very large impact on society, either in terms of costs (over $100 million annually), or in terms of effects on industrial sector, employment, or international trade. The 1995 revisions were classified by OMB as "not major". Although not a major rule, the 1995 revisions were sent to OMB for comment.

Examples of the type of questions received from OMB in response to the 1995 crop grouping revisions are:

- Why are data required for so many representative commodities?

- Why did EPA not consider additional crop grouping possibilities?

- How will the proposed revisions impact the registrant's product liability?

For major regulations, EPA must also prepare an economic analysis, which is a benefit-cost analysis of the regulation. Although not a major rule, an economic analysis was prepared for the 1995 crop group revisions. The economic analysis was a qualitative assessment since statistical data were not available to conduct a quantitative assessment. The benefits of the 1995 crop group revisions, as described by the economic analysis, are applicable to the objectives of this symposium. The economic analysis concluded that:

- Subgoups, expanded commodity lists, and revised representative crops will increase the options available to pesticide manufacturers to use the crop grouping system.

-Pesticide manufacturers will benefit from selling their products to a wider variety of growers.

- Growers will benefit from the broader selection of pesticides to combat pest problems and increases quality and yield.

- Consumers will benefit since the quality of the food supply will be sustained or improved.

- The availability of a greater choice of pesticides for minor crops is likely to result in use of pesticides on food crops that pose lower risk concerns than currently registered pesticides.

Although the benefits of the 1995 crop group regulations are difficult to measure, we can say with certainty that the revisions did increase the options for using crop groupings and that growers do have a wider selection of reduced risk chemicals available for pest management on minor crops.

The crop grouping revisions were published on August 25, 1993, as a proposed rule with a 60-day comment period. Comments were received from 22 interested parties and groups including the pesticide industry, State pesticide regulatory authorities, agricultural grower and marketing organizations and the Interregional Research Project No. 4. All of the comments were supportive of proposal in concept, but some comments requested modifications to the proposal. Examples of the comments received in response to the proposed rule are, as follows:

- Efforts should be made to incorporate additional regional names in the crop groupings.

- The goal should be to maximize the number of commodities that are assigned to crop groupings and to make the system as uniform as possible with those used in other countries.

- Establish crop groups for oilseed crops, tropical and subtropical fruits.

- Reduce the number of representative commodities required in support of crop group tolerances for the herb and spices group, which have relatively low-dietary intake and insufficient economic return to justify the development of the required residue data.

Comments were addressed in the final rule, although not all proposals were included in the 1995 revisions to the crop group regulations. Several of these proposals will be discussed at the workgroup sessions tomorrow. The final rule revising the crop group regulations was published on May 17, 1995, approximately three years from the beginning of the regulatory process.

HOW TO BEST USE AND DEVELOP CROP GROUPS

Bernard A. Schneider, Ph.D.
Senior Plant Physiologist, Health Effects Division
Office of Pesticide Programs
U.S. Environmental Protection Agency

Organization of the Crop Group Regulation:

The U.S. EPA Crop Group regulation (40 CFR 180.41) enables the establishment of tolerances and exemptions for groups of crops based on residue data for certain representative commodities. The current crop group regulation published in 1995 expanded the number of commodities in the 19 established crop groups from 300 to more than 400 individual commodities. Commodities in the crop groups range from three in crop group 7 - Foliage of legume vegetables to 69 for the Herb and spice group 19. In addition, the regulation added 18 crop subgroups to eight of the crop groups. The number of representative commodities ranges from two to five for the crop groups and from one to three for the crop subgroups. Each subgroup is a smaller and more closely related grouping of commodities that are included in the crop groups and each has its own representative commodity. These crop subgroups subdivide the crop group into commodities within the group with similar growth characteristics and residue potential, such as Crop Group 4 - Leafy vegetables except *Brassica* has two subgroups: the Leafy greens subgroup 4A with head or leaf lettuce and spinach as the representative commodities and the Leaf petioles subgroup 4B with celery as the representative commodity. When tolerances are established for representative commodities in a crop group and/or crop subgroup, the tolerance will apply to all of the members of that crop group and/or crop subgroup.

Crop subgroups have increased the utility of the crop groups for growers, registrants, and dietary surveys. For example, in 1995 the Small fruit and berry group was replaced by Crop group 13 - Berry. The Small fruit and berry group had grape, cranberry, strawberry, raspberry and blueberry as the representative commodities for the group. Only one tolerance since 1983 was established for this group because of the diverse cultural practices and separate residue chemistry needs such as processing studies was a deterrent to developing a crop group tolerance. The current Berry crop group 13 has any one raspberry or any one blackberry and blueberry as its representative commodities. It also has two subgroups: the Caneberry with any one raspberry or any one blackberry as the representative commodity; and the Bushberry subgroup with the blueberry as the representative commodity. Currently, the Berry group has two established tolerances. However, the Caneberry subgroup has 14 tolerances and the Bushberry subgroup has six tolerances. In addition, there are several petitions under review to consider tolerances on these two subgroups.

EPA Food and Feed Commodity Vocabulary:

With the recent publication of the second edition of *Food and Feed Crops of the United States* (Markle, G.M., J.J. Baron, and B.A. Schneider. 1998. Meister Publishing Company, Willoughby, Ohio. 517 pp.), information on further developments and expansions of new or additions to crop groups/definitions and commodity terminology became possible. This publication has also stimulated the development of international harmonization between crop

groups, crop names, residue levels, and trade. Scientific names are updated using USDA-ARS Germplasm Resources Information Network (http://www.ars-grin.gov). This book has also facilitated the development of the EPA Food and Feed Commodity Vocabulary (http://www.epa.gov/pesticides/foodfeed) that consolidated commodities listed in 12 different EPA databases with more than 12,000 terms to about 1,200 preferred terms. Crop terminology from all over the world will be included in the vocabulary. This vocabulary will be the standardized commodity vocabulary used to establish tolerances for commodities, crop groups, crop subgroups and exemptions from tolerances for pest control agents. Each lookup or search term is linked to the EPA preferred term and also references the applicable crop monograph in the 'Food and Feed Crops of the United States'.

Orphan Crops:

The Crop group regulation published in 1995 had some crops such as mushrooms, hops, asparagus, papaya, and globe artichokes that were not placed as a member of any crop group. In the last revision, the Agency had regulatory constraints against creating new crop groups. Okra is the best example of an orphan crop, since it was a member of a seed and pod vegetable group that was discontinued in 1983, and all the members of the group were placed in either Crop Group 6 - Legume vegetables or Crop group 19 - Herb and spice group, except for okra. USDA - IR4 has submitted a proposal to the EPA that is being reviewed to consider adding okra to Crop Group 8 - Fruiting vegetables. The publication of the *Food and Feed Crops of the United States* often referred to as the "greenbook" has also identified several hundred possible crops that are not yet in a crop group. The diverse population of the United States has introduced a wealth of fruits and vegetables not previously available in the local marketplace. The need to harmonize commodity terminology is also essential in international trade as well as for tolerance enforcement actions. This crop group symposium will provide guidance and recommendations on how to improve the Crop Group regulation, and where to appropriately place an orphan crop in a group.

Criteria and Guidance for Evaluating a Crop Group Proposal:

When a crop group/subgroup or commodity definition is developed there are several criteria and general guidance points that will help develop the proposal before it is submitted to the Agency. It should be noted that all the points discussed in the guidance below are not required in all cases.

Some of the points to include in a crop group/subgroup proposal are:

1. Determine the botany and nomenclature of the commodity:
   (a) Plant family and family characteristics such as members of the *Brassicas*
   (b) Genus and species refer to the USDA-ARS Germplasm Resources Information Network - GRIN (http://www.ars-grin.gov)
   (c) Common names and/or synonyms
   (d) Cultivars if appropriate

2. Consider the geographical distribution and production in the U.S. (See EPA Field Trial Residue Regions - OPPTS Series 860 Residue Chemistry, Appendix 1)

3. Discuss similarities and differences in crop cultural practices:
   (a) Planting rate(s) and dates
   (b) Whether it is a row or broadcast seeded crop

(c) Length of growing season and days from planting to flowering
(d) Irrigation management practices
(e) Harvesting and post-harvest practices

4. Commercial importance of commodity

5. Possibilities for genetic improvement (hybrids)

6. Comparison of edible part(s):
(a) Description of fruit/vegetable
(b) What parts are consumed (peel, pulp, or leaf)?
(c) When is the crop harvested?
(d) How is it harvested?
(e) How often is the crop harvested and intervals between harvests
(f) Other uses of the commodity such as livestock feed, syrup production, foods, shampoos, adhesives
(g) Surface area to weight ratios, such as small vs. large fruit
(h) Type of fruit/vegetable surface (Is the peel, skin, or leaf rough, hairy, or smooth?)
(i) Typical weight of fruit/vegetable
(j) Similarities to other commodities

7. Livestock feed item(s) for beef and dairy cattle, poultry, or swine (include importance of feedstuffs [> 250,000 tons] and percent of livestock diet)

8. Processed products and/or fresh market of the whole fruit/vegetable

9. Compare pest problems
(a) Insects
(b) Diseases
(c) Nematodes
(d) Weeds
(e) Vertebrates such as moles, rodents
(f) Other pest problems

10. Comparison of potential residue levels

11. Provide justification for a crop group/subgroup definition:

(a) Select representative crops utilized for residue field trials to cover an entire crop group;

(B) Select representative crops utilized for residue field trials to cover an entire crop subgroup.

12. Codex classification of food and feed crops for harmonization of international terminology

13. Rotational crops

14. Specific references

15. Tolerance expression uses U.S. EPA Food and Feed Commodity Vocabulary (http://www.epa.gov/pesticides/foodfeed)

Proper Expression of the Crop Group/Subgroup Tolerance for the Federal Register:

Crop Group or Subgroup #	Crop Group/Subgroup Tolerance Expression
1	Vegetable, root and tuber, group 1
1A	Vegetable, root, subgroup 1A
1B	Vegetable, root, except sugar beet, subgroup 1B
1C	Vegetable, tuberous and corm, subgroup 1C
1D	Vegetable, tuberous and corm, except potato, subgroup 1D
2	Vegetable, leaves of root and tuber, group 2
3	Vegetable, bulb, group 3
4	Vegetable, leafy, except brassica, group 4
4A	Leafy greens subgroup 4A
4B	Leaf petioles subgroup 4B
5	Vegetable, brassica, leafy, group 5
5A	Brassica, head and stem, subgroup 5A
5B	Brassica, leafy greens, subgroup 5B
6	Vegetable, legume, group 6
6A	Vegetable, legume, edible podded, subgroup 6A
6B	Pea and bean, succulent shelled, subgroup 6B
6C	Pea and bean, dried shelled, except soybean, subgroup 6C
7	Vegetable, foliage of legume, group 7
7A	Vegetable, foliage of legume, except soybean, subgroup 7A
8	Vegetable, fruiting, group 8
9	Vegetable, cucurbit, group 9
10	Fruit, citrus, group 10
11	Fruit, pome, group 11
12	Fruit, stone, group 12
13	Berry group 13
13A	Caneberry subgroup 13A
13B	Bushberry subgroup 13B
14	Nut, tree, group 14
15	Grain, cereal, group15
16	Grain, cereal, forage, fodder and straw, group 16
17	Grass, forage, fodder and hay, group 17
18	Animal feed, non-grass, group 18
19	Herbs and spices group 19
19A	Herb subgroup 19A
19B	Spice subgroup 19B

When there are exceptions to the Crop Group or Crop Subgroup, the exceptions are listed after the group/subgroup number.

For example:

"Vegetable, root and tuber, group 1, except carrot
Vegetable, root, except sugar beet, subgroup 1B, except carrot
Leafy greens subgroup 4A, except leaf lettuce".

EPA Review of Crop Group/Subgroup Proposals:

The general steps for reviewing a crop group/subgroup proposal are:

1. Proposal or petition is developed by IR-4 with the input from growers, grower association, and scientists or from the Crop Grouping Symposium or from public comments.

2. The proposal is submitted to EPA for review.

3. EPA scientist review's proposal and makes recommendations to the Health Effects Division ChemSAC (Chemistry Science Advisory Council) for their approval or recommendations. The HED ChemSac is composed of a chemist from each of the Division's Science Branches, whose purpose is to assure the consistency of science and policies for reviewing residue chemistry studies and dietary assessments. A recent ChemSac decision on June 12, 2002 was to approve the formation of a Crop group 20 - Oilseed to harmonize with the Canadian Crop Group 20. The representative crops for the Oilseed Crop Group are rapeseed (canola varieties) and sunflower. These oilseed crops such as rapeseed, safflower, flax, and mustard seed are primarily grown in the northern tier of the United States.

4. The crop group proposals approved by ChemSAC are sent to the appropriate EPA Division to prepare it for rule making to be published in the Federal Register.

The Codex Classification System and Crop Groups

Dr. Steve Funk
Chemist, Health Effects Division
Office of Pesticide Programs
U. S. Environmental Protection Agency

The US and Codex Classification systems for food and feed commodities have common origins. The first Codex system was published in 1978 and was, like its US counterpart, based on the work of Reo Duggan (USA). The Codex Classification System was updated in 1989 by Professor Besemer of the Netherlands. Common names and more precise descriptors were introduced, and some changes were made to the crop groups. For example, leafy Brassica vegetables were removed from the Brassica group. The latest revision was in 1993 (*Codex Alimentarius Volume Two, Pesticide Residues in Food*, 1993), at which time a modified numbering system was introduced that would allow the addition on new commodities without renumbering. Synonyms were also added, with 4000 series numbers. The CCPR (2001, 2002) recognized the need for another revision, and the 2003 CCPR will consider the desired extent of revision.

The purposes of the Codex Classification system are to:

- Provide a complete listing of food and feed commodities in international trade, with commodities classified into groups.

- Provide a reference for JMPR/CCPR in establishing maximum residue limits (MRLs). Generally, an MRL will not be established for a commodity not in the Codex Classification.

- Promote harmonization of terms used to describe commodities. Thus, aubergine is eggplant; paprika is sweet pepper; and corn is maize.

- Facilitate the establishment of crop group MRLs. Groups allow the leveraging of data for several major crops to an entire group of related crops, including minor crops that might not be supported otherwise.

The System has 5 classes. The classes are subdivided into types, and the types are divided into groups. Types are based on physical characteristics and traditional use with some consideration of the botanical (or zoological) associations. A type is too broad for a single MRL. Groups within each type show similarities with respect to pesticide residues, in the nature of the agricultural practices, and to the botanical (or zoological) associations. A group MRL must be based on a similar (not identical) GAP for the representative crops, and the residues on the representative crops must be similar.

The Classes are as follows:

Class A: Primary food commodities of plant origin (5 types: fruits, vegetables, grasses [cereals], nuts and seeds, and herbs and spices)

Class B: Primarily food commodities of animal origin (5 types)

Class C: Primary feed commodities (1 type)

Class D: Processed food of plant origin (4 types)

Class E: Processed food of animal origin (4 types)

The following table presents a comparison of some groups from the Codex Class A types with the US groups.

Codex Group in Type A	**US Crop Group**	**Comment/Codex Representative Commodity for Group**
A1 Citrus	10 Citrus	*large and small* (orange and mandarin)
A2 Pome fruit	11 Pome fruit	*apple and pear*
A3 Stone fruit	12 Stone fruit	*Peach/apricot/plum, cherry*
A4 Berries & small fruits	13 Berries 13a Caneberry 13b Bushberry	A4 not useful: blueberry, blackberry, etc., cranberry, grape, strawberry
A5 Tropical & subtropical fruit, edible peel	None	Examples: date, fig, olive, kumquat
A6 Tropical & subtropical fruit, inedible peel	None	Examples: avocado, banana, mango
A9 Bulb vegetables	3 Bulb vegetable	A9 includes fennel (4 in US, leafy vegetables)
A10 Brassica (excl leafy)	5 Brassica 5a Head and stem Brassica 5b Leafy brassica	A10 subgroup: flowerhead brassica. A10 no kale, mustard greens
A11 Cucurbits	9 Cucurbits	*Cucumber, zucchini, melon*
A12 Fruiting vegetables	8 Fruiting vegetables	A12 includes sweet corn, mushroom, edible fungi, okra
A13 Leafy vegetables (incl Brassica leafy)	4 Leafy vegetables (excl Brassica leafy)	A13 includes mustard greens, kale, turnip green. 4 includes celery, a stem and stalk (A17)
A14 Legume vegetables (succulent)	6 Legume vegetables: 6a, 6b (succulent)	A14 and 6a and 6b are succulent.
A15 Pulses	6 Legume vegetables: 6c (dry)	A15 and 6c are dry beans and dry peas
A16 Root & tuber vegetables	1 Root and tuber vegetables	1 contains turmeric (A28 spice). *Carrot and potato.*

A17 Stalk & stem vegetables	None	Globe artichoke, asparagus, celery (4), rhubarb (4).
A20 Cereal grains	15 Cereal grains	*Wheat, barley, sorghum rice, maize*
A22 Tree nuts	14 Tree nuts	A22 includes coconut, pine nuts
None	2 Leaves of root & tuber vegetables	Most in Leafy Veg (A13), but missing sugar beet, burdock, carrot, celeriac, dasheen, parsnip, yam
A23 Oilseed	None	*None specified.*

The *FAO Manual on the submission and evaluation of pesticide residues data for the estimation of maximum residue levels in food and feed*, 2nd Edition, 2002 states that: "Group MRLs...that generally appear to be acceptable include those for cereal grains..., pome fruit..., stone fruits; poultry meat; milks; meat from mammals other than marine mammals; and oilseed."

An inspection of existing Codex group MRLs is a good indication of which crop groups are practical. The following information was taken from the last year of published electronic data base, 1999.

Crop Group	**Number of Pesticides With Group MRL**
Citrus fruit	40
Pome fruit	37
Stalk and Stem Vegetables	32
Cereal grains	22
Stone fruit	7
Others	<5 (most <3)

Spices (A28) have been of special concern for CCPR. These commodities are typically grown on very small, subsistence plots in developing countries. It is impossible for the growers to conduct supervised field trials, and manufacturers generally will not conduct such trials for uses with insignificant market share. The CCPR is now considering the use of monitoring data for establishing MRLs for spices. This approach may be acceptable only in the special case of spices because the dietary intake is extremely small.

The JMPR has little guidance on the criteria for establishing group (and individual) MRLs. The number of trials and the distribution of those trials for a given crop or crop group are not specified. An individual commodity MRL, for example, wheat, could be established based on trials from one country that were at the GAP of that country. Representative commodities for crop groups are not formally defined. Generally, a minimum of 6 trials is needed per commodity with no reductions for group MRLs. For example, a stone fruit MRL would require 6 trials each for peach, plum/apricot, and cherry, for a total of 18 trials. Group MRLs are considered on a case-by-case basis, relying on the collective expertise of the FAO Panel of JMPR and the concurrence of the CCPR.

Some efforts have been expended to create international guidelines for pesticide residue chemistry. The EC sponsored several workshops in York, UK, with the last one being in 1999. Guidelines for nature of the residue in plants and animals, storage stability, animal feeding studies, and other topics were readily developed, based on the guidelines of the US EPA and the EC. The rudiments of guidelines for the number and location of trials for commodities and groups were proposed based on the importance of the commodity in trade, the importance of the commodity in the human diet, and the distribution of the commodity growing areas around the world. Important in the diet was determined to be >0.5% of the total diet. Exact values for importance in trade (presumably acreage or volume/weight produced per relevant zone), and for distribution (number of geographic zones) were not recommended. The number of trials per crop ranged from 3 (one zone, insignificant in diet and trade) to 16 (>3 zones, significant in diet and trade).

The same workshop considered crop groupings and extrapolation of residue data. Some recommendations were made for group representative commodities for the purpose of group MRLs, and these are used on an informal basis by JMPR. For example, oranges/grapefruits and mandarins/lemons were the representative commodities for citrus. It was also recommended to extrapolate oranges to grapefruit and mandarins to limes, lemons, and clementines. Extrapolations (to or from) some crops were ruled inappropriate: cherries, strawberry, grapes, rice, maize, poppy, sesame, cotton, peanut, soybean, carambola, date, fig, kumquat, olive, persimmon, banana, cherimoya, durian, guava, kiwi, litchi, tamarillo, papaya, passion fruit, pineapple, pomegranate.

A subgroup of the York workshop, composed of representatives of several major countries and FAO, met under the auspices of the OECD to develop zones. Five climatic zones were proposed: polar (no crops), tropical, cold, wet temperate, dry temperate. The group used JMPR residue data from the last ten years to attempt to validate the four growing zones for foliar treatments only, and a statistician was employed to assist. Zones based on climate could not be validated. The differences within a zone were as great as or greater than the differences among zones. It was determined that most of the variability in residues could be attributed to events at or within a day or two of treatment. While zones might be established on factors such as geographic distribution of commodity growing areas, soil type, topography, and local agricultural practices, climate alone would appear not to be an appropriate basis.

In comparing the Codex Classification groups in type A to the EPA groups (above), some problems with the Codex system were indicated. In addition, there are general issues that need to be addressed. An electronic-based Codex system is needed. The goal would be an online, searchable system, possibly cross-referenced to various national systems. The US EPA database could be used as a model for rewriting the Codex Classification, and consideration is being given to offering assistance to Codex/FAO in the implementation of such a system.

The Codex system needs to be harmonized with national systems and cross-references are needed to the sundry common names. Hopefully, this would include reference to EPA-preferred terms.

Some general terms need to be eliminated from the Codex system, such as, "Vegetables (except as otherwise listed)." These terms serve no useful purpose.

Crop scientific names need to be updated. For example, the Codex name for rhubarb needs to be changed from *Rheum rhapontium* L to *Rheum* X *hybridum* Murray.

New commodities of plant origin need to be added to the system. As a result of cross breeding, new varieties of crops have been introduced into international trade. This is especially important in the Asia region. Examples of new commodities from the US perspective include cuphea, garden dahlia, epazote, globemallow, ginko, and ginseng.

The Codex crop groups need to be refined. A group is needed for the foliage of root and tuber vegetables, or new additions are needed to the leafy vegetables group. Some of these commodities need to be added to animal feeds. The berry group (A4) needs to be made useful, perhaps by creating subgroups of bushberries and caneberries. Brassica leafy vegetables (A13) need to be moved back to the Brassica group (A10). Subgroups could be established within Brassica to alleviate the concern that residues are not the same on leafy and head Brassicas. Sweet corn should be moved from fruiting vegetables (A12) to cereal grains (A20). The cucurbit group would benefit from subgroups for cucumber-type and melon-type vegetables.

The future of the Codex Classification System was discussed at the 2002 CCPR. There was general agreement that improvements are needed, but there was little agreement on the extent of that improvement (ALINORM 03/24, paragraph 212). Only three countries (including the US) supplied input to a paper for the 2002 Meeting on the need for revision (CX/PR 02/13). The Netherlands and the Chair of CCPR (NL) were requested to prepare a paper for the 2003 Meeting on the practical aspects of a revision, including the extent of the revision and resource implications (CL 2002/16-PR, C.5). The US will support a complete revision of the Classification and will actively participate to harmonize the US and Codex systems.

In conclusion, it is recognized that the Codex and US Classification Systems have common origins and are not extremely different. About 70 – 80% of Codex commodities match US commodities. Persistence, cooperation, and material support in dealing with CCPR and FAO will yield an improved international classification that will benefit manufacturers, farmers, and exporters.

Improving the Crop Grouping System
Jerry Baron, Associate Director, IR-4 Project

We all agree that the current crop grouping system needs to be updated and improved. How to improve the crop grouping system? Ideas include modification of the 5X factor; allowing crops to be members of multiple crop groups/subgroups; pursuing harmonization of Crop Definitions and Crop Groups/Subgroups; and, establishing Crop Classes (formalized Super Crop Groups). I will briefly discuss these ideas in following paragraphs.

What is the 5X Factor? It was defined that in establishment of crop group tolerances, the maximum residues on representative crops must be within a 5 fold range. If it is outside of the 5X range, EPA normally does not establish a crop group tolerance. In some cases this 5X factor is a problem, and it can be a significant problem with early post-emergence applications. For example, one crop has no detectable residues and another crop has residues slightly more than 5 times the level of quantification. To resolve the 5x Factor problems, we can either fully utilize the flexibility allowed in regulatory language, or even better to use Crop Subgroups, such as expanding the number of subgroups within parent crop group to minimize the problems. In my opinion the best solution is to eliminate the 5X Factor, which is to establish Crop Group MRL's at highest level if there is an adequate room in Risk Cup.

It is a good idea to add crops in multiple crop groups. Traditionally, crops are members of only one crop group. If a crop could be a member of multiple crop groups and subgroups, it would expand the usefulness of crop groups. The ways to do this could be simply allowing crops to be members of multiple crop groups based on the enforcement on highest established MRL, or more positively to encourage the expansion of crop groups and subgroups to include crossovers. And the best solution would be to establish Crop Classes to allow broad extrapolations.

Harmonization of Crop Definitions and Crop Groups/Subgroups should be a benefit to tolerance establishment on more crops. Crop definitions are very similar to mini-crop subgroups, that a MRL on a specific crop will provide potential to register active ingredients on one or more additional crops. For example, data generated from blackberry can be used for all *Ribus eubatus* varieties and hybrids, and data generated from green onion can be used for green onion, leeks, spring onion, scallions, Japanese bunching onions, green shallots, and green eschalots. Crop definitions are a quick source of new crop protection solutions for a new commodity. Examples are, Triticale was instantly provided potential registrations for all materials labeled for wheat, and chemicals labeled on peach can be potentially used on nectarine. Let's think about the harmonization of crop definitions to reflect crop subgroups from following definition and subgroup:

Celery definition is Celery = celery, Florence fennel, sweet anise, sweet fennel, finochio, and,

Leafy Petiole Subgroup = cardoon, celery, Chinese celery, Florence fennel, rhubarb, Swiss chard.

Registrants often forget to request the appropriate subgroups in their tolerance petitions. It is important to integrate the gems found in the crop definitions into the Crop Groups/Subgroups. It would be more helpful to modify selected crop definitions to better reflect Crop Groups/Subgroups (e.g. definitions of Sweet Potato, Celery, Mustard Greens, Cantaloupe, Blueberry, and Almond). In addition to the above, we should also integrate the crop grouping information found in 40 CFR 180.34 into the crop definitions, crop groups and subgroups.

There are more good stuff in 40 CFR 180.34 including very early crop grouping scheme and provision that allows for less data on 27 groups. There are some excellent gems in this provision such as peach, apricot, nectarine group, wheat, barley, oat, rye group, sugarcane, cane sorghum group, and alfalfa, grasses, clover group, etc.

Finally let's look at the idea about establishing Crop Classes (formalized Super Crop Groups). Here is the proposed Crop Hierarchy:

– Crop classes (Super Crop Groups)
  – Sub classes –
    – Crop Groups
      – Subgroups
        –Specific Crops

Examples of Crop Classes are: Annual Strawberry, Herb and Vegetable, Crop Class; Perennial Fruit, Nut, and Vegetable Crop Class; Grass, and Field/Row Crop Class. Subclasses under Annual Strawberry, Herb and Vegetable Crop Class include Root Subclass (crop groups 1 & 3); Leafy Subclass (crop groups 2, 4, 5, & 19A); Seed/Pod/Fruit Subclass (crop groups 6, 8, 9 & 19B, strawberry). Subclasses under Perennial Fruit, Nut and Vegetable Crop Class include Tree Fruit/Nut Subclass (crop groups 10, 11, 12, 14, tropical tree fruits); Small Fruits Subclass (crop groups 13 and grape, cranberry, perennial strawberry, kiwifruit, guava, etc.); and Perennial Vegetable Subclass (artichoke, Asparagus, etc.). Subclasses under Grass, Field/Row Crop Class include Soybean and Grain Subclass (soybean, lupine, crop group 15); Mixed Animal Feed Subclass (crop groups 7, 16, 17, 18); and Oilseed Subclass (cotton, Canola, etc.).

There are some housekeeping issues need to be considered while we improve crop group scheme, these include to eliminate language in 40 CFR.180.34 which implies a requirement residue data on all crops if the chemical is systemic, and provision has not been enforced (but what if).

Finally I would like to emphasize that the Crop Groups have been extremely useful to tolerance establishment. With the rapid development of the world agriculture, the current crop grouping scheme needs to be improved to make the crop groups/subgroups work even better. It is the EPA who makes final decision on the crop grouping scheme, however it is up to us (the stakeholders) to make clear, logical cases to support our suggestions and proposals.

Management's View of Crop Grouping
Dan Kunkel
October 2002

Background. Using crop groups provides an enormous potential for saving research dollars. If crop groups did not exist there would be an even larger number of crops that need pest control products. IR-4 research data would be needed for each and every one of those crops. This would limit research due to the amount of funding required for each study. The IR-4 dollar could not sufficiently finance all of these studies. Therefore, the 100 or so studies that IR-4 conducts each year would only support 100 new uses. IR-4 Field Research centers would have to become familiar with even more diverse crops (annual as well as perennial). With crop grouping, this research can support many more uses.

Shortly after the EPA was established, it crop groups in the 1976 40 *CFR* 180. In this publication, crop were grouped beginning with Citrus and extending to stone fruit, which was somewhat similar to the Crop Groups we now have, but there were no representative crops. The policy at the time indicated that "It may be possible to make a reliable estimate of the residues to be expected on each commodity in a group of related commodities on the basis of less data that would be required for each commodity in the group considered separately." This meant that data would be needed for nearly every crop. By 1984 crop groups changed to representative commodities with 19 crop groups, however no sub-groups were represented. In 1995 the current crop group system with sub-groups was approved.

Working Smarter. The entire IR-4 research program focuses on crop groups, this includes the IR-4 database, workshops etc. By focusing on representative crops, IR-4 can save resources in maintenance logs, SOPs, etc. Field Research centers can concentrate their efforts on the representative crops such as plum, peach, and cherry, thus researchers have a smaller universe of crops with which to become familiar. This became even more important after 1989 when all field generated data were required to be collected under Good Laboratory Practices (GLP).

Using Crop Groups and More. One case study that stresses the resource savings realized from crop groups, was exampled by an IR-4 data package for dimethomorph on cucurbit vegetables (Cucumber, Summer Squash, Cantaloupe). Without a crop group tolerance, the result would be that only three new uses could be added to product labels. With a crop group tolerance the result was 14 new uses that could be added to the product label; allowing for many more uses becoming available to growers. Crops included those noted along with winter squash, pumpkin, edible gourds, watermelon, and several others. Another area where IR-4 has realized great savings is with regard to Crop Definition 40 CFR 180.1(h). This case Study involved IR-4 submission of a petition for Halosulfuron-methyl on beans. By expressing the tolerance as beans instead of expressing it as kidney beans, the registrant added as many as 36 different beans to their label including beans such as Garbanzo and black-eyed peas.

In recent years, IR-4 along with some registrants have provided proposals to EPA to allow for reductions in data generation, thus achieving greater savings. The product rotenone had not had pesticide tolerances in the past, however, during the re-registration process, EPA requested data. The registrant negotiated a truncated data set with EPA, saving the manufacturer time and money. By 1999, IR-4 had taken this idea and applied it to some of the new reduced risk products and submitted several proposals called "Super Crop Group Proposals" to EPA. The idea was that certain reduced risk products have properties that lend themselves to easier data extrapolation and residue prediction, making them ideal candidates for these proposals. One reduced risk product was Spinosad insecticide. It was not very persistent, thus making it easy to determine product residues after a relativity short treatment to harvest interval. In addition, to these savings EPA's Chemistry Science Advisory Council (ChemSAC) also provided guidance for using tree nut (almond data) to establish tolerances on pistachios and mustard green data to establish tolerances on turnip greens. Results from these proposals have been very positive, the approval of the Spinosad super crop group, in 2000, resulted in 165 new uses, most of these uses were approved without residue data. The approval of Azoxystrobin in 2001 resulted in 129 new uses, again many without residue data. Also, the glyphosate expansion of tolerances from a large number of pre-existing tolerances onto LDI crops resulted in over 200 new uses without data.

In summary. US EPA Office of Pesticide Programs, Senior Plant Physiologist, B. Schneider noted that 96 percent of the IR-4 slots on EPA's 2003 Workplan involved Crop groups/Sub-groups/ or Definitions. IR-4 will continue to obtain numerous new uses based on this single study/data package theory, where it results in an average of close to 5 new uses for each IR-4 submitted study. Our goal is to see a tenfold increase in IR-4 submitted petitions using the new crop grouping scheme.

The IR-4 Project

Providing Safe and Effective Pest Management Solutions for Specialty Crop Growers

IR-4/USDA Crop Grouping Symposium

Root and Tuber and Leafy Vegetables

Workgroup # 1

Crop Group 1: Root and Tuber Vegetables

Crop Group 2: Leaves of Root and Tuber Vegetables

Crop Group 3: Bulb Vegetables

Crop Group 4: Leafy Vegetables (Except Brassica Vegetables)

Crop Group 5: Brassica (Cole) Leafy Vegetables

Crop Group A (21): Stalk and Stem Vegetables

Root and Tuber and Leafy Vegetables

Workgroup # 1

IR-4/USDA Crop Grouping Symposium
7-8 October 2002
Arlington, Virginia

Chair: Dan Kunkel
Co-Chairs: Tom Bloem, Hong Chen, Doug Dotson, Mary Lamberts, Yuen-Shaung NG, Ray Ratto.

Workgroup #1's mission was to review, evaluate and validate established Crop Groups 1, 2, 3, 4, 5, and the proposed Crop Group A to include additional crops.

Note: The established Crop Groups reflected the US EPA's 40 CFR 180.41, Health Canada's Pest Management Regulatory Agency's Directive 98-02 and Mexico's Crop Grouping System which are identical.

Workgroup # 1
Crop Groups: 1 to 5 and Proposed Crop Group A
Monograph numbers from the Greenbook are set off by parentheses
Information printed in capital letters and all strikethroughs have been added to the original document by Workgroup #1

Crop Group 1. Root and Tuber Vegetables **Crop Groups** **US = 1 Canada = 1 Codex = VR Mexico = 1**			**Author's Classification of Root and Tuber Vegetables** **Crop Groups** **US = 1 Canada = 1 Codex = VR Mexico = 1**	
Rep. Commodities	**Established Commodities**	**Validate:Y/N**	**Proposed Commodity Additions/Changes**	**Validate:Y/N**
Carrot, Potato, Radish, and Sugarbeet	Arracacha (026)	Y	Arrowhead (027)	Y
	Arrowroot (029)	Y	Bean/goa (051), ROOT. WINGED BEAN, ROOT	Y
	Artichoke/Chinese (030)	Y	Beet/fodder (064) ADD TO CG 2	Y
	Artichoke/Jerusalem (032)	Y	Cassava (131) YES. EXPRESS ONLY AS CASSAVA	Y
	Beet/garden (065)	Y	Dahlia/garden (216)	Y
	Beet/sugar (583)	Y	Dasheen (219)	Y
	Burdock/edible (102)	Y	Evening primrose/common (234), ROOT. (TOPS, SEED ARE ALSO USED)	Y
	Canna/edible (118)	Y	Honewort (282) MITSUBA	Y
	Carrot (129)	Y	Lotus root (347)	Y
	Cassava/~~bitter & sweet~~ (131) ONLY CASSAVA	Y	Maca (352)	Y
	Celeriac (137)	Y	Mashua (~~245~~, 366)	Y for 366
	Chayote (root) (142)	Y	Mauka (367)	Y
	Chervil/turnip-rooted (149)	Y	Mustard/tuberous rooted Chinese (395)	Y
	Chicory (153)	Y	Oca (416)	Y
	Chufa (157)	Y	Polynesian arrowroot (485)	Y
	Dasheen (taro) (219)	Y	Potato/specialty (490)	Y
	Ginger (154)	Y	Rampion (506)	Y
	Ginseng (257)	Y	Sugarbeet (583)	Y
	Horseradish (286)	Y	Taro (606)	Y
	Leren (330)	Y	Ti (613)	Y
	Parsley/turnip-rooted (440) PROPOSE MAKING IT JUST ROOT	Y	Tyfon (626)	Y

	Parsnip (441)	Y	Ulluco (628)	Y
	Potato (489)	Y	Wasabi (642)	Y
	Radish (503)	Y	Waterchestnut/ Chinese (646)	Y
	Radish/oriental (504) DAIKON	Y	Yacon (686)	Y
	Rutabaga (520)	Y	Yautia (690*)* TANIER	Y
	Salsify (529)	Y	Term change from beet/sugar to sugarbeet	N
	Salsify/black (530)	Y	Term change from cassava/bitter & sweet to cassava CASSAVA	Y
	Salsify/Spanish (531)	Y	Dasheen (taro) split to dasheen (219) and taro (606)	Y
	Skirret (550)	Y	Turmeric moved to Herbs and Spices OR KEEP IN CG #1. ADD LEAVES TO CG # 2 AND HERBS/SPICES (CG #19)	KEEP ROOT IN CG # 1. .ALSO ADD LEAVES TO CG'S 2 AND 19.
	Sweet potato (594)	Y		
	Tanier (690)	Y		
	Turmeric (624)	Y		
	Turnip (525)	Y		
	Yam bean (687) ROOT. JICAMA	Y		
	Yam/true (690)	Y		

Subgroups (established or proposed) for CG # 1:
1A – Root (Established)
1B – Root (x sugarbeet) (Established)
1C – Tuberous and Corm (Established)
1D – Tuberous and Corm (x Potato) (Established)
1E – Aquatic Root (Proposed)
1F – Carrot (Proposed as outlined in 1.11)
1G – Radish (Proposed as outlined in 1.28)

Subgroups for Crop Group 1: Root and Tuber Vegetables

Subgroup 1A. Root Vegetable Subgroup (Established)		
Rep. Commodities	**Commodities**	**Validate: Y/N**
Carrot, radish, and ~~sugarbeet~~ BEET, SUGAR	Beet/garden - BEET, TABLE (GARDEN) ; beet/sugar, burdock/edible; carrot; celeriac; chervil/turnip-rooted; chicory; ginseng; horseradish; parsley/turnip-rooted; parsnip; radish; radish/oriental; rutabaga; salsify; salsify/black; salsify/Spanish; skirret; turnip New: Beet/fodder –OK BUT COVERED BY SUGARBEET	Y
Subgroup 1B. Root Vegetables (Except Sugarbeet) Subgroup (Established)		
Rep. Commodities	**Commodities**	**Validate: Y/N**
Carrot and radish	Beet/garden [beet, table (garden)]*;* burdock/edible; carrot; celeriac; chervil/turnip-rooted; chicory; ginseng; horseradish; parsley/turnip-rooted; parsnip; radish; radish/oriental; rutabaga; salsify; salsify/black; salsify/Spanish; skirret; turnip. New: Evening primrose/common; Honewort; Kava; Maca; Mauka; Mustard/tuberous rooted; Chinese; Oca; Rampion;Tyfon; Wasabi; Waterchestnut/Chinese ADD ALL NEW CROPS TO 1A AS WELL	Y
Subgroup 1C. Tuberous and Corm Vegetables Subgroup (Established)		
Rep. Commodities	**Commodities**	**Validate:Y/N**
Potato	Arracacha; arrowroot; artichoke/Chinese; artichoke/ Jerusalem; canna/edible; cassava/bitter and sweet; chayote (root); chufa; dasheen (taro); ginger; leren; potato; sweet potato; tanier; turmeric; yam bean; yam/true New: Arrowhead; Bean/goa; Dahlia/garden; Lotus root; Mashua; Polynesian arrowroot; Potato/specialty; Taro; Ti; Ulluco; Yacon; Yautia. GALANGAL, APOIS. ADD ALL LISTED UNDER “NEW” TO 1D EXCEPT POTATO/SPECIALITY	Y
Subgroup 1D. Tuberous and Corm Vegetables (Except Potato) Subgroup (Established)		
Rep. Commodities	**Commodities**	**Validate:Y/N**
Sweet potato	Arracacha; arrowroot; artichoke/Chinese; artichoke/ Jerusalem; canna/edible; cassava/bitter and sweet; chayote (root); chufa; dasheen (taro); ginger; leren; sweet potato; tanier; turmeric; yam bean; yam/true ADD CROPS FROM 1C AS INDICATED	Y
SUBGROUP 1E. AQUATIC ROOT VEGETABLES ADDED BY WORKGROUP # 1 (Proposed)		
WETLAND TARO AND/OR WASABI*	TARO/WETLAND, LOTUS, WATER CHESTNUT, WASABI, OTHERS POSSIBLE AS NOTED BELOW	Y

ADDITIONS TO AQUATIC ROOT VEGETABLES FROM WORKGROUP #1 FOR SUBGROUP 1E							
Common Name	**Scientific Name**	**Group/Subgroup Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate: Y/N**
CHINESE WATER CHESTNUT	*ELEOCHARIS DULCE* (BURM.F.) TRIN. EX *HENSCHE/ELEOCHARIS TUBEROSA* L.	1E – AQUATIC ROOT VEGETABLES	LOTUS ROOT OR WETLAND TARO	CORM	H. CHEN		Y
LOTUS ROOT*	*NELUMBO NUCIFERA* GAERTN.	1E – AQUATIC ROOT VEGETABLES	LOTUS ROOT OR WETLAND TARO	ROOTS	H. CHEN		Y
TARO (WETLAND)	*COLOCASIA ESCULENTA* (L.) SCHOTT	1E – AQUATIC ROOT VEGETABLES	LOTUS ROOT OR WETLAND TARO	CORM	M. LAMBERTS	FLORIDA HAS SOME PROBLEMS WITH THIS FORM OF TARO, BUT I CAN'T FIND IT ON ANY LISTS	Y

*AFTER DISCUSSION IN THE WORKGROUP, WASABI WAS DROPPED AS A REP CROP FOR SUBGROUP 1E AND LOTUS ROOT WAS ADDED

Workgroup Worksheet
Workgroup #: ___1_____Crop Group: __1_____

Additions to Established Crop Groups and Subgroups							
Common Name	**Scientific Name**	**Group/Subgroup Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate: Y/N**
1.1 Kava Kava	*Piper methysticum* (Piperaecae)	1	Carrot and radish	Root	Mike Kawate (HI)	Awa	Y
1.2 Dandelion	*Taraxacum officinale* (Asteraceae)	1	Carrot and radish	Root	Jack Rabin (NJ)		Y
1.3 Echinacea	*Echinacea* spp. (Asteraceae)	1	Carrot and radish	Root	Jack Rabin (NJ)	Canada	Y
1.4 Goldseal GOLDENSEAL	*Hydrastis canadensis* (Ranunculaceae)	1	Carrot and radish	Root	Jack Rabin (NJ)	GOLDENSEAL	Y
1.5 Stinging Nettle	*Urtica dioica* (Urticaceae)	1	Carrot and radish	Root	Jack Rabin (NJ)	WEED. PLEASE DON'T GROW	Y

1.6 Valerian VALERIAN	*Valeriana officinalis* (Valerianaceae)	1	Carrot and radish	Root	Jack Rabin (NJ)	VALERIAN	Y
1.7 (Reserved)							
1.8 Blue Vervain	*Verbena hastata* (Verbenaceae)	1	Carrot and radish	Root	Jack Rabin (NJ)		AI
1.9 Galangal (fresh and dried) (247)	*Alpina* spp. (Zingiberaceae)	1	~~Tumeric and ginger~~ POTATO/ SWEET POTATO	Root	Mike Braverman (NJ)	ADD TO HERBS & SPICES	Y
1.10 Konjac	*Amorophallus konjac* (Araceae)	1	~~Canna~~ POTATO/ SWEET POTATO	Tuber, corm	IR-4	Devil's Tongue, Voodoo Lily	Y
1.11 Carrot Subgroup	New Subgroup 1F	1F ROOT VEGGIES EXCEPT FOR SUGAR BEET AND RADISH	Carrot as only rep crop	Root	IR-4	Include Garden Beet, Burdock, Carrot, Celeriac, Turnip-rooted chervil, Ginseng, Horseradish, Oriental Radish, Rutabaga, Spanish Salsify, Skirret, Turnip PARSNIP. WASABI. REVISIT NEW CROPS	Y
1.12 Balloon Flower	*Platycodon grandifloris* (Campanulaceae)	1	Potato	Root and top	W. Sciarappa (NJ)	White root used in Korean cooking (Toraji)	AI
1.13 Common Beet	*Beta vulgaris* (Chenopodiaceae)	1	Carrot and radish	Root and top	S. Perry (MI)	Suggested to change from garden to common or table beet. (principal vernacular) KEEP TABLE AND GARDEN BEET	NO TO 'COMMON'
1.14 Chinese Arrowhead	*Sagittaria trifolia* var. *edulis* (Alismataceae)	1D – Tuberous and corm vegetables	Sweet potato /POTATO	Corm	H. Chen	Monograph 027 ADD NAME TO CFR	Y

1.15 Chinese Water Chestnut	*Eleocharis dulce, Eleocharis tuberosa* (Cyperaceae)	Subgroup 1E – Aquatic roots YES – LOTUS ROOT REP CROP		Corm	H. Chen	Monograph 646	Y
1.16 Elephant-foot Yam	*Amorphophallus* spp. (Araceae)	1D – Tuberous and corm vegetables	Sweet potato /POTATO	Corm	H. Chen	ADD NAME TO CFR	Y
1.17 Kaempferia Galangia	*Kaempferia galangia* (Zingiberaceae)	1C – Tuberous and corm vegetables	Potato /SWEET POTATO	Corm	H. Chen		Y
1.18 (Reserved)							
1.19 Myoga	*Zingiber mioga* (Zingiberaceae)	1C – Tuberous and corm vegetables	Potato /SWEET POTATO	Corm	H. Chen M. LAMBERT D.SCHAFF	Monograph 245, 383 MIOGA, ROOT	Y
1.20 (Reserved)							
1.21 Subgroup E Crop Group 1	See 1.15 and 1.22	1E – Subgroup		Corm	H. Chen	Add Subgroup E for Aquatic Root 1.15, 1.22 WASABI IS GROWN BOTH WET & DRY	Y
1.22 Lotus Root	*Nelumbo nucifera* (Nelumbonaceae)	1E – Aquatic	WETLAND TARO OR WASABI, LOTUS ROOT REP. CROP	Root	H. Chen	Monograph 347, add: Lily Root	Y
1.23 Madeira Vine	*Anredera cordifolia* (Basellaceae)	1	Carrot and Radish	Tuber	M. Braverman	Leaves may be eaten raw ALSO IN CG 19	Y
1.24 ~~Potato Bean~~ APOIS	*Apios Americana* (Fabaceae)	1	Potato /SWEET POTATO	Tuber	M. Braverman	~~Groundnut, Indian Potato~~ APIOS. GROUNDNUT=PEANUT	Y
1.25 Coltsfoot	*Tussilago farfara* (Asteraceae)	1	POTATO/ SWEET POTATO	Slender root	M. Braverman	Young leaves edible CONSIDER CG 2	Y

1.26 Solomon's Seal	*Polygonatum* spp. (Liliaceae)	1	Carrot and Radish POTATO/ SWEET POTATO	Root	M. Braverman	DISCUSSED CROP GROUP 3	Y
1.27 Garden Heliotrope	*Valeriana officinalis* (Valerianaceae)	1	Carrot and Radish	Root	M. Braverman	Root extract used to flavor ice cream, etc.	Y
1.28 Radish Subgroup	New Subgroup	1G	Radish	Root	IR-4	Includes Garden Beet, Burdock, Celeriac, Radish, Oriental Radish, Rutabaga, Turnip Root	Y

WORKGROUP #1, CROP GROUP # 1: ADDITIONS FROM THE WORKGROUP

Common Name	Scientific Name	Group/Subgroup Placement	Rep Crop	Edible Part	Person(s) Requesting	Comments	Validate: Y/N
BEET, TABLE (GARDEN) (065)		1A, ETC	CARROT RADISH SUGARBEET	LEAVES ROOTS	KUNKEL	TERM CHANGE TO BEET, TABLE (GARDEN)	Y
BONIATO, BATATAS, CAMOTE, PAPA DULCE	SWEET POTATO (594)	180.1(H)	SWEET POTATO		LAMBERTS SCHAFF	INCLUDE THESE CROPS IN SWEET POTATO DEFINITION	Y
MALANGA	TANIER (603)	180.1(H)	TANIER		LAMBERTS		Y
MALANGIS LENA	TARO (606)	180.1(H)	TARO		LAMBERTS		Y

Crop Group 2. Leaves of Root and Tuber Vegetables (Human Food or Animal Feed)
Crop Groups
US = 2 Canada = 2 Codex = VI & AV Mexico = 2

Rep. Commodities	Established Commodities	Validate: Y/N
Turnip, Garden beet or Sugarbeet	Beet/garden (065) BEET/TABLE (GARDEN)	Y
	Beet/sugar (583)	Y
	Burdock/edible (102)	Y
	Carrot (129)	Y

Author's Classification of Leaves of Root and Tuber Vegetables (Human Food or Animal Feed)
Crop Groups
US = 2 Canada = 2 Codex = VI & AV Mexico = 2

Proposed Commodity Additions/Changes	Validate: Y/N
Arracacha (026)	Y
Artichoke/Jerusalem (032) SUNCHOKE	Y
Beet/fodder (064)	Y
Dasheen (219)	Y

	Cassava/~~bitter and sweet~~ (131) LEAVES	Y		Honewort (282, 301) BOTH	Y
	Celeriac (137)	Y		Maca (352)	Y
	Chervil/turnip-rooted (149)	Y		Mashua (245, 366)	Y
	Chicory (153)	Y		Mauka (367)	Y
	Dasheen (taro) (219)	Y		Parsley/turnip rooted (440) SUGGEST PARSLEY ROOT	Y
	Parsnip (441)	Y		Radish/oriental (504)	Y
	Radish (503)	Y		Rampion (506)	Y
	Radish/ Oriental (Daikon) (504)	Y		Salsify (529)	Y
	Rutabaga (520)	Y		Sugar beet (583)	Y
	Salsify/black (530)	Y		Tanier spinach (603)	Y
	Sweet potato (594)	Y		Taro (606)	Y
	Tanier (690)	Y		Ti (613) GOOD LUCK PLANT	Y
	Turnip (625)	Y		Turnip (tops) (625)	Y
	Yam/true (690)	Y		Tyfon (626)	Y
				Ulluco (628)	Y
				Yacon (686)	Y
				Yautia (690)	Y
				Term change from beet/sugar to sugarbeet	Y
				Term change from cassava/ bitter & sweet to cassava CASSAVA LEAVES	Y
				Dasheen (taro) split to dasheen (219) and taro (606) LEAVES	Y
				Radish/oriental (daikon) covered in radish/oriental (504) LEAVES	Y
				Term change from turnip to turnip (tops)	Y
				Tanier covered in yautia (690)	Y

Workgroup Worksheet
Workgroup #: __1_____ Crop Group: __2_____

Additions to Established Crop Groups and Subgroups							
Common Name	**Scientific Name**	**Group/Subgroup Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate: Y/N**
2.1 Echinacea	*Echinacea* spp. (Asteraceae)	2 AND 19		Top	J. Rabin (NJ)	ADD TO HERBS	Y

2.2 Stinging Nettle	*Urtica dioica* (Urticaceae)	2 AND 19		Top	J. Rabin (NJ)	ARE YOU KIDDING? MAYBE ONLY IN 19	NO
2.3 Blue Vervain	*Verbena hastata* (Verbenaceae)	2 AND 19		Top	J. Rabin (NJ)	ADD TO HERBS	Y
2.4 Kava Kava AWA	*Piper methysticum* (Piperaecae)	2 AND 19		Leaves and stems	M. Kawate (HI)	ALSO AWA	Y
2.5 Radish Leaves	Monograph	2 ONLY	Crop Group 2 reps	Leaves and root	IR-4	Are leaves a significant food item? With the label statement "Do not harvest radish tops for human consumption", can they be controlled by the grower?	Y
ADDITION TO CROP GROUP 2 BY WORKGROUP # 1							
RADISH TOPS (503)	MONOGRAPH	2				ADD AS AN ALTERNATE REP. CROP TO TURNIP TOPS (TURNIP OR RADISH TOPS)	Y

Crop Group 3. Bulb Vegetables **Crop Groups** **US = 3 Canada = 3 Codex = AV Mexico = 3**			**Author's Classification of Bulb Vegetables** **Crop Groups** **US = 3 Canada = 3 Codex = AV Mexico = 3**	
Rep. Commodities	**Established Commodities**	**Validate: Y/N**	**Proposed Commodity Additions/Changes**	**Validate: Y/N**
Onion/green and Onion/dry bulb*	Garlic (249)	Y	Chive(154) **	Y
	Garlic/great-headed (250)	Y	Chive/Chinese ** (155)	Y
	Leek (325)	Y	Daylily (221, ~~245~~) 221 Only	Y
	Onion/dry bulb and green (419)	Y	Onion (419)	Y
	Onion/Welsh (424)	Y	Onion/~~Beltsville~~ Bunching (420) (424) SUGGEST REMOVING BELTSVILLE	Y
	Shallot (545)	Y	Onion/Chinese (421)	Y
			Onion/potato (422) ADD WITH ONION/BUNCHING	Y

			Onion/tree ((423) TOPSET ONION. GREEN ONION NOT DRY BULB	Y
			Rakkyo (421) BULB ONION	Y
			Wild leek (~~250~~, 680)	Y
			Onion/dry bulb and green covered in Onion (419)	Y

*IN 180.1(H) INCLUDE ONION, BULB. GROUP PREFERS BULB ONION THAN DRY ONION OR ONION, BULB (DRY).
**IN 180.1(H) INCLUDE CHIVES AND CHINESE CHIVES IN GREEN ONION DEFINITION.

Subgroups (proposed) for Crop Group # 3:

3A – Green Onion (Proposed)

3B – Bulb Onion (proposed)

SUBGROUP 3A: GREEN ONION: ADDED BY WORKGROUP #1 (Proposed)		
Rep. Commodities	**Commodities**	**Validate: Y/N**
GREEN ONION	ALL GREEN ONIONS	Y
SUBGROUP 3B: BULB ONION: ADDED BY WORKGROUP #1 (Proposed)		
Rep. Commodities	**Commodities**	**Validate: Y/N**
BULB ONIONS	ALL BULB ONIONS INCLUDING GARLIC	Y

Workgroup Worksheet
Workgroup #: ___1_____Crop Group: __3_____

Additions to Established Crop Groups and Subgroups							
Common Name	**Scientific Name**	**Group/Subgroup Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate: Y/N**
3.1 Chive	*Allium schoenoprasum* (Liliaceae)	3A	Green Onion	Tops	IR-4	From CG 19 to CG 3	Y
3.2 Bulb Subgroup		3B	Dry Bulb Onion	Bulb	New Zealand	Divide CG 3 into Bulb and Green Onion	Y
3.3 Green Onion Subgroup		3A	Green Onion	Tops	New Zealand	Divide CG 3 into Bulb and Green Onion	Y
3.4 Fritillaria	*Fritillaria spp*. (Liliaceae)	3B	Bulb Onion	Bulb	M. Braverman		Y
3.5 Jiaotou	*Allium chinense* (Liliaceae)	3 - A	Green Onion	Entire plant	H. Chen	Monograph 421	Y

3.6 Lily	*Lilium spp.* (Liliaceae)	3 - B	~~Green~~ BULB Onion	Entire plant	H. Chen		Y
3.7 Macrostem Onion	*Allium macrostemon* (Liliaceae)	3 - A	Green Onion	Leaves, shoots, and bulb	H. Chen		Y
3.8 Chinese Chive	*Allium tuberosum* (Liliaceae)	3 - A	Green Onion	Leaves	C. Coiner (FL)		Y

Crop Group 4. Leafy Vegetables (Except *Brassica* Vegetables) **Crop Groups** **US = 4 Canada = 4 Codex = VL Mexico = 4**			**Author's Classification of Leafy Vegetables (Except *Brassica* Vegetables)** **Crop Groups** **US = 4 Canada = 4 Codex = VL Mexico = 4**	
Rep. Commodities	**Established Commodities**	**Validate: Y/N**	**Proposed Commodity Additions/Changes**	**Validate: Y/N**
Celery, Head lettuce, Leaf lettuce, and Spinach	Amaranth (Chinese spinach) (014)	Y	Amaranth/Chinese (014) CG 4D + 4A	Y
	Arugula (roquette) (033)	Y	Amaranth/leafy (016)	Y
	Cardoon (125)	Y	Arugula (033)	Y
	Celery (138)	Y	Chicory (153,231)	Y
	Celery/Chinese (139)	Y	Comfrey (189)	Y
	Celtuce (334)	Y	Coriander (cilantro) (181)	Y
	Chervil (148)	Y	Coriander/false (192) CULANTRO	Y
	Chrysanthemum/edible-leaved (156)	Y	Dock (224, 557, 558)	Y
	Chrysanthemum/garland (156)	Y	Fameflower ((235) WATER LEAF	Y
	Corn salad (194)	Y	Fenugreek (240)	Y
	Cress/garden (202)	Y	Fern/edible (241)	Y
	Cress/upland (203)	Y	Good-king-Henry (259)	Y
	Dandelion (218)	Y	Gow kee (263)	Y
	Dock (sorrel) (224 557, 558)	Y	Ice plant (291)	Y
	Endive (escarole) (231)	Y	Japanese honewort (301)	Y
	Fennel/Florence (239)	Y	Jute/nalta (310) FRUIT ALSO EATEN	Y
	Lettuce/head and leaf (333)	Y	Kale/sea (312)	Y
	Orach (426)	Y	Lettuce (333)	Y
	Parsley (439)	Y	Lettuce/celery (334)	Y
	Purslane/garden (498)	Y	Lettuce/head (335)	Y
	Purslane/winter (499)	Y	Lettuce/leaf (336)	Y

	Radicchio (red chicory) (153)	Y	Marshmarigold (364)	Y
	Rhubarb (512)	Y	Plantain (043, 475)	Y
	Spinach (569)	Y	Pokeweed (483)	Y
	Spinach/New Zealand (570)	Y	Sorrel/French (557)	Y
	Spinach/vine (571) MALABAR	Y	Sorrel/garden (558)	Y
	Swiss chard (595)	Y	Water dropwort (644)	Y
			Water spinach (645)	Y
			Watercress (647)	Y
			Amaranth (Chinese spinach) covered in Amaranth/Chinese (014)	Y
			Arugula (roquette) covered in Arugula (033)	Y
			Chrysanthemum/garland covered in Chrysanthemum/edible-leaved (156)	Y

Subgroups (Established and Proposed) for Crop Group # 4:
4A – Leafy Greens (Established)
4B – leaf petiole (Established)
4C – Aquatic Leaf and Stem (Proposed)
4D – Edible Ferns (Proposed)
4E – Lettuce (Proposed as outlined in 4.44)
4F – Spinach (Proposed as outlined in 4.45)

Subgroups for Crop Group 4: Leafy Vegetables (Except *Brassica* Vegetables)

Subgroup 4A. Leafy Greens Subgroup (Established)		
Rep. Commodities	**Commodities**	**Validate: Y/N**
Head lettuce and leaf lettuce, and spinach	Amaranth (Chinese spinach); arugula; chervil; chrysanthemum/edible-leaved; chrysanthemum/garland; corn salad; cress/garden; cress/upland; dandelion; dock; endive; lettuce; orach; parsley; purslane/garden; purslane/winter; radicchio; spinach; spinach/New Zealand; spinach/vine New: Chicory; Comfrey; Coriander(cilantro); Coriander/false; Fameflower; Fenugreek; Fern/edible;Good-king-Henry;Gow kee;Ice plant; Jute/nalta; Kale/sea; Marshmarigold; Plantain; Pokeweed; Sorrel/French; Sorrel/garden; Water spinach; Watercress	Y

ADDITIONS MADE BY WORKGROUP #1 TO SUBGROUP 4A; LEAFY GREENS SUBGROUP.							
Common Name	**Scientific Name**	**CG/SG Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate: Y/N**
TANIER LEAVES		2 AND 4A	LETTUCE AND SPINACH	LEAVES	KUNKEL	INCLUDE IN BOTH 2 AND 4	Y
YAM LEAVES		2 AND 4A	LETTUCE AND SPINACH	LEAVES	KUNKEL	INCLUDE IN BOTH 2 AND 4	Y
ARRACACHA LEAVES		2 AND 4A	LETTUCE AND SPINACH	LEAVES	KUNKEL	INCLUDE IN BOTH 2 AND 4	Y
HONEWORT LEAVES		2 AND 4A	LETTUCE AND SPINACH	LEAVES	KUNKEL	INCLUDE IN BOTH 2 AND 4	Y
MACA LEAVES		2 AND 4A	LETTUCE AND SPINACH	LEAVES	KUNKEL	INCLUDE IN BOTH 2 AND 4	Y
MASUHA LEAVES		2 AND 4A	LETTUCE AND SPINACH	LEAVES	KUNKEL	INCLUDE IN BOTH 2 AND 4	Y
RAMPION LEAVES		2 AND 4A	LETTUCE AND SPINACH	LEAVES	KUNKEL	INCLUDE IN BOTH 2 AND 4	Y
TANIER SPINACH LEAVES		2 AND 4A	LETTUCE AND SPINACH	LEAVES	KUNKEL	INCLUDE IN BOTH 2 AND 4	Y
TARO LEAVES		2 AND 4A	LETTUCE SPINACH	LEAVES	KUNKEL	INCLUDE IN BOTH 2 AND 4	Y
YAUTIA LEAVES		2 AND 4A	LETTUCE SPINACH	LEAVES	KUNKEL	INCLUDE IN BOTH 2 AND 4	Y
BURDOCK LEAVES		2 AND 4A	LETTUCE	LEAVES	KUNKEL	INCLUDE IN BOTH 2 AND 4	Y
BEETS, TABLE(GARDEN) LEAVES		2 AND 4A	SPINACH	LEAVES	KUNKEL	INCLUDE IN BOTH 2 AND 4	Y
CASSAVA LEAVES		2 AND 4A	LETTUCE	LEAVES	KUNKEL	INCLUDE IN BOTH 2 AND 4	Y
CHICORY LEAVES		2 AND 4A	SPINACH	LEAVES	KUNKEL	INCLUDE IN BOTH 2 AND 4	Y
DASHEEN (TARO) LEAVES		2 AND 4A	LETTUCE	LEAVES	KUNKEL	INCLUDE IN BOTH 2 AND 4	Y
PARSNIP, LEAVES		2 AND 4A	SPINACH	LEAVES	KUNKEL	INCLUDE IN BOTH 2 AND 4	Y
SALSIFY BLACK, LEAVES		2 AND 4A	LETTUCE	LEAVES	KUNKEL	INCLUDE IN BOTH 2 AND 4	Y

SWEET POTATO LEAVES		2 AND 4A	SPINACH	LEAVES	KUNKEL	INCLUDE IN BOTH 2 AND 4	Y
ULLUCO LEAVES		2 AND 4A	LETTUCE	LEAVES	KUNKEL	INCLUDE IN BOTH 2 AND 4	Y
SALSIFY LEAVES		2 AND 4A	SPINACH	LEAVES	KUNKEL	INCLUDE IN BOTH 2 AND 4	Y
DAYLILY TOPS		4A	LETTUCE SPINACH	LEAVES	KUNKEL		Y
GRAPE LEAVES		4A			KUNKEL		Y
CORIANDER/FALSE		4A	LETTUCE SPINACH	LEAVES	KUNKEL	INCLUDE CULANTRO IN NAME	Y

Subgroup 4B. Leaf Petioles Subgroup (Established)

Rep. Commodities	Commodities	Validate: Y/N
Celery	Cardoon; celery; celery/Chinese; celtuce; fennel/Florence; rhubarb; Swiss chard New; Japanese honewort; Water dropwort	Y

ADDITIONS MADE BY WORKGROUP #1 TO SUBGROUP 4B: LEAFY PETIOLES SUBGROUP

Common Name	Scientific Name	CG/SG Placement	Rep Crop	Edible Part	Person(s) Requesting	Comments	Validate: Y/N
CELERIAC LEAVES		4B	CELERY	LEAVES	KUNKEL	INCLUDE IN BOTH 2 AND 4B	Y
YAUTIA LEAVES		4B	CELERY	LEAVES	KUNKEL	INCLUDE IN BOTH 2 AND 4B	Y
YACON LEAVES		4B	CELERY	LEAVES	KUNKEL	INCLUDE IN BOTH 2 AND 4B	Y
TANIER SPINACH		4B	CELERY	LEAVES	KUNKEL	INCLUDE IN BOTH 2 AND 4B	Y
TARO LEAVES		4B	CELERY	LEAVES	KUNKEL	INCLUDE IN BOTH 2 AND 4B	Y
MAUKA LEAVES		4B	CELERY	LEAVES	KUNKEL	INCLUDE IN BOTH 2 AND 4B	Y

CROP SUBGROUP 4C: AQUATIC LEAFY AND STEM VEGETABLES PROPOSED BY WORKGROUP #1 (Proposed)

Common Name	Scientific Name	CG/SG Placement	Rep Crop	Edible Part	Person(s) Requesting	Comments	Validate: Y/N
COMMOM CATTAIL	*TYPHA LATIFOLIA L.*	4C	WATERCRESS	BUDS	H. CHEN		Y
EURYALE	*EURYALE FEROX SALISB.*	4C	WATERCRESS	YOUNG LEAF STALKS	H. CHEN		Y

WATER BAMBOO	*ZIZINIA LATIFOLIA (GRISEB.) TURCZ. EX STAPF./Z. CADUCIFLORE (TURCZ.) HAND. –MAZZ.*	4C	WATERCRESS	STEMS	H. CHEN		Y
WILD RICE	*ZIZANIA AQUATICA L.*	4C	WATERCRESS	STEMS	H. CHEN		Y
WATER CALTROP	*TRAPA SPP.*	4C	WATERCRESS	NUT-LIKE FRUIT, LEAVES & STEMS	H. CHEN		Y
WATER DROPWORT	*OENANTHE JAVANICA (BLUME) DC.*	4C	WATERCRESS	LEAVES & STEMS	H. CHEN		Y
WATER SHIELD	*BRASENIA SCHREBERI J.F. GMELIN*	4C	WATERCRESS	LEAVES & STEMS	H. CHEN		Y
WATER SPINACH	*IPOMOEA AQUATICA FORSSK.*	4C	WATERCRESS	LEAVES & STEMS	M. LAMBERTS	THIS IS AN ADDITIONAL CLASSIFICATION SINCE THERE ARE 2 FORMS OF THIS CROP. NOTE: THIS IS A CLASS I PROHIBITED PLANT (FL. DEPT OF ENV. PROTECT.) IN FL THOUGH IT CAN BE GROWN AS A PERMITTED CROP, **NOT** THE AQUATIC FORM	Y
SPIRULINA	*SPIRULINA*	4C	WATERCRESS	ENTIRE PLANT	M. BRAVERMAN	AQUATIC ALGAE	Y

SUBGROUP 4D: EDIBLE FERNS , PROPOSED BY WORKGROUP # 1 (Proposed)							
Common Name	**Scientific Name**	**CG/SG Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate: Y/N**
BRACKEN FERN	*PTERIDIUM AQUILINUM (L.) KUHN VAR. LATIUSCULUM (DESV.) UNDERW.EX A. HELLER*	4D	LETTUCE AND/OR SPINACH	YOUNG STEMS	H. CHEN	BRACKEN FERN	Y

CINNAMON FERN	*OSMUNDA CINNAMOMEA L. AND O. CINNAMOMEA L. VAR. ASIATICA FERNALD.*	4D	LETTUCE AND/OR SPINACH	YOUNG STEMS	H. CHEN	CINNAMON FERN	Y
JAPANESE FLOWERING FERN	*OSMUNDA JAPONICA THUNB.*	4D	LETTUCE AND/OR SPINACH	CROZIERS	H. CHEN	JAPANESE FLOWERING FERN	Y
OSTRICH FERN	*MATTEUCCIA STRUTHIOPTERIS (L.) TODARO*	4D	LETTUCE AND/OR SPINACH	CROZIERS	H. CHEN	OSTRICH FERN	Y

Workgroup Worksheet
Workgroup #: ___1_____Crop Group: __4_____

Additions to Established Crop Groups and Subgroups							
Common Name	**Scientific Name**	**Group/SG Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate:Y/N**
4.1 Skullcap	*Scutellaria laterifolia* (Lamiaceae)	4 AND 19		Top	J. Rabin (NJ)		Y
4.2 St. Johnswort	*Hypericum perforatum* (Clusiaceae)	4		Top	J. Rabin (NJ)		Y
4.3 Huauzontle	*Chenopodium berlandieri* (Chenopodiaceae)	4, 15 and 16	Spinach	Top, seed	Mexico	Leaves used as spinach; seed used in bread; (Azetec Red Spinach)	Y
4.4 Spinach Subgroup	See comments, crop already in established crop group	4F	Spinach	Top	IR-4	Arugula, cress, BRASSICA CROP GROUP ALSO, dock, dandelion, parsley, CHICORY TOPS, etc.	Y
4.5 Warrigal greens	*Tetragonia tetragonoides* (Aizoaceae)	4F	Spinach	Top	G. Bulow (Australia)	New Zealand Spinach	Y
4.6 Balloon Flower	*Platycodon grandiflorus* (Campanulaceae)	4		Root and top		White root is primary use. Young leaves eaten boiled.	Y
4.7 Watercress	*Rorippa nasturtium-aquaticum* (Brassicaceae)	4A	Lettuce and Spinach	Top	G. Saxena (FL)	Water issue vs. upland watercress INCLUDE WITH BRASSICA	Y

4.8 Alfalfa	*Medicago hispida* (Fabaceae)	4A	Head & leaf lettuce, Spinach	Young shoots	H. Chen	Monograph 008	Y
4.9 Cat's Whiskers	*Cleome gynamdra* (Capparaceae)	4A	Head & leaf lettuce, Spinach	Flower stems with attached leaves	H. Chen		Y
4.10 Chinese Mallow	*Malva vericillata* (Malvaceae)	4A	Head & leaf lettuce, Spinach	Tender leaves and shoot tips	H. Chen		Y
4.11 Coltsfoot	*Tussilago farfara* (Asteraceae)	4A	Head & leaf lettuce, Spinach	Leafstalks, flower stems & buds	H. Chen		Y
4.12 Common Sow Thistle	*Sonchus oleraceae* (Asteraceae)	4A	Head & leaf lettuce, Spinach	Young leaves	H. Chen		Y
4.13 Day Lily	*Hemerocallis spp.* (Liliaceae)	4A	Head & leaf lettuce, Spinach	Flower buds	H. Chen	Monograph 221, 245	Y
4.14 Cilantro	*Coriandrum sativum* (Apiaceae)	4A	Head & leaf lettuce, Spinach	Leaves and petioles	H. Chen	Monograph 191	Y
4.15 Field Sow Thistle	*Sonchus brachyotus* (Asteraceae)	4A	Head & leaf lettuce, Spinach	Young plants and leaves	H. Chen		Y
4.16 Gynura	*Gynura bicolor* (Asteraceae)	4A	Head & leaf lettuce, Spinach	Young plants and leaves	H. Chen		Y
4.17 India Kalimeris	*Kalimeris indica* (Asteraceae)	4A	Head & leaf lettuce, Spinach	Shoots	H. Chen		Y
4.18 (Reserved)							
4.19 Vegetable Chryanthemum	*Chryanthemum nankingensis* (Asteraceae)	4A 4F	~~Celery~~ SPINACH	Leaves & stem	H. Chen		Y
4.20 Water Caltrop	*Trapa spp.* (Cyperaceae)	4C	Watercress	Leaves & stem	H. Chen	Monograph 646	Y
4.21 Water Dropwort	*Oenanthe javanica* (Onagraceae)	4C 4B	CELERY	Leaves & stem	H. Chen	Monograph 234	Y

4.22 Water Shield	*Brasenia schreberi* (Cabombaceae)	4C	WATERCRESS	Leaves & stem	H. Chen		Y
4.23 Bracken Fern	*Pteridium aquilinum var. latiusculum* (Dennstaediaceae)	4D		Young stems	H. Chen	Monograph 241	Y
4.24 Cinnamon Fern	*Osmunda cinnamomea and O. cinnamomea var. asiatica* (Osmundaceae)	4D		Young stems	H. Chen	Monograph 241	Y
4.25 Japanese Flowering Fern	*Osmunda japonica* (Osmundaceae)	4 D		Croziers	H. Chen	Monograph 241	Y
4.26 Ostrich Fern	*Matteuccia struthiopteris* (Dryoptericaceae)	4 D		Croziers	H. Chen		Y
4.27 Fresh Herbs	Many in 19 A (See list)	4A	Lettuce and Spinach	Tops	C. Coiner (FL)	~~Move~~ INCLUD*E* IN BOTH 19A and Crop Group 4A	Y
4.28 Water Spinach	*Ipomoea aquatica* (Convolulaceae)	4C	~~Lettuce and Spinach~~	Tops	IR-4	Monograph (645), also called Ong Choy	Y
4.29 Chicory Dandelion		4A	Lettuce	Tops	Ray Ratto (CA)	Chard Dandelion	Y
4.30 English Primose	*Primula vulgaris* (Primulaceae)	4A	Lettuce and Spinach	Flowers & leaves	M. Braverman	Flowers and leaves eaten raw	Y
4.31 Cowslip	*Primula veris* (Primulaceae)	4A	Lettuce and Spinach	Flowers & leaves	M. Braverman	Flowers and leaves eaten raw	Y
4.32 Yerba Mansa	*Anemopsis californica* (Saururaceae)	4A	Lettuce and Spinach	Top	M. Braverman		Y
4.33 Grasswort	*Salicornia europaea* (Salicorniaceae)	4A AQUATIC LEAFY VEG. 4C	Lettuce and Spinach	Top	M. Braverman	Leaves and stems eaten raw or as potherb. Edible seeds can be used for edible oil	Y
4.34 Madeira Vine	*Anredera cordifolia* (Basellaceae)	4A	Lettuce and Spinach	Leaves	M. Braverman	Also in root group	Y
4.35 Chicory Leaf (Frisee)	Presently in 2	4A	Lettuce and Spinach	Top	C. Coiner (FL)	Add chicory leaf to 4A	Y
4.36 Beet Top	Presently in 2	4A	Lettuce and Spinach	Top	C. Coiner (FL)	Add beet top to 4A	Y

4.37 Swiss Chard	Presently in 4B	4A	Lettuce and Spinach	Top	Ray Ratto (CA)	Add Swiss chard to 4A	Y
4.38 Kava Leaf	*Piper methysticum* (C. piperaceae)	4A	Lettuce and Spinach	Leaf	M. Braverman	Also see Crop Group 2	Y
4.39 Fresh Mint	*Mentha spp.* (Lamiaceae)	4A	Lettuce and Spinach	Leaves	M. Braverman	See monograph (382)	Y
4.40 Epazote	*Chenopodium ambrosioides* (Chenopodiaceae)	4A	Lettuce and Spinach	Leaves	M. Braverman	See monograph (232)	Y
4.41 Stevia Leaf	*Stevia rebaudiana* (Asteraceae)	4A	Lettuce and Spinach	Leaves	M. Braverman	Sweet Leaf Monograph (579)	Y
4.42 Spirulina	*Spirulina spp.* (Oscillatoriaceae)	4A AQUATIC 4C	Lettuce and Spinach WATERCRESS	Algae	M. Braverman	Blue-green algae	Y
4.43 Sunset Hibiscus	*Abelmoschus manihot* (Malvaceae)	4A	Lettuce and Spinach	Leaves	M. Braverman	Young leaves eaten raw, cooked, used to wrap meat.	Y
4.44 Lettuce Subgroup		4E	Lettuce	Leaves	IR-4	Include head and leaf lettuce, endive, radicchio	Y
4.45 Spinach Subgroup		4F	Spinach	Leaves	IR-4	Include amaranth, arugula, chervil, chrysanthemum, corn salad, cress, dandelion, Dock, endive, orach, parsley, purslane, spinach, New Zealand spinach. CHICORY TOPS, CILANTRO, DILL. CONSIDER SOME HERBS FOR THE 4C & 4D SUBGROUPS OR ALL IN 4F	Y

WORKGROUP #1 CROP GROUP #4, ADDITIONS FROM WORKGROUP							
Common Name	**Scientific Name**	**Group/SG Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate: Y/N**
HORSERADISH TREE	*MORINGA PTERYGOSPERMA M. OLEIFERA*	4		LEAF FLOWERS PODS	M. LAMBERTS	(066)	Y
UDO	*ARALIA CONDATA*	CG A, WITH ASPARAGUS	CELERY	SHOOT	S. MIYAZAKI	MONOGRAPH 627	YES TO ASPARAGUS + BAMBOO SHOOTS
BANANA FLOWER	*MUSA SP.*	4	LETTUCE	FLOWER	M. BRAVERMAN		Y
BANANA LEAF	*MUSA SP.*	4	LETTUCE	LEAF IN COOKING	M. BRAVERMAN		Y
LOTUS LEAF	*NELUMBO NUCEFERA*	2 AND 4	LETTUCE	LEAF IN COOKING	M. BRAVERMAN		Y

Crop Group 5. *Brassica* (Cole) Leafy Vegetables **Crop Groups** **US = 5 Canada = 5 Codex = VL & VB Mexico = 5**			**Author's Classification of *Brassica* (Cole) Leafy Vegetables** **Crop Groups** **US = 5 Canada = 5 Codex = VL & VB Mexico = 5**	
Rep. Commodities	**Established Commodities**	**Validate: Y/N**	**Proposed Commodity Additions/Changes**	**Validate: Y/N**
Broccoli or cauliflower, Cabbage, and Mustard greens	Broccoli (090, 136)	Y	Abyssinian cabbage (002)	Y
	Broccoli/Chinese (gai lon) (091)	Y	Bok choy (085)	Y
	Broccoli raab (rapini) (092)	Y	Broccoli/Chinese (091)	Y
	Brussels sprouts (096)	Y	Broccoli raab (092)	Y
	Cabbage (105)	Y	Cabbage/Chinese (106)	Y
	Cabbage/Chinese (bok choy) (106)	Y	Cabbage Seakale (107)	Y
	Cabbage/Chinese (napa) (106)	Y	Hanover salad (276) (UNCOMMON KALES)	Y
	Cabbage/Chinese mustard (gai choy) (397)	Y	Kale/common (311)	Y
	Cauliflower (136)	Y	Mustard/wild (396)	Y
	Cavalo broccolo(090) (136)	Y	Rape (507)	Y
	Collards (188)	Y	Turnip (greens) (625)	Y
	Kale (311)	Y	Broccoli/Chinese (Gai lon) covered in Broccoli/Chinese (091)	Y
	Kohlrabi (319)	Y	Broccoli raab (rapini) covered in broccoli raab (092)	Y

	Mizuna (397)	Y	Cabbage/ Chinese (bok choy) covered in Bok choy (085)	Y
	Mustard greens (397)	Y	Cabbage/Chinese Mustard (Gai choy) covered under Mustard greens (397)	Y
	Mustard spinach ((397)	Y	Cabbage/Chinese (napa) covered in Cabbage/Chinese (106)	Y
	Rape greens (507)	Y	Cavalo broccolo covered in broccoli (090)	Y
			Change term from kale to ~~kale/common~~ (311)	NO
			Mizuna and Mustard Spinach covered in Mustard greens (397)	Y
			Rape greens covered in Rape (507)	Y

Subgroups (Established and Proposed) for Crop Group # 5:
5A – head and stem *Brassica* (Established)
5B – Leafy *Brassica* (Established)
5C – Broccoli (Proposed as outlined in 5.6)

Subgroups for Crop Group 5: *BRASSICA* (COLE) LEAFY VEGETABLES

Subgroup 5A. Head & Stem *Brassica* Subgroup (Established)		
Rep. Commodities	**Commodities**	**Validate: Y/N**
Broccoli or cauliflower and cabbage	Broccoli; broccoli/Chinese; brussels sprouts; cabbage; cabbage/Chinese (napa); cabbage/Chinese mustard; cauliflower; cavalo broccolo; kohlrabi	Y
Subgroup 5B. Leafy *Brassica* Greens Subgroup (Established)		
Rep. Commodities	**Commodities**	**Validate: Y/N**
Mustard greens	Broccoli raab; cabbage/Chinese (bok choy);collards; kale; mizuna; mustard greens; mustard spinach; rape greens New: Abyssinian cabbage; Broccoli/Chinese; Cabbage/Seakale; Hanover salad; Mustard/wild; Turnip (greens); Chinese cabbage	Y

ADDITIONS TO CROP SUBGROUP 5B BY WORKGROUP #1							
Common Name	**Scientific Name**	**Group/SG Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate: Y/N**
FLOWERING CHINESE FLAT LEAF MUSTARD (397)		5B					Y
TURNIP TOPS		2 and 5B	MUSTARD GREENS	LEAVES	KUNKEL	INCLUDE IN BOTH CG 2 AND 5B	Y
RADISH TOPS		2 and 5B	MUSTARD GREENS	LEAVES	KUNKEL	INCLUDE IN BOTH CG 2 AND 5B	Y
ORIENTAL RADISH TOPS		2 and 5B	MUSTARD GREENS	LEAVES	KUNKEL	INCLUDE IN BOTH CG 2 AND 5B	Y
TYFON TOPS		2 and 5B	MUSTARD GREENS	LEAVES	KUNKEL	INCLUDE IN BOTH CG 2 AND 5B	Y
RUTABAGA TOPS		2 and 5B	MUSTARD GREENS	LEAVES	KUNKEL	INCLUDE IN BOTH CG 2 AND 5B	Y
CANOLA GREENS		5B	MUSTARD GREENS	LEAVES	KUNKEL	ADD TO CROP GROUP	Y
ARUGULA TOPS		2 and 5B	MUSTARD GREENS	LEAVES	KUNKEL	INCLUDE IN BOTH	Y
CRESS GARDEN		5B	MUSTARD GREENS	LEAVES	KUNKEL	ADD TO CROP GROUP	Y
CRESS UPLAND		5B	MUSTARD GREENS	LEAVES	KUNKEL	ADD TO CROP GROUP	Y

Workgroup Worksheet
Workgroup #: ____1_____Crop Group: ___5_____

Additions to <u>Established</u> Crop Groups and Subgroups							
Common Name	**Scientific Name**	**Group/Subgroup Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate: Y/N**
5.1 Turnip Greens	*Brassica rapa* (Brassicaceae)	5B	Mustard greens	Leaves	IR-4	Move Turnip Greens from CG 2to CG 5	Y
5.2 Flat Chinese Cabbage	*Brassica campestris* spp.*Chinensis* var. *rosularis*/*B. rapa* var. *parachinensis* (Brassicaceae)	5B – Leafy *Brassica* greens	Mustard greens	Entire plant	H. Chen	Monograph 085, 092, 106, 397, 507, 625 YES FOR ALL.	Y

5.3 Flowering Purple Stem Chinese Cabbage	*Brassica campestris* spp.*Chinensis* var. *rosularis/B. rapa* var. *purpurea* (Brassicaceae)	5B – Leafy Brassica greens	Mustard greens	Stems and shoots	H. Chen	Monograph 085, 092, 106, 397, 507, 625	Y
5.4 Tatsoi (Rosette bok choy)	*Brassica rapa* (Brassicaceae)	5B	Mustard greens	Top	IR-4	Tatsoi is monograph 085. Add CN Rosette Bok Choy	Y
5.5 Kale vs. Mustard Greens as rep crop	Surrogate data	5B	Mustard greens OR KALE	Top	Canada	Use Kale as rep crop in place of Mustard greens for Canada Crop Group 5	Y
5.6 Broccoli or Cauliflower subgroup	New Subgroup	5C	Broccoli or Cauliflower	Tops	IR-4	Include Broccoli, Chinese Broccoli, BROCCOLI RAAB~~,Cabbage,~~ Cauliflower, ~~Chinese mustard~~ BROCCOLI OR CAULIFLOWER	Y

Proposed Crop Group A: Stalk and Stem Vegetables **Current Crop Group** **US = Miscellaneous Canada = None Codex = VS Mexico = None**	
Author's Commodity List (Greenbook) Greenbook monograph number follows the crop name	**Validate: Y/N**
Airpotato *(006*) – NOXIOUS WEED	NO
Artichoke/globe (030)	Y
Asparagus (035)	Y
Bamboo (042, 253)	Y
Japanese knotweed (302)	Y
Palm heart (432)	Y
Udo (627)	Y
Water bamboo (643) MOVE TO AQUATIC STALK AND STEM VEG. 4C	Y

Subgroups (Proposed) for Crop Group 'A':
Aa – Stem (Proposed)
Ab – Stalk and Stem (Proposed)

Proposed Subgroups for Crop Group A

Subgroup : Aa, Stem Subgroup (Proposed)		
Rep. Commodities	**Commodities**	**Validate:Y/N**
Asparagus	~~Airpotato~~; Asparagus; Bamboo; Japanese knotweed; Palm heart; Udo; Water Bamboo	Y
Proposed Subgroup : Ab, Stalk and Stem Subgroup (Proposed)		
Rep. Commodities	**Commodities**	**Validate:Y/N**
Asparagus and Artichoke	Artichoke; Airpotato (COVERED UNDER YAM); Asparagus; Bamboo; Japanese knotweed; Palm heart; Udo; ~~Water Bamboo~~	Y

Workgroup Worksheet
Workgroup #: ___1_____ Crop Group: ___A (Stalk and Stem Vegetables)__

Additions to Proposed Crop Groups and Subgroups							
Common Name	**Scientific Name**	**Group/Subgroup Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate: Y/N**
A.1 Bamboo Shoot	*Bambusoideae spp.* (Poaceae)	A	Asparagus	Young shoots	H. Chen		Y
A.2 Chinese Toon	*Toona sinensis* (Meliaceae)	A	Asparagus	Young shoots	H. Chen		AI
A.3 Common Cattail	*Typha latifolia* (Typhaceae)	A AQUATIC	Artichoke	Buds	H. Chen	SEE 4C	Y
A.4 Euryale	*Euryale ferox* (Nymphaeaceae)	A AQUATIC	Asparagus	Young leaf stalks	H. Chen	SEE 4C	Y
A.5 Water Bamboo	*Zizania latifolia/Z. caduciflore* (Poaceae)	A AQUATIC	Asparagus	Stems	H. Chen	SEE 4C	Y
A.6 Wild Rice STEM	*Zizania aquatica* (Poaceae)	A AQUATIC	Asparagus	Stems	H. Chen	SEE 4C MONOGRAPH 681	STEMS Y
A.7 Asparagus	*Asparagus officinalis* (Liliaceae)	A	Asparagus	Spear	A. Schreiber (WA)	Is Group 4 better? NO	Y

A.8 Artichoke, Globe	*Cynara cardunculus* (Asteraceae)	A	Artichoke	Buds	IR-4	Monograph 031	Y
A.9 Agave	*Agave spp.* (Agavaceae)	A	Artichoke	Base of plant	IR-4	COVERED BY OTHER CROP GROUP 'M', OR CUCURBITS	Y
ADDITIONS TO PROPOSED CROP GROUP A BY WORKGROUP #1							
JAPANESE KNOTWEED	*POLYGONUM CUSPIDATUM*	A	ASPARAGUS	YOUNG STEM	MIYAZAKI	MONOGRAPH 302	Y
LOTUS STEM	*NOLUMBO NUCIFERA*	A	ASPARAGUS	STEM	M. BRAVERRNAN	MONOGRAPH 347	Y
MIOGA, BUD	*ZINGIBER MIOGA*	4B AND CG A	ASPARAGUS	FLOWER BUDS AND YOUNG SHOOTS	S. MIYAZAKI	GARNISH USE	Y
NOPAL CACTI IN CACTI GROUP. REP.			PRICKLY PEAR			SEE PROPOSED CROP GROUP M	Y

The IR-4 Project

Providing Safe and Effective Pest Management Solutions for Specialty Crop Growers

IR-4/USDA Crop Grouping Symposium

Legume Vegetables and Non-grass Animal Feed — Forage, Fodder and Hay

Workgroups # 2 and 7

Crop Group 6: Legume Vegetables (Succulent or Dried)

Crop Group 7: Foliage of Legume Vegetables

Crop Group 18: Nongrass Animal Feeds — Forage, Fodder, Straw and Hay

Legume Vegetables and Non-grass Animal Feed (Forage, Fodder and Hay)

Workgroups # 2 and 7

IR-4/USDA Crop Grouping Symposium
7-8 October 2002
Arlington, Virginia

Chairs: Keith Dorschner
Co-Chairs: Brian Flood, Bill Hazel, Sheila Piper

Workgroups # 2 and 7's mission was to review, evaluate and validate established Crop Groups 6, 7 and 18 to include additional crops

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Note: The established Crop Groups reflected the US EPA's 40 CFR 180.41, Health Canada's Pest Management Regulatory Agency's Directive 98-02, and Mexico's Crop Grouping System which are identical.

Workgroups # 2 and # 7
Crop Groups: 6, 7 and 18
Monograph numbers from the Greenbook are set off by parentheses
Information printed in capital letters and all strikethroughs have been added to the original document by Workgroups #2 and #7

Crop Group 6. Legume Vegetables (succulent or dried) **Crop Groups** **US = 6 Canada = 6 Codex = VD and VP Mexico = 6**			**Author's Classificatin of Legume Vegetables (succulent or dried)** **Crop Groups** **US = 6 Canada = 6 Codex = VD and VP Mexico = 6**	
Rep. Commodities	**Established Commodities**	**Validate:Y/N**	**Proposed Commodity Additions/Changes**	**Validate:Y/N**
Bean (*Phaseolus*) (succulent & dried), Pea (*Pisum*) (succulent & dried), and Soybean	Bean (*Lupinus*) including grain lupin (047, 350); sweet lupin (047); white lupin (350); white sweet lupin (047)	Y	Bambara groundnut (041)	YES FOR NEW SUBGROUP
	Bean (*Phaseolus*) including field bean (049. 050.637); kidney bean (047, 050); lima bean (053); Navy bean (047, 050); pinto bean (047,050); runner bean (057); snap bean (047, 058); tepary bean (059); wax bean (058)	Y	Bean/goa (051) ROOTS IN ROOT AND TUBER VEGETABLES, PODS IN EDIBLE PODDED BEAN SUBGROUP	Y (WITH NOTES)
	Bean (*Vigna*) including adzuki bean (048); asparagus bean (047, 061); blackeyed pea (450); catjang (134); Chinese longbean (061); cowpea (047, 450); crowder pea (450); moth bean (054); mung bean (055); rice bean (056); southern pea (450); urd bean (060); yardlong bean (061); broad bean (fava)(047); chickpea (garbanzo)(047, 152); guar (271); jackbean (299); lablab bean (052); lentil (329)	Y	Bean/dry common (050)	Y
	Pea *(Pisum*) includes dwarf pea (448); edible-podded pea (446); English pea (448) ; field pea (447); garden pea (448); green pea (448); snowpea (446); sugar snap pea (446)	Y	Bean/hyacinth (052) EDIBLE PODDED SUBGROUP ALSO FOR SHELLED SUCCULENT AND DRIED	Y

	pigeon pea (449)	Y	Bean/ scarlet runner (057) ALL SUBGROUPS. ADD ROOTS TO ROOT VEGETABLE CG	Y
	Soybean (562)	Y	Bean/succulent common ~~(085)~~ (58)	Y
	Soybean (immature seed) (563)	Y	Pea/winged (451)	Y
	Sword bean (299, 596)	Y	Peanut (453) NEW SUBGROUP	Y
			Soybean/vegetable (563) SUCCULENT SHELLED	Y

Subgroups for Crop Group 6: Legume Vegetables (succulent or dried)

Subgroup 6A. Edible-Podded Legume Vegetables Subgroup		**6A. Edible Podded Legume Vegetables Subgoup Author's Classification (Changes)**
Rep. Commodities	**Commodities**	
Any one succulent cultivar of edible-podded bean (*Phaseolus*) and any one succulent cultivar of edible-podded pea (*Pisum*)	Bean (*Phaseolus*) includes runner bean, snap bean, wax bean; Bean (*Vigna*) includes asparagus bean, Chinese longbean, moth bean, yardlong bean; Jackbean; Pea (*Pisum*) includes dwarf pea, edible-podded pea, snow pea, sugar snap pea; Pigeon pea; Soybean (immature seed); Sword bean	NEW: Add Winged pea (451) to 6A and 6B
Subgroup 6B. Succulent Shelled Pea and Bean Subgroup		**6B. Succulent Shelled Pea and Bean Subgroup Author's Classification (Changes)**
Rep. Commodities	**Commodities**	
Any succulent shelled cultivar of bean *(Phaseolus*) and garden pea (*Pisum*)	Bean (*Phaseolus*) includes lima bean/ green; broad bean/ succulent; Bean (*Vigna*) includes blackeyed pea, cowpea, southern pea; Pea (*Pisum*) includes English pea, garden pea, green pea; Pigeon pea	Change Lima bean/green; to Lima bean/succulent:: YES Add Winged pea: YES Delete the term "Blackeyed pea" from this subgroup: NO

Subgroup 6C. Dried Shelled Pea and Bean (Except Soybean) Subgroup		6C. Dried Shelled Pea and Bean (Except Soybean) Subgroup: Author's Classification (Changes)
Rep. Commodities	**Commodities**	
Any one dried cultivar of bean (*Phaseolus*) and any one dried cultivar of pea (*Pisum*)	Dried cultivars of bean (*Lupinus*); Bean (*Phaseolus*) includes field bean, kidney bean, lima bean (dry), navy bean, pinto bean, tepary bean; Bean (*Vigna*): includes adzuki bean, blackeyed pea, catjang, cowpea, crowder pea, moth bean, mung bean, rice bean, southern pea, urd bean; Broad bean (dry); Chickpea; Guar; Lablab bean; Lentil; Pea (*Pisum*) includes field pea; Pigeon pea	Dried cultivars of bean (*Lupinus*): (add grain lupin) YES Bean (*Phaseolus*) changed to Bean seed (*Phaseolus*): NO (delete field bean, add broad bean, change lima bean (dry) to lima bean. Remainder of crops stay the same); YES Bean (*Vigna*) changed to Bean seed (*Vigna*):NO (all crops remain the same) Pea (*Pisum*) changed to Pea seed (*Pisum*): NO (add Pigeon pea/seed) ADD PIGEON PEA Delete terms as follows: field bean YES ; and Southern pea NO – KEEP IT *Note: Rough pea (517) belongs to Crop Group 18: Non-grass Animal Feed group NEW: Bambara groundnut (041); Peanut (453) PEANUT AND BAMBARA GROUNDNUT – NEW SUBGROUP Bean/goa (051); YES ON THE PODS FOR CG 6, ROOTS IN ROOTS AND TUBERS, CG 1

Workgroup Worksheet
Workgroup #: ____2_____Crop Group: ___6_____

Additions to Established Crop Groups and Subgroups							
Common Name	**Scientific Name**	**Group/SG Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate: Y/N**
6.1 Wattleseed	*Acacia* sp. (Fabaceae)	6	Soybean	Seed	G. Bulow (Australia)	Seeds roasted and milled into flour for baking	NO

6.2 Edamame	Soybean vegetable (Fabaceae)	6A BELONGS IN CG 6G	Soybean	Succulent pod and seed	IR-4	Monograph 563	NO
6.3 Edible-podded Bean Vegetable Subgroup	New Subgroup 6D	6D	Succulent *Phaseolus*	Seed and Pod	IR-4	Includes *Phaseolus* and *Vigna*, Jackbean	Y
6.4 Edible-podded Pea Vegetable Subgroup	New Subgroup 6E	6E	Succulent *Pisum*	Seed and Pod	IR-4	Includes *Pisum*, Pigeon Pea, Swordbean, Vegetable Soybean	Y
6.5 Succulent Shelled Pea Subgroup	New Subgroup 6F	6F	Succulent *Pisum*	Seed	IR-4	Includes *Pisum*, Pigeon Pea	Y
6.6 Succulent Shelled Bean Subgroup	New Subgroup 6G	6G	Succulent Phaseolus	Seed	IR-4	Includes *Phaseolus* and *Vigna* ADD SUCCULENT SOYBEAN	Y
6.7 Dried Shelled Pea Subgroup	New Subgroup 6H	6H	Dried Pisum	Seed	IR-4	Includes *Pisum*, Chickpea, Lentil, Pigeon Pea	Y*
6.8 Dried Shelled Bean Subgroup	New Subgroup 6I	6I	Dried *Phaseolus* OR SOYBEAN	Seed	IR-4	Includes *Lupinus*, *Phaseolus, Vigna*, Broadbean, Chickpea, Guar, Lablab Bean	Y* *WITH MODIFICA-TION. ADD " OR SOYBEAN" AS REP. CROP
6.9 Soybean Succulent or Dried Subgroup	New Subgroup 6J	6J	Soybean (Succulent and Dried)	Seed and Pod	IR-4	Includes Soybean Seed and Soybean Vegetable	NO

WORKGROUP # 2 CROP GROUP # 6, ADDITIONS FROM THE WORKGROUP							
ROMANO BEAN		EDIBLE PODDED BEAN	SNAP BEAN	POD AND SEED	BRIAN FLOOD		Y
NEW SUBGROUP		6K	PEANUT	SEED	IR-4	INCLUDE BAMBARA GROUNDNUT	Y
SCARLET RUNNER BEAN		ADD ROOTS TO ROOT VEGETABLE CROP GROUP	POTATO	ROOTS	GROUP	ROOTS TO CG 1	Y

Crop Group 7. Foliage of Legume Vegetables **Crop Groups** **US = 7 Canada = 7 Codex = AL Mexico = 7**			**Author's Classification of Foliage of Legume Vegetables** **Crop Groups** **US = 7 Canada = 7 Codex = AL Mexico = 7**	
Rep. Commodities	**Established Commodities**	**Validate:Y/N**	**Proposed Commodity Additions/Changes**	**Validate:Y/N**
Any cultivar of bean (*Phaseolus*), field pea (*Pisum*) and soybean	Plant parts of any legume vegetable included in the legume vegetables that will be used as animal feed	Y	Catjang (134)	Y
			Guar (271) PUT IN NEW TROPICAL/SUBTROP. SHRUB AND TREE SUBGROUP 18B	NO
			Lupin (350)	Y
			Pea/field (447)	Y
			Pea/southern (450)	Y
			Peanut (453)	NO
			Soybean (562) ALREADY IN THE CG HAVE SOYBEAN FOLIAGE COVER EVERYTHING (NO BEAN OR PEA DATA NEEDED) FOR CG 7	Y

Subgroups for Crop Group 7: Foliage of Legume Vegetables

Subgroup 7A. Foliage of Legume Vegetables (Except Soybeans) Subgroup		
Rep. Commodities	**Commodities**	**Validate:Y/N**
Any cultivar of bean (*Phaseolus*) and field pea (*Pisum*)	Plant parts of any legume vegetable (except soybeans) included in the legume vegetables group that will be used as animal feed.	Y

Workgroup Worksheet
Workgroup #: ____2_____Crop Group: ___7_____

Additions to Established Crop Groups and Subgroups							
Common Name	**Scientific Name**	**Group/SG Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate: Y/N**
7.1 Pigeon Pea	*Cajanus cajan* (Fabaceae)	7A	Bean and pea foliage	Forage (top)	ARS	Summer legume for Great Plains. Winter wheat, perennial grass, pigeon pea for grazing	Y
7.2 Pea Forage Subgroup	*Pisum* (Fabaceae)	7B	Any *Pisum*	Forage	IR-4		Y
7.3 Bean Forage (Except Soybean) Subgroup	*Phaseolus, vigna, Vicia, Cicer, Lupinus* (Fabaceae)	7C	Any *Phaseolus*	Forage	IR-4		Y

Crop Group 18: Nongrass Animal Feeds (forage, fodder, straw and hay) **Crop Groups:** **US = 18 Canada = 18 Codex = AL Mexico = 18**			**Author's Classification of Nongrass Animal Feeds (forage, fodder, straw and hay)** **Crop Groups:** **US = 18 Canada = 18 Codex = AL Mexico = 18**			
Rep. Commodities	**Established Commodities**	**Validate: Y/N**	**Commodity Additions**	**Validate: Y/N**	**Commodity Additions**	**Validate:Y/N**
Alfalfa and Clover (*Trifolium*)	Alfalfa (008)	Y	Arrowleaf balsamroot (028)	Y	Gumweed/great valley (275)	Y
	Bean/velvet (631)	Y	Black wattle ~~(037)~~ (073) NEEDS TO BE ADDRESSED BY SOMEBODY IN HAWAII	MAYBE	Huisache (289)	Y
	Clover (*Trifolium*, *Melilotus*) (173,184, 593)	Y	Burclover (101)	Y	Kenaf (314)	Y
	Kudzu (320)	Y	Calopo (111)	Y	Kidney vetch (315)	Y
	Lespedeza (331)	Y	Camwood (113)	Y	Koa (317) IN NEW SUBGROUP	Y*

	Lupin (350) CHANGE TO LUPIN SPP.	Y		Clover/alsike (166) NOTE: CLOVER INCLUDES CLOVER GROWN FOR SEED	Y	Kochia (318)	Y
	Sainfoin (527)	Y		Clover/alyce (167)	Y	Leadplant (324)	Y*
	Trefoil (621)	Y		Clover/arrowleaf (168)	Y	Leucaena (337)	Y*
	Vetch (634)	Y		Clover/ball (169)	Y	Mulga (390	Y*
	Vetch/crown (205)	Y		Clover/berseem (170)	Y	Multiflower falserhodesgrass (391)	Y
	Vetch/milk (636)	Y		Clover/bigflower (171)	Y	Perennial peanut (465)	Y
				Clover/crimson (172)	Y	Purple prairieclover(497)	Y
				Clover/hop (173)	Y	Rough pea (517)	Y
				Clover/Lappa (174)	Y	Roundleaf cassia (518)	Y
				Clover/Persian (175)	Y	Sesbania (544)	Y*
				Clover/red (176)	Y	Spiny hopsage (572)	Y*
				Clover/rose (177)	Y	Sweet clover (593)	Y
				Clover/seaside (178)	Y	Tapertip hawks-beard (605)	Y
				Clover/strawberry (179)	Y	Thorn mimosa (610)	Y*
				Clover/striata (180)	Y	Threadleaf sedge (611)	Y
				Clover/sub (181)	Y	Velvet bean (631)	Y
				Clover/white (182)	Y	Vetch/chickling (635)	Y
				Clover/whitetip (183)	Y	Vetch/minor (637)	Y
				Clovers/true (184)	Y		
				*Crotalaria (204)	Y		
				Crownvetch (205)	Y		
				Globemallow (258)	Y		
				Guajillo (270)	Y*		

*POSSIBLE SUBGROUP (18 B) FOR TROPICAL/SUBTROPICAL SHRUBS AND TREES: MONOGRAPHS 317, 73, 275, 113. JUST DO ONE.

Workgroup Worksheet
Workgroup #: __2_____Crop Group: __18_____

WG #7 CROP DEFINITIONS 40 CFR 180.1(H) FOR:
A B
HAY = MIXED LEGUME OR GRASSES AS INVASIVE SPP.
FORAGE = MIXED LEGUME OR GRASSES AS INVASIVE SPP.
FODDER = MIXED LEGUME OR GRASSES AS INVASIVE SPP.

Additions to Established Crop Groups and Subgroups							
Common Name	**Scientific Name**	**Group/Subgroup Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate: Y/N**
18.1 Ebo	*Vicia sativa* (Fabaceae)	18	Alfalfa	Top	Mexico	Same sp. as common vetch	Y
18.2 Mixed stands	Alfalfa plus grass (WEEDS) CLOVER PLUS GRASS WEEDS	Crop Definition 180.1 (h)	Alfalfa	Top	IR-4	Add: mixed stands for alfalfa and grass	Y SEE NOTES
18.3 Bean Cypress	*Bassia scoparia* (Chenopodiaceae)	18		Forage	H. Chen	Monograph 318	Y

SUMMARY OF WORKGROUPS #2 AND #7
BY KEITH DORSCHNER

1. Mixed Stands Issue (where grass and legume forages are produced in the same field)
   Two issues are involved – when weeds come in (like grassy weeds in a stand of alfalfa) or when grasses are purposely interplanted with alfalfa and /or clover.

   a. The mixed stand by design
      1.) The group decided that data are needed to set a tolerance on the grass and non-grass portion of the stand. In most cases where tolerances exist for both grass and non-grass (e.g. alfalfa and/or clover), the mixed stand could just be treated with the most restricted use pattern.

      The group also thought that when grass data are not available, the EPA could consider wheat forage, fodder or straw data as surrogate data to cover the grass.

2.) The group suggested a new crop group for mixed stands.

Non-grass rep crops: alfalfa and clover
Grass rep crops: timothy/brome/orchard (these are most likely to be used in mixed stands)

3.) The Chair believes that an alternative to the above plan be considered as follows:

Combine CG 17 and CG 18
New Crop Group: Grass and Non-Grass Animal Feeds Group
Rep crops: alfalfa, clover, and several grass species
Subgroups:

Subgroup Non-Grass: rep. crops of alfalfa or clover
Subgroup Grass: Several grass species

EPA to offer substantial reduction in data requirement for petitioners who cover both the Grass and the Non-grass. This will encourage work on both forage/hay types to help solve the mixed stand issue.

b. The mixed stand not by design

Pure stands will degrade over time and weeds will invade. Weeds are a fact of life!

Solution: Add definitions in 180.1(h) for forage, fodder, hay and straw. Define the commodity and add language that a certain percentage of grass and non-grass weeds will be present, maybe up to about 30%. May not have to include a percentage.

This will address these commodities with weeds being present. Will take care of all crops which produce hay, forage, fodder and straw which are always infested with a portion of weedy, invasive species.

2. A New Crop Subgroup (18B) for CG 18

Tropical/Subtropical Forage Shrubs and Trees (18B)
Monographs: 317, 73, 275, 113, 289, 324, 337, 390, 544, 572, 610, 270, 271
One of these crops could be brought up to the main crop group as a rep crop.

3. The Legumes

The group did not know how to include peanut. Some thought that it should be the sole rep commodity of a new subgroup that includes monograph 41.

I felt that peanut should be in 180.1(h) and defined so that peanut = Bambara groundnut (monograph 41).
Add pods of Bean/goa (51) to correct subgroup (edible podded bean) and add the roots to Root and Tuber Vegetable Crop Group.

4. For Subgroup 6C, add soybean as a rep crop to cover dry beans and dry peas.

5. Under Commodities for 6A, 6B, and 6C, do the following to prevent confusion:

6A
Bean/Edible-podded (*Phaseolus*), 6 A.1
Bean/Edible-podded (*Vigna*), 6 A.2
Pea/Edible-podded (*Pisum*), 6 A.3

6B
Bean/Succulent Shelled (*Phaseolus*), 6 B.1
Bean/Succulent Shelled (*Vigna*), 6 B.2
Pea/Succulent Shelled (*Pisum*), 6 B.3

6C
Bean/Dried Shelled (*Phaseolus*), 6 C.1
Bean/Dried Shelled (*Vigna*), 6 C.2
Pea/Dried Shelled (*Pisum*), 6 C.3

6. New common name was mentioned for Southern Pea: Pinkeye-Purple Hull.

7. For a "Greenhouse Crops" Crop Group:

The group thought that it was a good idea but needed tomato and pepper data.

8. Ant baits delivered in bait stations.
Expand from all orchard and vine crops to all Raw Agricultural Commodities (RACs)

9. WG #7 Crop Definitions 40 CFR 180.1(h) for:

A	B
Hay =	mixed legume or grasses as invasive spp.
Forage =	mixed legume or grasses as invasive spp.
Fodder =	mixed legume or grasses as invasive spp.

WG # 2 & 7 (2.5) 12/9/02

The IR-4 Project

Providing Safe and Effective Pest Management Solutions for Specialty Crop Growers

IR-4/USDA Crop Grouping Symposium

Fruiting Vegetables and Edible Fungi

Workgroup # 3

Crop Group 8: Fruiting Vegetables (Except Cucurbits)

Crop Group 9: Cucurbit Vegetables

Crop Group B: Edible Fungi

Fruiting Vegetables and Edible Fungi

Workgroup # 3

IR-4/USDA Crop Grouping Symposium
7-8 October 2002
Arlington, Virginia

Chair: Jerry Baron
Co-Chairs: Robin Bellinder, Rick Griffin, Christine Smith, Bill Wassell

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Workgroup # 3's mission was to review, evaluate and validate the established Crop Groups 8 and 9 and the proposed Crop Group B to include additional crops

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Note: The established Crop Groups reflected the US EPA's 40 CFR 180.41, Health Canada's Pest Management Regulatory Agency's Directive 98-02 and Mexico's Crop Grouping System which are identical.

Workgroup #3

Crop Groups 8 and 9 and Proposed Crop Groups B and M

Monograph numbers from the Greenbook are set off by parentheses

Information printed in capital letters and all strikethroughs have been added to the original document by Workgroup # 3

Crop Group 8. Fruiting Vegetables (except cucurbits) **Crop Groups** **US = 8 Canada =8 Codex = VO Mexico = 8**			**Author's Classification of Fruiting Vegetables (except cucurbits)** **Crop Groups** **US = 8 Canada = 8 Codex = VO Mexico = 8**	
Rep. Commodities	**Established Commodities**	**Validate:Y/N**	**Proposed Commodity Additions/Changes**	**Validate:Y/N**
Tomato, Bell Pepper, and one cultivar of non-bell pepper.	Eggplant (288)	Y	Groundcherry (269)	-
	Groundcherry (*Physalis* spp) (269)	Y	Huckleberry/garden (288)	Y
	Pepino (206,252, 458)	Y	Martynia (365)	Y
	Pepper (includes bell pepper, chili pepper, cooking pepper, pimento, sweet pepper) (459, 462)	Y	Okra (417)	Y
	Tomatillo (269,618)	Y	Peppers (459, 462)	Y
	Tomato (617)	Y	Peppers/hot (463)	NO
			Peppers /sweet (464)	NO
			Roselle (515)	NO
			Tomato/currant (618) ADD TO CROP DEFINITION FOR TOMATO	Y
			Tomato/tree (619) ADD TO CROP DEFINITION FOR TOMATO	Y
			Groundcherry (*Physalis* spp) changed to Groundcherry (269)	-

Workgroup Worksheet

Workgroup #: _____3_____Crop Group: ___8_____

Additions to Established Crop Groups and Subgroups							
Common Name	**Scientific Name**	**Group/SG Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate Y/N**
8.1 Naranjilla	*Solanum quitoense* (Solanaceae)	8	Tomato	Fruit (inedible peel)	M. Braverman (NJ)	(400) Also see Crop Group E	Y

8.2 Okra	*Abelmoschus* esculentus (Malvaceae)	8	Non bell pepper	Fruit (edible peel)	Mexico, US	Gumbo, *Hibiscus esculentus*	Y
8.3 Roselle	*Hibiscus sabdariffa* (Malvaceae)	8	Non bell pepper	Flower head	Mexico, US	Sorrel nut (seeds)-Tea Jamaica (See H.1)	NO
8.4 Bush Tomato	*Solanum centrale* (Solanaceae)	8	Tomato	Fruit (fresh and dried)	G. Bulow (Australia)		Y
8.5 Oriental/Chinese /Japanese Eggplant	*Solanum melongena* (Solanaceae)	8	Tomato	Long fruit	IR-4	Monograph 228	Y
8.6 Thai Eggplant (grape eggplant)	*Solanum melongena* (Solanaceae)	8	Tomato	Fruit	IR-4	Monograph 228	Y
8.7 Scarlet Eggplant	*Solanum aethiopicum* (Solanaceae)	8	Tomato	Red-skinned fruit	IR-4	Cultivated in Africa	Y
8.8 African Eggplant	*Solanum macrocarpon* (Solanaceae)	8	Tomato	Fruit	IR-4		Y
8.9 Sunberry	*Solanum x burbankii* (Solanaceae)	8	Tomato	Small fruit	IR-4	Wonderberry, Msoba	Y
8.10 Cocona	*Solanum sessiliflorum* (Solanaceae)	8	Tomato	Small fruit	IR-4 (South Am.)	Peach-tomato	Y
8.11 Pea Eggplant	*Solanum torvum* (Solanaceae)	8	Tomato	Small fruit	IR-4	(Tropics)	Y
8.12 Bell vs. Non-bell Pepper	Include peppers with bell or non-bell groups	Crop definitions	Peppers	Fruit	IR-4	Propose Bell Pepper and Non-Bell Pepper definitions	Y
ADDITIONS TO CROP GROUP 8 BY WORKGROUP #3							
ANCHO (PEPPER) SMALL HOT JALAPENO			PEPPER				Y
TOMATO SUBGROUP		8A	TOMATO			INCLUDE TOMATO, EGGPLANT, GROUNDCHERRY	Y

PEPPER SUBGROUP		8B	PEPPER			INCLUDE OKRA	Y

Crop Group 9. Cucurbit Vegetables **Crop Groups** **US = 9 Canada = 9 Codex = VC Mexico = 9**			**Author's Classification of Cucurbit Vegetables** **Crop Groups** **US = 9 Canada = 9 Codex = VC Mexico = 9**	
Rep.Commodities	**Established Commodities**	**Validate:Y/N**	**Proposed Commodity Additions/Changes**	**Validate:Y/N**
Cucumber, Muskmelon, and Summer squash	Chayote (fruit) (142)	Y	African horned cucumber (004) (9B)	Y
	Chinese waxgourd (Chinese preserving melon) (650)	Y	Balsam pear (040) (9B)	Y
	Citron melon (160)	Y	Cantaloupe (119, 394) (9A)	Y
	Cucumber (206)	Y	Cucumber/Armenian (207) (9A and 9B)	
	Gherkin (206, 252)	Y	Cucumber/wild (208) (9B)	Y
	Gourd/edible includes hyotan (261), cucuzza (261), hechima (261), Chinese okra (261)	Y	Gherkin/West Indian (252) CUKE CROP DEFINITION	Y
	Momordica spp (includes balsam apple (040), balsam pear (040), bittermelon (040), Chinese cucumber(040)	Y	Gourd/edible (261) ADD TERM TO SUMMER SQUASH CROP DEFINITION 9B	Y
	Muskmelon (includes cantaloupe) (119, 394)	Y	Melon/Garden (373) ADD TERM UNDER MELON DEFINITION	Y
	Pumpkin (496, 574)	Y	Melon/Oriental pickling (374) 9B	Y
	Squash/summer (573)	Y	Melon/winter (375) MODIFY CROP DEFINITION	Y
	Squash/ winter (includes butternut squash, calabaza, hubbard squash, acorn squash, spaghetti squash) (574)	Y	Muskmelon (119, 394) 9A	Y
	Watermelon (648)	Y	Snakegourd FRUIT (553) SUMMER SQUASH	Y

			Waxgourd (650)	Y
			Chinese wax-gourd changed to Waxgourd (650) – SUMMER SQUASH	Y
			Gherkin changed to Gherkin/West Indian (252)	Y
			Gourd/edible (includes hyotan, cucuzza, hechima, Chinese okra) changed to Gourd/edible (261)	Y
			Momordica spp (includes balsam apple, balsam pear, bittermelon, Chinese cucumber) changed to Balsam Pear (040)	NO
			Muskmelon (includes cantaloupe) changed to Cantaloupe (119)	NO

- CUCUMBER CROP DEFINITION – INCLUDE CUCUMBER (*CUCUMIS SATIVA*), AFRICAN HORNED CUCUMBER, CUCUMBER/ ARMENIAN, CUCUMBER/ WILD, GHERKIN/ WEST INDIAN
- SUMMER SQUASH CROP DEFINITION – ADD EDIBLE GOURD, ORIENTAL PICKLING MELON
- MELON CROP DEFINITION – ADD WINTER MELON AND ADD CITRON MELON TO 180.1 (h) MELON DEFINITION

Subgroups for Crop Group 9: Cucurbit Vegetables

Subgroup 9A. Melon Subgroup (established)		
Rep. Commodities	**Commodities**	**Validate:Y/N**
Cantaloupe	Citron melon ADD TO 180.1(h) TO MELON CROP DEFINITION; muskmelon; watermelon	Y
Subgroup 9B. Squash/Cucumber Subgroup (established)		
Rep. Commodities	**Commodities**	**Validate:Y/N**
One cultivar of summer squash and cucumber	Chayote (fruit); Chinese waxgourd; cucumber; gherkin; gourd/edible; *Momordica* spp; pumpkin; squash/summer; squash/winter NEW**:** African horned cucumber; Balsam pear; Cucumber/Armenian; Cucumber/wild; Gherkin/West Indian; Snakegourd; Squash/winter; Waxgourd	Y

Workgroup Worksheet
Workgroup #: ____3_____Crop Group: ___9_____

Additions to Established Crop Groups and Subgroups							
Common name	**Scientific Name**	**Group/SG Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**ValidateY/N**
9.1 Subgroup: Edible Peel Fruit and Inedible Peel Fruit			Cantaloupe, Summer squash, cucumber	Fruit	New Zealand	Separate Cucurbits into Subgroups with edible and inedible peel. Also see 9.9	NO
9.2 Cactus	See Crop Group M	9	Summer squash, cucumber	Fruit and pad	M. Braverman		NO
9.3 Calabash	*Lageneria siceraria* (Cucurbitaceae)	9 - Cucurbit	Summer squash	Young fruit	H. Chen	Monograph 261	Y
9.4 Chieh-qua	*Benincasa hispida var. Chieh-qua* (Cucurbitaceae)	9 - Cucurbit	Summer squash	Fruit	H. Chen	Monograph 650 WAX GOURD	Y
9.5 Chinese Pickling Melon	*Cucumis melo* var. *flexuosus* (Cucurbitaceae)	9 - Cucurbit	Summer squash	Fruit	H. Chen	Monograph 207, 394	Y
9.6 Chinese Vegetable Melon	*Cucumis melo* var. *conomon* (Cucurbitaceae)	9 - Cucurbit	Summer squash	Fruit	H. Chen	Monograph 374, 394 9B ONLY	Y
9.7 Japanese Cucumber (Kyuri)	*Cucumis sativa* (Cucurbitaceae)	9B	Cucumber	Long and slender fruit	IR-4	Monograph 206	Y
9.8 Figleaf Gourd	*Cucurbita ficifolia* (Cucurbitaceae)	9B	Summer squash, cucumber	Young fruit, ripe fruit used as winter squash	M. Braverman	Malabar Gourd, Chilacoyte, Zambo	AI
9.9 Winter Squash Subgroup	New Subgroup 9C	9C	Pumpkin or any Winter Squash	Pulp	IR-4	Mature Fruit new Subgroup	Y

9.10 Squash Subgroup	New Subgroup 9D	9D	Summer Squash	Whole Fruit	IR-4	Include Chayote, Edible Gourds, Pumpkin, Summer Squash, Spagetti Squash	Y
9.11 Cucumber Subgroup	New Subgroup 9E	9E	Cucumber	Whole Fruit	IR-4	Includes Waxgourd, Cucumber, West Indian Gherkin, Luffa, Balsam pear, Bitter Melon	Y

Proposed Crop Group B: Edible Fungi **Current Crop Group** **US = Miscellaneous Canada = None Codex = VO Mexico = None**	
Author's Commodity List (Greenbook) **Greenbook monograph number follows the crop name**	**Validate:Y/N**
Mushroom/*Agaricus* (392)	* See Summary (point 8)
Mushroom/specialty (393)	* See Summary (point 8)
See Work sheets for Additions for Proposed Crop Group B	

Workgroup Worksheet
Workgroup #: ___3_____Crop Group: ___B__(Edible Fungi)_____

Additions to Proposed Crop Groups and Subgroups							
Common Name	**Scientific Name**	**Group/Subgroup Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	Validate:Y/N
B.1 Black Moss	*Nostoc commune* (Nostocaceae)	B	Mushroom	Fruiting body	H. Chen	Blue-green strands	* See Summary (point 8)
B.2 Chanterelle	*Cantharellus cibarius* (Cantharellaceae)	B	Mushroom	Fruiting body	H. Chen	Monograph 393	* See Summary (point 8)
B.3 Ganbajun	*Thelephora ganbajun* (Thelephoraceae)	B	Mushroom	Fruiting body	H. Chen		* See Summary (point 8)
B.4 Hazel Mushroom	*Armillariella mellea* (Tricholomataceae)	B	Mushroom	Fruiting body	H. Chen		* See Summary (point 8)
B.5 Hirmeola	*Auricularia auricula* (Auriculariaceae)	B	Mushroom	Fruiting body	H. Chen		* See Summary (point 8)

B.6 Monkey-head Mushroom	*Hericium erinaceus* (Hydnaceae)	B	Mushroom	Fruiting body	H. Chen		* See Summary (point 8)
B.7 Morel	*Morchella esculenta* (Morchellaeceae)	B	Mushroom	Fruiting body	H. Chen	Monograph 393	* See Summary (point 8)
B.8 Net Bearing Dictyophora	*Dictyophora indusiata* (Phallaceae)	B	Mushroom	Fruiting body	H. Chen		* See Summary (point 8)
B.9 Oyster Mushroom	*Pleurotus ostreatus* (Tricholomataceae)	B	Mushroom	Fruiting body	H. Chen	Monograph 393	* See Summary (point 8)
B.10 Pai-ku-mo	*Tricholoma mongolicum* (Tricholomataceae)	B	Mushroom	Fruiting body	H. Chen		* See Summary (point 8)
B.11 Red Russula	*Russula vinosa* (Russulaceae)	B	Mushroom	Fruiting body	H. Chen		* See Summary (point 8)
B.12 Chinese Mushroom	*Volvariella volvacea* (Pluteaceae)	B	Mushroom	Fruiting body	H. Chen	Monograph 393, straw mushroom	* See Summary (point 8)
B.13 Suffron Milk Cap	*Lactarium deliciosus* (Russulaceae)	B	Mushroom	Fruiting body	H. Chen		* See Summary (point 8)
B.14 Termite Fungus	*Termitomyces eurrhizus* (Tricholomataceae)	B	Mushroom	Fruiting body	H. Chen		* See Summary (point 8)
B.15 Enoke (Enoki)	*Flammulina velutipes* (Tricholomataceae)	B	Mushroom	Fruiting body	IR-4	Monograph 393	* See Summary (point 8)

***IN LIEU OF INCLUSION IN A CROP GROUP, THE WORKGROUP DECIDED THAT A NEW CROP DEFINITION SHOULD BE ESTABLISHED FOR MUSHROOMS.**

SEE SUMMARY OF WORKGROUP # 3.

Proposed Crop Group M: Cactus Current Crop Group US = Miscellaneous Canada = None Codex = None Mexico = None	
Author's Commodity List (Greenbook) Greenbook monograph number follows the crop name	**Validation: Yes or No**
Prickly pear (492)	* See Summary (point 8)
Strawberry Pear (581)	* See Summary (point 8)
See Work sheets for additions for Proposed Crop Group M	

Workgroup Worksheet
Workgroups #: _3, 4 and 10_____Crop Group: _ M (Cactus)____

Additions to Proposed Crop Groups and Subgroups							
Common Name	**Scientific Name**	**Group/SG Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate: Yes or No**
M.1 Agave	*Agave* spp. (Agavaceae)	M or E	Prickly Pear Cactus	Bulbous base of plant and flower stalks	Mexico		* See Summary (point 8)
M.2 Prickly Pear Cactus	*Opuntia* spp. (Cactaceae)	M or E	Prickly Pear Cactus	Fruit and pads			* See Summary (point 8)
M.3 Strawberry-pear	*Hylocereus undatus* (Cactaceae)	M or E	Prickly Pear Cactus	Fruit and flower buds			* See Summary (point 8)
M.4 Aloe Vera	*Aloe vera* (Aloeaceae)	M or 4		Leaves and seeds	D. Smith (TX)	Perennial succulent plant, grown from Pups (juice)	* See Summary (point 8)
M.5 Pulquero	*Agave atrovirens* (Agavaceae)				Mexico		* See Summary (point 8)
M.6 Henequen	*Agave fourcryodes* (Agavaceae)				Mexico		* See Summary (point 8)
M.7 Tequilero	*Agave teqilana* (Agavaceae)				Mexico		* See Summary (point 8)
M.8 Guayule	*Parthenium argentatum* (Asteraceae)	M or J	Sunflower	Plant	TX, AZ, NM, CA	Chewing gum from plant	-

SUMMARY FROM WORKGROUP # 3 ON THE FRUITING VEGETABLES, CUCURBIT VEGETABLES AND PROPOSED EDIBLE FUNGI AND CACTUS GROUPS
BY JERRY BARON

FRUITING VEGETABLES (Crop Group 8)

1. All established members of the existing group should stay in the group.
2. Addition of new crops:
    - Huckleberry, garden – Yes in new tomato subgroup
    - Martynia – Yes in new pepper subgroup
    - Okra – Yes in new pepper subgroup
    - Roselle – This crop does not belong in crop group
    - Tomato, currant – Yes in new tomato subgroup
    - Tomato, tree – Yes in new tomato subgroup
    - Naranjilla – Yes in new tomato subgroup
    - Eggplant (including Oriental, Chinese, Japanese, Thai, African, Pea, Scarlet, etc.) – Yes in new tomato subgroup
    - Bush Tomato – Yes in new tomato subgroup
    - Sunberry – Yes in new tomato subgroup
    - Cocona – Yes in new tomato subgroup

3. Delete all reference of bell/non-bell/sweet/hot pepper - Pepper should now be simply classified as pepper
4. New harmonized two subgroups(8A and 8B) and two crop definitions:
    - Tomato = tomato (*Lycopersicon esculentum);* eggplant (*Solanum melongena*), Scarlet eggplant (*S. aethiopicum*); African eggplant (*S. macrocarpon*); pea eggplant (*S. torvum*); garden huckleberry, currant tomato, tree tomato, naranjilla, bush tomato cocona and *Physalis spp*. (including groundcherry, tomatillo)
    - Pepper = pepper (*Capsicum* spp.), Pepino, martynia, and okra

CUCURBIT VEGETABLES (Crop Group 9)

5. All established members of the existing group should stay in the group
6. Addition of new crops and subgroups
    - African horned cucumber – Yes in Subgroup 9b
    - Cucumber, Armenian – Yes, in Subgroups 9a and 9b
    - Cucumber, wild – Yes in Subgroup 9b
    - Gherkin, West India – Yes in Subgroup 9b
    - Melon, garden, Yes in Subgroup 9a
    - Melon, Oriental pickling – Yes in Subgroup 9b
    - Melon, winter – Yes in subgroup 9b

- Snakegourd fruit – Yes in subgroup 9b
- Waxgourd – Yes in subgroup 9b
- Aloe vera – No
- Cactus pads – No
- Cactus fruit – No
- Agave – No
- Calabash – a *Langeneria*, thus it is already part of Crop group/cucumber&squash subgroup
- Chieh-qua – same species of Waxgroud
- Chinese Pickling melon – a *Cucumis melo*, thus it is already part of crop group/melon subgroup
- Chinese Vegetable melon – a *Cucumis melo*, thus it is already part of crop group/melon subgroup
- Japanese Cucumber – a *Cucumis sativa*, thus it is already part of crop group/cucumber & squash subgroup
- Figleaf gourd - not enough info to make a decision
- New subgroups 9C, 9D, and 9E

7. New/Modified Crop Definitions Proposed
    - Cucumber = Cucumber (*Cucumis sativus* L); cucumber, African horned; cucumber, Armenian; cucumber, wild; gherkin, West Indian.
    - Summer Squash = Fruit of the gourd (Cucurbitaceae) family that are consumed when immature, 100% of the fruit is edible either cooked or raw, once picked it cannot be stored, has a soft rind which is easily penetrated, and if seed were harvested they would not germinate; e.g. Chayote *(Sechium edule*); *Cucurbita pepo* (i.e crookneck squash, straightneck squash, scallop squash, and vegetable marrow); Edible gourds (*Langenaria spp*. [including calabash, spaghetti squash, hyotan cucuzza] and *Luffa spp* [including hechima, Chinese okra]); melon, Oriental pickling; *Momordica spp*. (including balsam apple, balsam pear, bittermelon, Chinese cucumber); *Benincasa hispida (*including waxgourd, chieh-qua); and other cultivars and/or hybrids of these.
    - Melons = Muskmelons which are varieties and/or hybrids of *Cucumis melo,* includes *C. melo* var*. cantalupensis* (Cantaloupe, Persian melon, netted melon); *C. melo* var. *chito* (Queen Ann's pocket melon, Dudaim, Garden melon, mango melon, etc.); *C. melo* var. *conomon* (Oriential pickling melon, sweet melon, Chinese vegetable melon); *C. melo* var. *flexuosus (*Armenian cucumber, snake melon, Chinese pickling melon)*; C. melo* var. *inodorus* (casaba, Crenshaw, honeydew, winter melon); *C. melo* var. *momoridica* (snapmelon, phut); and hybrids and/or varieties of *Citrullus spp.* (includes watermelon and citron melon).
8. It was suggested that new crop definitions be established for cactus and mushrooms as follows:
    - Cactus = Cactus fruit and cactus pads, of aloe vera, agave and other edible cactus plants
    - Mushrooms = Mushroom, *Agaricus*, Portobello, shiitake mushroom, oyster mushrooms, enoke, morel, truffle and edible fruiting body from other fungi.

The IR-4 Project

Providing Safe and Effective Pest Management Solutions for Specialty Crop Growers

IR-4/USDA Crop Grouping Symposium

Tropical/ Subtropical Tree and Small Fruits (Edible and Inedible Peels)

Workgroup # 4

Crop Group 10: Citrus Fruits

Crop Group D (22): Tropical and Subtropical Fruits Edible Peel

Crop Group E (23): Tropical and Subtropical Fruits Inedible Peel

Crop Group M (27): Cactus

Tropical/ Subtropical Tree and Small Fruits

(Edible and Inedible Peels)

Workgroup # 4

IR-4/USDA Crop Grouping Symposium
7-8 October 2002
Arlington, Virginia

Chair: Michael Braverman
Co-Chairs: Jonathan Crane, Nancy Dodd, Will Donovan, Edith Lurvey, Maria Rodriguez

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Workgroup #4's mission was to review, evaluate and validate the established Crop Group #10, and the proposed Crop Groups D, E and M to include additional Crops.

Note: The established Crop Groups reflected the US EPA's 40 CFR 180.41, Health Canada's Pest Management Regulatory Agency's Directive 98-02, and Mexico's crop Grouping System which are identical.

Workgroup #4

Crop Group 10 and Proposed Crop Groups D, E and M

Crop Group 10. Citrus Fruits Crop Groups US = 10 Canada = 10 Codex = FC Mexico = 10			Author's Classification of Citrus Fruits Crop Groups US = 10 Canada = 10 Codex = FC Mexico = 10	
Rep. Commodities	**Established Commodities**	**Validate:Y/N**	**Proposed Commodity Additions/Changes**	**Validate:Y/N**
Sweet orange, Lemon, and Grapefruit	Calamondin (162) LIME OR LEMON*	Y	Citrus fruits(161)	NA
	Citrus citron (159) ORANGE	Y	Lime/sweet (340) WITH ORANGE	Y
	Citrus hybrids includes chironja (162), tangelo (162, 600), tangor (162)	Y	Orange/trifoliate (429) LIME OR LEMON	Y
	Grapefruit (267)	Y	Sapote/white (538) MOVE TO PAPAYA, AVOCADO, BANANA	NO. MOVED TO CG E
	Kumquat (321) LIME OR LEMON	Y	Tangelo (162,600) ORANGE	Y
	Lemon (326) LIME OR LEMON	Y	Tangerine (PRIMARY NAME) (601) ONE OR OTHER - CITRUS OR ORANGE	Y
	Lime (339, 341) LIME OR LEMON	Y		
	Mandarin (tangerine) (601) ORANGE	Y		
	Orange/sour (427) ORANGE	Y		
	Orange/sweet (428) ORANGE	Y		
	Pummelo (495) GRAPEFRUIT	Y		
	Satsuma mandarin (601) ORANGE ALSO PLACE IN THE CROP DEFINITION UNDER TANGERINE	Y		

* Caps (crops) signify the representative crop(s) associated with the entry.

Workgroup Worksheet
Workgroup #: ___4_____Crop Group: __10_____

Additions to Established Crop Groups and Subgroups							
Common Name	**Scientific Name**	**Group/SG Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate: Y/N**
10.1 Lemon Aspen	*Acronychia acidula* (Rutaceae)	10	Lemon	Fruit	G. Bulow (Australia)	Fruit eaten raw or made into jam, etc.	Y
10.2 White Sapote	*Casimiroa edulis* (Rutaceae)	10	MOVE TO BANANA, PAPAYA, AVOCADO	Fruit	J. Crane (FL)	Mexican Apple	Y
10.3 Grapefruit Subgroup	New Subgroup 10C	10	Grapefruit	Fruit	J. Crane (FL)	Including pummelo, and their citrus hybrids including Uniq or Ugli Fruit, Grapefruit	Y
10.4 Mediterranean Mandarin	*Citrus deliciosa* (Rutaceae)	10C	Orange	Fruit	M. Braverman	Italian tangerine	Y
10.5 Changshaw	*Fortunella obovata* (Rutaceae)	10	Orange	Edible peel Fruit	M. Braverman		Y
10.6 Maylayan Swingle	*Fortunella polyandra* (Rutaceae)	10	Orange	Fruit	M. Braverman		AI
10.7 Orange Subgroup	New Subgroup	10A	Sweet Orange	Fruit	IR-4	Include Calamodin (SMALL FRUITS COVERED BY LEMON, LIME), Citron Citrus, Citrus Hybrids, tangelo, Kumquat (SMALL FRUITS COVERED BY LEMON, LIME), Sour and Sweet Orange, Mandarin, Satsuma, Tangerine, ~~White Sapote~~	Y
10.8 Lemon/Lime Subgroup	New Subgroup	10B	Lemon	Fruit	IR-4	Lemon, Lime	Y

Proposed Crop Group D: Tropical and Subtropical Fruits – Edible Peel **Current Crop Group** **US = Miscellaneous Canada = None Codex = FT Mexico = None**	
Author's Commodity List (Greenbook) **Greenbook monograph number follows the crop name**	**Validation:** **Yes or No**
Acerola (003) JUJUBE OR SURINAM CHERRY*	Y
Ambarella (017) INEDIBLE PEEL. AVOCADO, BANANA, PAPAYA	NO. MOVE TO CG E
Blimbe (075) GUAVA/PERSIMMON	Y
Carob bean (127) FIG	Y
Cashew apple (130) GUAVA/PERSIMMON	Y
Chinese jujube (*Ziziphus jujuba* Mill.) (305, 306) JUJUBE OR SURINAM CHERRY	Y
Date (220) FIG	Y
Fig (243) FIG	Y
Guava (273) GUAVA	Y
Imbu (294) GUAVA/PERSIMMON	Y
Jaboticaba (298) JUJUBE OR SURINAM CHERRY	Y
Jujube (305, 306) JUJUBE OR SURINAM CHERRY	Y
Jujube/Indian (306) JUJUBE OR SURINAM CHERRY	Y
Natal plum (402) GUAVA/PERSIMMON	Y
Olive (418) (MOVE TO OILSEED)	NO
Otaheite gooseberry (431) JUJUBE OR SURINAM CHERRY	Y
Papaya/Mountain (438) PAPAYA	Y
Pejibaye-Peach palm (*Guilielma gasipaes=Bactris gasipaes*) (432) FIG	Y
Persimmon (468) GUAVA	Y
Pomerac (487) GUAVA/PERSIMMON	Y
Purple mombin (*Spondias purpurea* L.) (017) JUJUBE OR SURINAM CHERRY	Y
Rose apple (514) GUAVA/PERSIMMON	Y
Sentul (541) GUAVA/PERSIMMON	Y
Starfruit (578) GUAVA/PERSIMMON	Y
Surinam cherry (589) GUAVA/PERSIMMON	Y
Yellow mombin (*Spondias mombin* L.) (017) GUAVA/PERSIMMON	Y
See Work sheets for additions to proposed Crop Group D	

*Caps (crops) signify the representative crop(s) associated with the entry.

Proposed Subgroups for Group D
WENT CROP BY CROP (ABOVE) AND ADDED TO GROUP

Proposed Subgroup: Da		
Rep. Commodities	**Commodities**	**Validate:Y/N**
Guava and Raisin	Acerola; Ambarella; Blimbe; Carob bean; Cashew apple; Date; Fig; Guava; Imbu; Jaboticaba; Jujube; Jujube/Indian; Natal plum; Olive; Otaheite gooseberry; Papaya/Mountain; Persimmon; Pomerac; Rose apple; Sentul; Starfruit; Surinam cherry; Noni; Purple mombin; Yellow mombin; Chinese jujube; Bignay	NO*
Proposed Subgroup: Db		
Rep. Commodities	**Commodities**	**Validate:Y/N**
Raisin	Olive; Fig; Date; Carob bean	**NO***
Proposed Subgroup: Dc		
Rep. Commodities	**Commodities**	**Validate:Y/N**
Guava	Acerola; Ambarella; Blimbe; Carob bean; Cashew apple; Guava; Imbu; Jaboticaba; Jujube; Jujube/Indian; Natal plum; Otaheite gooseberry; Papaya/Mountain; Persimmon; Pomerac; Rose apple; Sentul; Starfruit; Surinam cherry; Noni; Purple mombin; Yellow mombin; Chinese jujube Feijoa; Wax Jambu; Passionfruit	**NO***

*SEE ATTACHED TABLES

Workgroup Worksheet
Workgroup #: ___4_____ Crop Group: D (Tropical/Subtropical Fruit, Edible Peel)

Additions to Proposed Crop Groups and Subgroups							
Common Name	**Scientific Name**	**Group/SG Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate: Y/N**
D.1 Craboo	*Byrsonima crassifolia* (Malpighiaceae)	D	~~guava~~ JUJUBE OR SURINAM CHERRY	Fruit (edible peel)	Mexico	NANCE Cherry-sized fruit eaten raw, etc.	Y
D.2 Jamaica Cherry	*Muntingia calabura* (Elaeocarpaceae)	D	~~guava~~ JUJUBE OR SURINAM CHERRY	Fruit (edible peel)	IR-4	Panama berry Strawberry Tree Capulin	Y

D.3 Riberry	~~*Suzygium*~~ *SYZYGIUM luehmannii* (Myrtaceae)	D	Guava	Fruit	G. Burlow (Australia)	Clove flavor (spice)	AI
D.4 Native Pepper	*Kunzea pomifera* (Leptospermaceae)	D	Guava	Fruit	G. Burlow (Australia)	Native apple (spice)	MOVE TO SPICE
D.5 Davidson's Plum	*Davidsonia pruriens* (Davidsoniaceae)	D	Guava	Fruit	G. Burlow (Australia)		AI
D.6 Illawarra Plum	*Podocarpus elatus* (Podocarpaceae)	D	~~guava~~ JUJUBE OR SURINAM CHERRY	Fruit	G. Burlow (Australia)	Resembles a grape	AI
D.7 Kakadu Plum	*Terminalia ferdinandiana* (Combretaceae)	D	Guava	Fruit	G. Burlow (Australia)	Resembles a gooseberry	AI
D.8 Noni	*Morinda citrifolia* (Rubiaceae)	D	Guava	Fruit	M. Kawate (HI)	Indian Mulberry	Y
D.9 Bignay	*Antidesma bunius* (Euphorbiaceae)	Da	JUJUBE OR SURINAM CHERRY	Fruit	M. Braverman		Y
D.10 Cajou	*Anacardium giganteum* (Anacardiaceae)	D	~~guava~~ JUJUBE OR SURINAM CHERRY	Fruit	M. Braverman		Y
D.11 Guava Berry	*Myrciaria floribunda* (Myrtaceae)	D	~~guava~~ JUJUBE OR SURINAM CHERRY	Fruit	M. Braverman		Y
D.12 Uvalha	*Eugenia uvalha* (Myrtaceae)	D	Guava	Fruit	M. Braverman (Brazil)		Y
D.13 Monos Plum	*Pseudanamomis umbellifera* (Myrtaceae)	D	~~guava~~ JUJUBE OR SURINAM CHERRY	Fruit	M. Braverman (Puerto Rico)		Y
D.14 Jelly Palm	*Butia capitata* (Arecaceae)	D	~~Guava~~ FIG	Fruit (eaten fresh)	M. Braverman (Brazil)		Y

D.15 Cherry of the Rio Grande	*Eugenia aggregata* (Myricaceae)	D	JUJUBE OR SURINAM CHERRY	Fruit	M. Braverman (IR-4)	Brazil	Y
D.16 Brazil Cherry	*Eugenia dombeyi* (Myricaceae)	D	JUJUBE OR SURINAM CHERRY	Fruit	M. Braverman (IR-4)	Size of cherry	Y
D.17 Pitomba	*Eugenia luschnatheanus* (Myrtaceae)	D	JUJUBE OR SURINAM CHERRY	Fruit	M. Braverman (IR-4)		Y
D.18 Black Plum	*Vitex doniana* (Verbenaceae)	D	JUJUBE OR SURINAM CHERRY	Fruit	M. Braverman (IR-4)	African plum	Y
D.19 Apple Rose	*Rosa villosa* (Rosaceae)	D		Fruit	M. Braverman (IR-4)	Leaves for tea MOVE TO GROUP H	AI
D. 20 Akebia	*Akebua quinata* (Lardiz abalaceae)	D		Fruit	M. Braverman (IR-4)		AI
D.21 Amra	*Spondias mangifera* (Anacardiaceae)	D		Fruit	M. Braverman (IR-4)		AI
D.22 Appleberry	*Billardiera scandens* (Pistiaceae)	D		Fruit	M. Braverman (IR-4)	Australia	AI
D.23 Arkurbal	*Willughbeia angustifloia* (Apocynaceae)	D		Fruit	M. Braverman (IR-4)	Kubal Madu	AI

ADDITIONS TO PROPOSED CROP GROUP D BY WORKGROUP # 4

Common Name	Scientific Name	Group/SG Placement	Rep Crop	Edible Part	Person(s) Requesting	Comments	Validate: Y/N
SEA GRAPE	*COCOLOBA UVIFERA*	D	JUJUBE		J. CRANE		Y
CATALEYA GUAVA	*PSIDIUM CATTLEIANUM*	D	JUJUBE OR SURINAM CHERRY		J. CRANE		Y
COSTA RICAN GUAVA	*PSIDIUM FRIEDRICHSTHALUANUM*	D	GUAVA/PERSIMMON		J. CRANE		Y
PUERTO RICAN GUAVA	*PSIDIUM MICROPHYLLUM*	D	JUJUBE OR SURINAM CHERRY		J. CRANE		Y
WATERROSE APPLE	*SYZYGIUM AQUEUM*	D	GUAVA		J. CRANE		Y
WATERBERRY	*SYZYGIUM GUINEENSE*	D	JUJUBE OR SURINAM CHERRY		J. CRANE		Y
LOQUAT	*ERIOBRYTA JAPONICA*	D	JUJUBE 0R SURINAM CHERRY		J. CRANE		Y

AFRICAN PLUM	*VITEX DONIANA*	D	JUJUBE OR SURINAM CHERRY		J. CRANE		Y
HOGPLUM AMBRA	*SPONDIUS PINATA*	D	JUJUBE OR SURINAM CHERRY		J. CRANE		Y
PARA GUAVA	*BRITOA ACIDA*	D	GUAVA/PERSIMMON		J. CRANE		Y
HERBERT RIVER CHERRY	*ANTIDESMA DALLACHYAMUM*	D	JUJUBE OR SURINAM CHERRY		J. CRANE		Y
GAOLNUT	*ANACOLOSA FRUTESCENS*	D	JUJUBE OR SURINAM CHERRY		WIERSEMA	SEE WIERSEMA ARS LIST FOR SN, ETC.	AI
BURMESE GRAPE KAPUNDUNG	*BACCAUREA SP.*	D	JUJUBE OR SURINAM CHERRY		WIERSEMA		Y
PALMYRA PALM	*BORASSUS FLABELLIFER*	D	FIG		WIERSEMA		Y
	PASSIFLORA + HYBRIDS	D	GUAVA OR PERSIMMON		WIERSEMA		Y
	PHYLLANATUS EMBLICA	D	JUJUBE OR SURINAM CHERRY		WIERSEMA		Y
	PITHECELLOBIUM DULCE	D	FIG		WIERSEMA		Y
	PSIDIUM SP. + HYBRIDS	D	GUAVA OR PERSIMMON		WIERSEMA		Y
MIRACLE FRUIT	*SUNSEPALUM DULCIFICUM*	D	JUJUBE OR SURINAM CHERRY		WIERSEMA		Y
VELVET TAMARIND	*DIALIUM GUINEENSE*	D	JUJUBE OR SURINAM CHERRY		WIERSEMA		Y
	DIALIUM INDUM	D	JUJUBE OR SURINAM CHERRY		WIERSEMA		Y
	DILLENIA PHILIPPENENSIS	D					AI
	DISPYROS SP.	D	GUAVA OR PERSIMMON		WIERSEMA		Y
	EUGENIA SPPS	D	JUJUBE OR SURINAM CHERRY		WIERSEMA		Y
AISEN	*BOSCIA SENEGALENSIS*	D	JUJUBE OR SURINAM CHERRY		WIERSEMA		Y
ALMONDETTE	*BUCHANANIA LANZAN*	D	JUJUBE OR SURINAM CHERRY		WIERSEMA		Y
CHIRAULI-NUT	*BUCHANANIA LATIFOLIA*	D	JUJUBE OR SURINAM CHERRY		WIERSEMA		Y
CIRUELA VERDE	*BUNCHOSIA ARMENIACA*	D	GUAVA		WIERSEMA		Y
CHINESE WHITE OLIVE	*CANARIUM SP.*	D	JUJUBE OR SURINAM CHERRY		WIERSEMA		Y
KARANDA	*CARISSA CARANDAS*	D	JUJUBE OR SURINAM CHERRY				Y

EGYPTIAN CARISSA	*CARISSA EDULIS*	D	JUJUBE OR SURINAM CHERRY		WIERSEMA		Y
COCO PALM	*CRYSOBALANUS ICACO*	D	JUJUBE OR SURINAM CHERRY		WIERSEMA		Y
WAMPI	*CLAUSENA LANSIUM*	D	JUJUBE OR SURINAM CHERRY		WIERSEMA		Y
JAVA PLUM	*SYZYGIUM CUMINI*	D	JUJUBE OR SURINAM CHERRY		WIERSEMA		Y
TAMARIND OF THE ANDES	*VANGUERIA MADAGASCARIENSIS*	D	JUJUBE OR SURINAM CHERRY		WIERSEMA		Y
TALLOWOOD	*XIMENIA AMERICANA*	D	JUJUBE OR SURINAM CHERRY		WIERSEMA		Y

Proposed Crop Group E: Tropical and Subtropical Fruits – Inedible Peel **Current Crop Group** **US = Miscellaneous Canada = None Codex = FI Mexico = None**	
Author's Commodity List (Greenbook) **Greenbook monograph number follows the crop name**	**Validate:** **Yes or No**
Abiu (001) PAPAYA, AVOCADO, BANANA*	Y
Akee apple (007) LYCHEE	Y
Atemoya (036) SUGAR APPLE	Y
Avocado (037) AVOCADO	Y
Banana (043) BANANA	Y
Biriba (071) SUGAR APPLE	Y
Breadfruit (088) PINEAPPLE	Y
Canistel (117) PAPAYA, AVOCADO, BANANA	Y
Cherimoya (143) SUGAR APPLE	Y
Custard Apple (143, 215, 582) SUGAR APPLE	Y
Durian (226) PINEAPPLE	Y
Feijoa (237) GUAVA	NO. MOVE TO CG D
Governor's plum (262) EDIBLE PEEL, JUJUBE OR SURINAM CHERRY	NO. MOVE TO CG D
Ilama (292) SUGAR APPLE	Y
Imbe (293) JUJUBE OR SURINAM CHERRY	NO. MOVE TO CG D
Jackfruit (300) PINEAPPLE	Y
Longan (345) LYCHEE	Y
Lychee (351) LYCHEE	Y
Mamey apple (355) PAPAYA, AVOCADO, BANANA	Y
Mango (356) AVOCADO, PAPAYA, BANANA	Y
Mangosteen (357) PAPAYA, AVOCADO, BANANA	Y

Marmaladebox (362)	EDIBLE PEEL, GUAVA	NO. MOVE TO CG D
Monstera (386)	PINEAPPLE	Y
Naranjilla (400)	EDIBLE PEEL, GUAVA	NO. MOVE TO CG D
Papaya (437)	PAPAYA, AVOCADO, BANANA	Y
Passionfruit (444)	EDIBLE PEEL, GUAVA	NO. MOVE TO CG D
Pawpaw (486)	SUGAR APPLE	Y
Pineapple (472)	PINEAPPLE	Y
Pomegranate (486)	PAPAYA, AVOCADO, BANANA	Y
Prickly pear (492) MOVE TO CUCURBITS		Y
Pulasan (494)	LYCHEE	Y
Rambutan (505)	LYCHEE	Y
Sapodilla (534))	PAPAYA, AVOCADO, BANANA	Y
Sapote/Black (535))	PAPAYA, AVOCADO, BANANA	Y
Sapote/Green (536))	PAPAYA, AVOCADO, BANANA	Y
Sapote/Mamey (537))	PAPAYA, AVOCADO, BANANA	Y
Soursop (559)	SUGAR APPLE	Y
Spanish lime (565)	LYCHEE	Y
Star apple (577))	PAPAYA, AVOCADO, BANANA	Y
Strawberrypear (581)	MOVE TO CUCURBITS	Y
Sugar apple (582)	SUGAR APPLE	Y
Tamarind (599)	FIG	NO. MOVE TO CG D
Wax jambu (649)	GUAVA	NO. MOVE TO CG D
See Work sheets for additions to proposed Crop Group E		

*Caps (crops) signify the representative crop(s) associated with the entry.

Proposed Subgroups for Group E

CROPS PLACED DIRECTLY IN SUBGROUPS IN TABLE ABOVE.

Subgroup: Ea		
Rep. Commodities	**Commodities**	**ValidateY/N**
Lychee, Avocado, Banana and Sugar apple	Abiu; Akee apple; Atemoya; Avocado; Banana; Biriba; Breadfruit; Canistel; Cherimoya; Custard Apple; Durian; Feijoa; Governor's plum; Ilama; Imbe; Jackfruit; Longan; Lychee; Mamey apple; Mango; Mangosteen; Marmaladebox; Monstera; Naranjilla; Papaya; Passionfruit; Pawpaw; Pineapple; Pomegranate; Pulasan; Rambutan; Sapodilla; Sapote/Black; Sapote/Green; Sapote/Mamey; Soursop; Spanish lime; Star apple; Strawberry pear; Sugar apple; Tamarind; Wax jambu; Wafer ash Agrito; Lena amarilla; American hornbeam; Saguaro	Y
Subgroup: Eb		
Rep. Commodities	**Commodities**	**ValidateY/N**
Lychee	Lychee; Longan; Spanish lime; Rambutan; Pulasan	Y
Subgroup: Ec		
Rep. Commodities	**Commodities**	**ValidateY/N**
Avocado	Avocado; Papaya, Star Apple; Black Sapote; Mango; Sapodilla; Canistel; Mamey Sapote	Y
Subgroup: Ed		
Rep. Commodities	**Commodities**	**ValidateY/N**
Banana	Pineapple; Plantain; Banana	Y
Subgroup: Ee		
Rep. Commodities	**Commodities**	**ValidateY/N**
Sugar apple	Sugar apple; Cherimoya; Atemoya; Custard apple, Ilama; Soursop; Biriba	Y
Subgroup: Ef		
Rep. Commodities	**Commodities**	**ValidateY/N**
Papaya	Papaya; Star Apple; Black Sapote; Mango; Sapodilla; Canistel; Mamey Sapote	Y

Workgroup Worksheet
Workgroup #: ___4_____ Crop Group: __ E_(Tropical/Subtropical Fruit-Inedible Peel_

Additions to Proposed Crop Groups and Subgroups							
Common Name	**Scientific Name**	**Group/SG Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate: Yes or No**
E.1 Wafer Ash	*Ptelea trifoliate* (Rutaceae)	E		Fruit	M. Braverman	Hop Tree Substitute for hop	MOVE TO HERBS AND SPICE
E.2 Agrito	*Mahonia trifoliolata* (Bereridaceae)	E		Fruit	M. Braverman (Mexico)	Eaten raw or in jellies	AI
E.3 American Hornbeam	*Carpinus caroliniana* (Betulaceae)	E		Fruit	M. Braverman		MOVE TO NUT GROUP
E.4 Saguaro	*Carnegia gigantea* (Cactaceae)	E		Fruit	M. Braverman	Sweet fruit. Eaten raw or cooked. Seed used for flour. FRUIT SIZE?	AI
E.5 Langsat	*Lansium domesticum* (Meliaceae)	E	LYCHEE	Fruit	M. Braverman (SE Asia)	Eaten out of hand	Y
E.6 Binjai	*Mangifera caesia* (Anacardiaceae)	E	AVOCADO, PAPAYA, BANANA	Fruit	M. Braverman	Eaten raw	Y
E.7 Horse Mango	*Mangifera foetida* (Anacardiaceae)	E	AVOCADO, PAPAYA, BANANA	Fruit	M. Braverman	Eaten fresh or peeled	Y
E.8 Abyssinian Gooseberry	*Dovyalis abyssinica* (Flacourtiaceae)	E	JUJUBE OR SURINAM CHERRY	Fruit	M. Braverman (Africa)		Y
E.9 Ceylon Gooseberry	*Dovyalis hebecarpa* (Flacourtianceae)	E	JUJUBE OR SURINAM CHERRY	Fruit	M. Braverman	Velvety fruit used in preserves	Y
E.10 Florida Gooseberry	*Dovyalis abyssinica x D. hebecarpa* (Flacourtianceae)	E	JUJUBE OR SURINAM CHERRY	Fruit fuzzy	M. Braverman	Hydrid. Fruit eaten out of hand	Y

E.11 Kei Apple	*Dovyalis caffra* (Flacourtianceae)	E	JUJUBE OR SURINAM CHERRY	Fruit	M. Braverman	Most fruit used for jelly	Y
E.12 Sataw	*Parkia speciosa* (Fabaceae)	E	FIG	Seed	M. Braverman (Malay)	Petai	Y
E.13 Maya Breadfruit	*Brosimum Alicastrum* (Moraceae)	E	JUJUBE OR SURINAM CHERRY	Seed	M. Braverman	Ramon Bread Nut Seeds eaten raw or mashed like potato	Y
E.14 Poshte	*Annona scleroderma* (Annonaceae)	E	SUGAR APPLE	Fruit	M. Braverman	Eaten fresh	Y
E.15 Ceibillo	*Ceiba aseculifolia* (Bombacaecae)	E		Fruit and seed	M. Braverman (Mexico)	Cooked or roasted. Pochote	AI
E.16 Lucmo	*Pouteria bovata* (Sapotaceae)	E	GUAVA	Fruit	M. Braverman (Peru)	Fruit similar to Canistel	Y
E.17 Bacury	*Platonia esculenta* (Clusiaceae)	E		Fruit	M. Braverman		AI
E.18 Salak	*Salacca zalacea* (Arecaceae)	E	FIG	Palm fruit	M. Braverman (Indonesia)	Fruit eaten fresh or cooked. Seeds edible	Y
E.19 Gandaria MA PRANG	*Bouea macrophylla* (Anacardiaceae)	E	GUAVA*/* PERSIMMON	Fruit and leaves	M. Braverman (Maylasia)	Kun Dang	Y
E.20 Mabolo	Diospyros discolor (Ebenaceae)	E	**GUAVA*/*** PERSIMMON	Fruit	M. Braverman (Asia)	Eaten fresh Apple-shaped with velvety skin	Y
E.21 Champedak	*Artocarpus integer* (Moraceae)	E	PINEAPPLE	Fruit, seed and leaves	M. Braverman (Asia)	Fruit like Durian	Y
E.22 Marang	*Artocarpus odoratissimus* (Moraceae)	E	PINEAPPLE	Fruit and seed	M. Braverman	Fruit like Jackfruit	Y

E.23 Mesquite Bean	*Prosopis juliflora* (Fabaceae)	E		Fruit	M. Braverman	Fodder is animal food	AI

ADDITIONS TO PROPOSED CROP GROUP E BY WORKGROUP # 4

Common Name	Scientific Name	Group/SG Placement	Rep Crop	Edible Part	Person(s) Requesting	Comments	Validate Y/N
BAEL FRUIT	*AEGLE MARMELOS*	E	AVOCADO, BANANA, PAPAYA		J. CRANE		Y
PANDANUS	*PANSANUS UTILUS*	E	PINEAPPLE		J. CRANE		Y
SCREWPINE	*PANDANUS TECTORIUS*	E	PINAPPLE		J. CRANE		Y
BIRIBA	*ROLLINIA DELECIOSA*	E	SUGAR APPLE		J. CRANE		Y
SWEETSOP	*ROLLINIA MUCOSA*	E	SUGAR APPLE		J. CRANE		Y
SUN SAPOTE	*LICANIA PLATYPUS*	E	AVOCADO, BANANA, PAPAYA		J. CRANE		Y
BAOBAB MONKEY BREAD TREE	*ADAMSONIA DIGITATA*						AI
MONKEY FRUIT	*ADD ARTOCARPUS*	E	PINEAPPLE		WIERSEMA	USDA-ARS	Y
TUCAMA PALM	*ASTROCARYUM SP.*				WIERSEMA		AI
MANDURO	*BALANITES MANGHMII*				WIERSEMA		AI
SUGARCANE FOR JUICE					WIERSEMA		N/A
BANANA	*MUSA SP. AND HYBRIDS*	E	BANANA		WIERSEMA		Y
	PLINIA GLOMERATA				WIERSEMA		AI
KAFFIR PLUM	*SCLEROCARPA BIRREA*	E	AVOCADO, PAPAYA, BANANA		WIERSEMA		Y
	CRATAEGUS AZAROLUS				WIERSEMA		AI
	CRESCENTIA CUJETE						AI
	MANILKARA HEXANDRA	E	AVOCADO, PAPAYA, BANANA		WIERSEMA		Y
COCONUT				MEAT		MEAT (NOT OIL) MOVE TO NUT CROP	
APAK PALM	*BRAHEADULCIS*				WIERSEMA		AI
	BUNCHOSIA CORNIFOLIA				WIERSEMA		AI
	CAMPOMANESIA				WIERSEMA		AI

PEGUI	*CARYOCAR*				WIERSEMA		AI
WHITE STAR APPLE	*CRYSOPHYLLUM ALBIDUM*	E	AVOCADO, PAPAYA, BANANA		WIERSEMA	ASK JONATHAN: SAME AS STAR APPLE? NO STAR APPLE IN MONOGRAPH (577)	Y
WHITE STAR APPLE OR SATINLEAF	*CRYSOPHYLLUM OLIVIFORME*	E	AVOCADO, PAPAYA, BANANA		WIERSEMA		Y
CACAO SP.	*THEOBROMA SP.*				WIERSEMA	TO BEVERAGE CROPS	N/A
WILD LOQUAT	*UAPACA KIRKANA*				WIERSEMA		AI
SUGAR PALM	*ARENGA PINNATA*				WIERSEMA	MOVE TO SUGAR CANE	N/A
ALL MANGO	ALL *MANGIFERA* SPP**.**	E	AVOCADO, PAPAYA, BANANA	FRUIT	M. BRAVERMAN	EATEN FRESH OR PEELED	Y
ANNONA SPECIES AND THEIR HYBRIDS			SUGAR APPLE				Y

Tropical/Subtropical Research Crop Groups/Definitions

Crop Group*	Rep. Crop	Crop Grouping	Comments
10	Grapefruit	Grapefruit, pummelo and their citrus hybrids including Uniq (Ugli fruit)	Corresponds to Codex Citrus Fruits definitions
E	Sugar Apple	Sugar apple, cherimoya, atemoya, custard apple, ilama, soursop, biriba	All crops in the Annonaceae; Similar gross morphology; Inedible peel
E	Lychee	Lychee, longan, Spanish lime, rambutan, pulasan	All crops in the Sapindaceae; Inedible peel
E	Papaya	Papaya, star apple, black sapote, mango, sapodilla, canistel, mamey sapote	All crops have inedible peel Corresponds to Codex classification
E	Avocado	Avocado, papaya, star apple, black sapote, mango,	All crops have inedible peel

		sapodilla, canistel, mamey sapote	Corresponds to Codex classification
D	Guava	Guava, feijoa, jaboticaba, wax jambu, starfruit, passionfruit, acerola	Primarily edible peel; Note – peel rarely contains Passiflora spp. during juicing
10	Citrus Fruits	Add white sapote (Casimiroa), and other cultivars and/or hybrids of these	White sapote is in the Rutaceae (citrus)

*See IR-4/USDA Crop Grouping Symposium crop group outline; CG 10 is citrus, CG 'D' is edible peel tropical fruits, CG 'E' is inedible peel tropical fruits. Presently, CG's 'D' and 'E' are used for research purposes only and these crops are not part of 40 CFR 180.41, regulatory crop groups.

Proposed Crop Group M: Cactus **Current Crop Group** **US = Miscellaneous Canada = None Codex = None Mexico = None**	
Author's Commodity List (Greenbook) **Greenbook monograph number follows the crop name**	**Validation:** **Yes or No**
Prickly pear (492)	SEE CG 'M'
Strawberry Pear (581)	SEE CG 'M'
See Work sheets for Additions for Proposed CG M	

Workgroup Worksheet
Workgroups #: _3, 4 and 10_____Crop Group: _ M (Cactus)____

Additions to Proposed Crop Groups and Subgroups							
Common Name	**Scientific Name**	**Group/SG Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate: Yes or No**
M.1 Agave	*Agave* spp. (Agavaceae)	M or E	Prickly Pear Cactus	Bulbous base of plant and flower stalks	Mexico		Y, MOVE TO CUCURBITS
M.2 Prickly Pear Cactus	*Opuntia* spp. (Cactaceae)	M or E	Prickly Pear Cactus	Fruit and pads			Y, MOVE TO CUCURBITS

M.3 Strawberry-pear NIGHT BLOOMING CEREUS PITAYA	*Hylocereus undatus* (Cactaceae)	M or E	Prickly Pear Cactus	Fruit and flower buds			Y, MOVE TO CUCURBITS
M.4 Aloe Vera	*Aloe vera* (Aloeaceae)	M or 4		Leaves and seeds	D. Smith (TX)	Perennial succulent plant, grown from Pups (juice)	Y, MOVE TO CUCURBITS
M.5 Pulquero	*Agave atrovirens* (Agavaceae)				Mexico		Y, MOVE TO CUCURBITS
M.6 Henequen	*Agave fourcryodes* (Agavaceae)				Mexico		Y, MOVE TO CUCURBITS
M.7 Tequilero	*Agave teqilana* (Agavaceae)				Mexico		Y, MOVE TO CUCURBITS
M.8 Guayule	*Parthenium argentatum* (Asteraceae)	M or J	Sunflower Plant OILSEED – MEAL TO COVER GUM	Plant	TX, AZ, NM, CA	Chewing gum from plant REFER TO WORKGROUP 10	N/A

"California Crops 2002 Listed by EPA Crop Group" compiled by R. Melnicoe, *et. al*. was considered but already covered.

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Mike: I strongly suggest that every crop you have here be listed by scientific and common name. I know that a number of common names are common to more than one species and common names vary with production area – with the scientific names there will be less/no confusion. Jonathan

PS: *Phyllantus emblica* is called emblic; *Pithecellobium dulce* is Manila tamarind; *Manilkara hexandra* doen't have a common name that I know.

Adapted from the tropical fruit crop definitions from the Chemistry Science Advisory Committee (CHEMSAC), Health Effects Division, Office of Pesticide Programs, US-EPA, August 1998. (Revised 9-26-02) Propose to adopt as definitions and subgroups.

	Rep. Crop	Commodities	Comments
Tropical fruit	Lychee, Banana, Pineapple, Guava or Persimmon (Japanese) Jujube or Surinam Cherry	Sugar apple, cherimoya, atemoya, custard apple, ilama, soursop, biriba, paw paw, Spanish lime, Langsat, Poshte, All species of the genus *Annona* and their hybrids, lychee, longan, Spanish lime, rambutan, pulasan, Akee, papaya, star apple, black sapote, mango, horse mango (all species of *Mangifera* and their hybrids) sapodilla, canistel, mamey sapote, abiu, Ambarella, Mamey apple, Mangosteen, Pomegranate, green sapote, Binjai, White star apple, Satinleaf, Kaffir plum, *Manilkara hexandra*, Bael fruit, Sun sapote, white sapote (*Casmiroa*) and hybrids of these. Banana (All Musa species and their hybrids), Avocado, Pineapple, jackfruit, durian, breadfruit, Monstera, Champadek, Marang, Monkeyfruit, Screwpine, Pandanus, Jujube, Chinese jujube, Indian jujube, Surinam cherry (All Eugenia spp. and their hybrids), Acerola, Jaboticaba, Purple mombin, Yellow mombin, Governor's Plum, Imbe, Craboo, Jamaica cherry, Bignay, Cajou, Guava berry, Monos plum, Cherry of the Rio Grande, Brazil cherry, Pitomba, Black plum(Vitex doniana), Abyssinian Gooseberry, Ceylon Gooseberry, Vitex doniana, Florida gooseberry, Kei apple, Maya breadfruit, Chinese white olive, Karanda, Egyptian carissa, Coco plum, Wampi, Aisen, Almondette, Chirauli nut, Galonut, Burmese grape, Kapundung, Phyllanthus emblica, Miracle fruit, Velvet tamarind, Dialium indum, Java plum, Tamarind of the Andes, Tallowood, Waterberry, Loquat, African plum, Hog plum or Ambra, Herbert river cherry, Seagrape, Cattley guava, Puerto Rican Guava, Figs, dates, carob bean, Pejibaye-Peach palm, Jelly palm, Sataw, Tamarind and other Palmae fruit, Salak, Palmyra palm fruit, Toddy palm fruit, Pithecellobium dulce	
A.Tropical fruit inedible peel subgroup	Lychee, Avocado, Banana, Pineapple	Sugar apple, cherimoya, atemoya, custard apple, ilama, soursop, biriba, paw paw, Spanish lime, Langsat, Poshte, All species of the genus Annona and their hybrids, lychee, longan, Spanish lime, rambutan, pulasan, Akee, papaya, star apple, black sapote, mango, horse mango (all species of Mangifera and their hybrids) sapodilla, canistel, mamey sapote, abiu, Ambarella, Mamey apple, Mangosteen, Pomegranate, green sapote, Binjai, White star apple, Satinleaf, Kaffir plum, Manilkara hexandra, Bael fruit, Sun sapote, white sapote (*Casmiroa*) *and* hybrids of these. Banana (All Musa species and their hybrids), Avocado, Pineapple, jackfruit, durian, breadfruit, Monstera, Champadek, Marang, Monkeyfruit, Screwpine, Pandanus	Utilizes the smallest rough skin fruit to cover worst case residues plus the two largest consumption fruit to cover all tropical inedible peel fruit. Avocado is still included to cover California and to cover intermediate sized fruit.

B. Inedible peel Sugar apple Subgroup	Sugar apple	Sugar apple, cherimoya, atemoya, custard apple, ilama, soursop, biriba, paw paw, Spanish lime, Langsat, Poshte, All species of the genus Annona and their hybrids	Most crops in the Annonaceae; similar gross morphology. Inedible peel medium size fruit with rough skin
C. Inedible peel Lychee subgroup	Lychee	Lychee, longan, Spanish lime, rambutan, pulasan, Akee, langsat	All crops in the Sapindaceae; inedible peel small size fruit with rough skin (except Spanish lime)
D. Inedible peel except Avocado and Banana subgroup	Papaya	Papaya, star apple, black sapote, mango, horse mango (all species of Mangifera and their hybrids) sapodilla, canistel, mamey sapote, abiu, Ambarella, Mamey apple, Mangosteen, Pomegranate, green sapote, Binjai, White star apple, Satinleaf, Kaffir plum, Manilkara hexandra, Bael fruit, Sun sapote, white sapote (*Casmiroa*) *and* hybrids of these.	All crop have inedible peel; smooth skin most corresponds to Codex classification
E. Inedible peel smooth skin except Papaya and Banana subgroup	Avocado	Avocado, black sapote, star apple, canistel, mamey sapote, mango, , horse mango (all species of Mangifera and their hybrids) papaya, sapodilla, Ambarella, Mamey apple, Mangosteen Pomegranate, green sapote , Binjai, White star apple, Satinleaf, Kaffir plum, Manilkara hexandra, Bael fruit, Sun sapote white sapote (*Casmiroa*) and hybrids of these. NOTE: mamaey sapote and sapodilla do not have a smooth peel, it is scurfy.	All crop have inedible peel; smooth skin most corresponds to Codex classification
F. Inedible peel smooth skin except Avocado and Papaya subgroup	Banana	Banana (All Musa species and their hybrids), black sapote, star apple, canistel, mamey sapote, mango, , horse mango (all species of Mangifera and their hybrids) papaya, sapodilla, green sapote, Ambarella , ,Mamey apple, Mangosteen Pomegranate, Binjai, White star apple, Satinleaf, , Bael fruit, Sun sapote, white sapote (*Casmiroa*) and hybrids of these. NOTE: mamaey sapote and sapodilla do not have a smooth peel; it is scurfy.	All crop have inedible peel; smooth skin most corresponds to Codex classification
G. Inedible peel Large aggregate fruit	Pineapple	Pineapple, jackfruit, durian, breadfruit, Monstera, Champadek, Marang, Monkeyfruit, Screwpine, Pandanus	All crop have rough, bumpy, inedible peel

subgroup			
H. Inedible peel Large aggregate fruit subgroup (except pineapple)	Jackfruit	Jackfruit, durian, breadfruit, Monstera, Champadek, Marang, Monkeyfruit, Screwpine, Pandanus	All crop have inedible peel. Does not include pineapple and is for situations where the use pattern for pineapple does not fit the other crops in the group.
I. Edible peel Guava/ Persimmon subgroup	Guava or Persimmon (Japanese)	Guava, Para Guava, Costa Rican Guava(All Psidium spp. and their hybrids), feijoa, jaboticaba, wax jambu, star fruit, passion fruit, (All *Passiflora* spp. and their hybrids), Japanese persimmon, common persimmon (All Diospyros spp. and their hybrids), Blimbe, Cashew apple, Imbu, Natal plum, Otaheite gooseberry, Mountain papaya, Pomerac, Rose apple, Sentul, Marmaladebox, Naranjilla, Noni, Uvalha, Lucmo, Gandaria, Maprang, Mabolo, Ciruela verde, Water Rose apple	Primarily edible peel; note/peel rarely contaminates *Passiflora* spp. during juicing smooth skin medium size fruit
J. Edible peel Jujube /Surinam cherry subgroup	Jujube or Surinam Cherry	Jujube, Chinese jujube, Indian jujube, Surinam cherry (All Eugenia spp. and their hybrids), Acerola, Jaboticaba, Purple mombin, Yellow mombin, Governor's Plum, Imbe, Craboo, Jamaica cherry, Bignay, Cajou, Guava berry, Monos plum, Cherry of the Rio Grande, Brazil cherry, Pitomba, Black plum (Vitex doniana), Abyssinian Gooseberry, Ceylon Gooseberry, Florida gooseberry, Kei apple, Maya breadfruit, Chinese white olive, Karanda, Egyptian carissa, Coco plum, Wampi, Aisen, Almondette, Chirauli nut, Galonut, Burmese grape, Kapundung, Phyllanthus emblica, Miracle fruit, Velvet tamarind, Dialium indum, Java plum, Tamarind of the Andes, Tallowood, Waterberry, Loquat, African plum, Hog plum or Ambra, Herbert river cherry, Seagrape, Cattley guava, Puerto Rican Guava, star fruit, wax jambu	All crops have edible peel or peel used in processing. Small, smooth skin
K. Palm and low moisture fruits subgroup	Fig	Figs, dates, carob bean, Pejibaye-Peach palm, Jelly palm, Sataw, Tamarind , Salak, Palmyra palm fruit, Toddy palm fruit, Pithecellobium dulce and all other fruit of the family Palmae	Fruit of low moisture

10. Citrus Fruits

	Rep. Crops	Commodities	Comments
Citrus fruits	Orange, Lemon or lime and Grapefruit	Grapefruit, (including Uniq/Ugli fruit) lemons, limes (Key and Tahiti), sweet oranges (Including but not limited to China sweet orange, Pigmented orange, Sanguine orange, Chinese navel orange, Chinas, Blood orange, Malta orange, Oranger, Valencia orange, Naranjo dulce, Shamouti), sour oranges (including but not limited to bitter orange, Seville orange, Bigarde orange, Naranja agria, Chinotto, Myrtleleaf orange, Moli, Soap orange);, bergamont orange, tangelos, tangor, chironja, mandarin (tangerine) Citrus citron, kumquats , pummelo, Satsuma mandarin, Mediteranian mandarin, Changsaw, Malayan swingle, trifoliate orange, Aspen lemon , calamondin, kumquat and all hybrids of citrus. Includes all members of the family Rutaceae and their hybrids	Based on Codex Citrus Fruits Definitions
10 A. Orange subgroup	Orange	Orange, sweet(Including but not limited to China sweet orange, Pigmented orange, Sanguine orange, Chinese navel orange, Chinas, Blood orange, Malta orange, Oranger, Valencia orange, Naranjo dulce, Shamouti) ; Orange, sour (including but not limited to bitter orange, Seville orange, Bigarde orange, Naranja agria, Chinotto, Myrtleleaf orange, Moli, Soap orange); (Including but not limited to China sweet orange, Pigmented orange, Sanguine orange, Chinese navel orange, Chinas, Blood orange, Malta orange, Oranger, Valencia orange, Naranjo dulce, Shamouti) Bergamont orange, Citrus citron, mandarin (tangerine), tangerine, satsuma, sweet lime, Mediteranian mandarin, Changshaw, Malayan swingle, tangelo and all their hybrids	
10 B. Lime , lemon subgroup	Lime or Lemon	Lemon, lime (Key and Tahiti), Aspen lemon, calamondin, kumquat, trifoliate orange, All members of the family Rutaceae and their hybrids other than orange and grapefruit	
10 C. Grapefruit subgroup	Grapefruit	Grapefruit, pummelo, chironja, tangor (including Uniq/Ugli fruit), tangelo, tangor and all hybrids of these	

CITRUS FRUITS DEFINITIONS

A	B
Citrus Fruits	Grapefruit, (including Uniq/Ugli fruit) lemons, limes (Key and Tahiti), sweet oranges (Including but not limited to China sweet orange, Pigmented orange, Sanguine orange, Chinese navel orange, Chinas, Blood orange, Malta orange, Oranger, Valencia orange, Naranjo dulce, Shamouti), sour oranges (including but not limited to bitter orange, Seville orange, Bigarde orange, Naranja agria, Chinotto, Myrtleleaf orange, Moli, Soap orange), bergamont orange, tangelos, tangor, chironja, mandarin (tangerine) Citrus citron, kumquats , pummelo, Satsuma mandarin, Mediteranian mandarin, Changsaw, Malayan swingle, trifoliate orange, Aspen lemon, calamondin, kumquat and all hybrids of citrus. Includes all members of the family Rutaceae and their hybrids

Orange	Orange, sweet (Including but not limited to China sweet orange, Pigmented orange, Sanguine orange, Chinese navel orange, Chinas, Blood orange, Malta orange, Oranger, Valencia orange, Naranjo dulce, Shamouti) ; Orange, sour (including but not limited to bitter orange, Seville orange, Bigarde orange, Naranja agria, Chinotto, Myrtleleaf orange, Moli, Soap orange); (Including but not limited to China sweet orange, Pigmented orange, Sanguine orange, Chinese navel orange, Chinas, Blood orange, Malta orange, Oranger, Valencia orange, Naranjo dulce, Shamouti) Bergamont orange, Citrus citron, mandarin (tangerine), tangerine, satsuma, sweet lime, Mediteranian mandarin, Changshaw, Malayan swingle, tangelo and all their hybrids
Lime	Lemon, lime (Key and Tahiti), Aspen lemon, calamondin, kumquat, trifoliate orange, All members of the family Rutaceae and their hybrids other than orange and grapefruit
Lemon	Lemon, lime (Key and Tahiti), Aspen lemon, calamondin, kumquat, trifoliate orange, All members of the family Rutaceae and their hybrids other than orange and grapefruit
Grapefruit	Grapefruit, pummelo, chironja, tangor (including Uniq/Ugli fruit), tangelo, tangor and all hybrids of these

TROPICAL CROP DEFINITIONS

A	B
Tropical fruit	Sugar apple, cherimoya, atemoya, custard apple, ilama, soursop, biriba, paw paw, Spanish lime, Langsat, Poshte, All species of the genus Annona and their hybrids, lychee, longan, Spanish lime, rambutan, pulasan, Akee, papaya, star apple, black sapote, mango, horse mango (all species of Mangifera and their hybrids) sapodilla, canistel, mamey sapote, abiu, Ambarella, Mamey apple, Mangosteen, Pomegranate, green sapote, Binjai, White star apple, Satinleaf, Kaffir plum, Manilkara hexandra, Bael fruit, Sun sapote, white sapote (*Casmiroa*) and hybrids of these. Banana (All Musa species and their hybrids), Avocado, Pineapple, jackfruit, durian, breadfruit, Monstera, Champadek, Marang, Monkeyfruit, Screwpine, Pandanus, Jujube, Chinese jujube, Indian jujube, Surinam cherry (All Eugenia spp. and their hybrids), Acerola, Jaboticaba, Purple mombin, Yellow mombin, Governor's Plum, Imbe, Craboo, Jamaica cherry, Bignay, Cajou, Guava berry, Monos plum, Cherry of the Rio Grande, Brazil cherry, Pitomba, Black plum(Vitex doniana), Abyssinian Gooseberry, Ceylon Gooseberry, Surinam cherry (All Eugenia spp. and their hybrids), Acerola, Jaboticaba, Purple mombin, Yellow mombin, Governor's Plum, Imbe, Craboo, Jamaica cherry, Bignay, Cajou, Guava berry, Monos plum, Cherry of the Rio Grande, Brazil cherry, Pitomba, Black plum(Vitex doniana), Abyssinian Gooseberry, Ceylon Gooseberry, Florida gooseberry, Kei apple, Maya breadfruit, Chinese white olive, Karanda, Egyptian carissa, Coco plum, Wampi, Aisen, Almondette, Chirauli nut, Galonut, Burmese grape, Kapundung, Phyllanthus emblica, Miracle fruit, Velvet tamarind, Dialium indum, Java plum, Tamarind of the Andes, Tallowood, Waterberry, Loquat, African plum, Hog plum or Ambra, Herbert river cherry, Seagrape, Cattley guava, Puerto Rican Guava, Figs, dates, carob bean, Pejibaye-Peach palm, Jelly palm, Sataw, Tamarind and other Palmae fruit, Salak, Palmyra palm fruit, Toddy palm fruit, *Pithecellobium dulce*

Tropical fruit, inedible peel	sugar apple, cherimoya, atemoya, custard apple, ilama, soursop, biriba, paw paw, Spanish lime, Langsat, Poshte, All species of the genus Annona and their hybrids, lychee, longan, Spanish lime, rambutan, pulasan, Akee, papaya, star apple, black sapote, mango, horse mango (all species of Mangifera and their hybrids) sapodilla, canistel, mamey sapote, abiu, Ambarella, Mamey apple, Mangosteen, Pomegranate, green sapote, Binjai, White star apple, Satinleaf, Kaffir plum, Manilkara hexandra, Bael fruit, Sun sapote, white sapote (*Casmiroa*) and hybrids of these. Banana (All Musa species and their hybrids), Avocado, Pineapple, jackfruit, durian, breadfruit, Monstera, Champadek, Marang, Monkeyfruit, Screwpine, Pandanus
Sugar apple	sugar apple, cherimoya, atemoya, custard apple, ilama, soursop, biriba, paw paw, Spanish lime, Langsat, Poshte, All species of the genus Annona and their hybrids
Lychee	lychee, longan, Spanish lime, rambutan, pulasan, Akee,
Papaya	papaya, star apple, black sapote, mango, horse mango (all species of Mangifera and their hybrids) sapodilla, canistel, mamey sapote, abiu, Ambarella, Mamey apple, Mangosteen, Pomegranate, green sapote, Binjai, White star apple, Satinleaf, Kaffir plum, Manilkara hexandra, Bael fruit, Sun sapote, white sapote (*Casmiroa*) and hybrids of these.
Avocado	Avocado, black sapote, star apple, canistel, mamey sapote, mango, horse mango (all species of Mangifera and their hybrids), papaya, sapodilla, Ambarella, Mamey apple, Mangosteen Pomegranate, green sapote, Binjai, White star apple, Satinleaf, Kaffir plum, Manilkara hexandra, Bael fruit, Sun sapote white sapote (*Casmiroa*) and hybrids of these.
Banana	Banana (All Musa species and their hybrids), black sapote, star apple, canistel, mamey sapote, mango, horse mango (all species of Mangifera and their hybrids) papaya, sapodilla, green sapote, Ambarella , Mamey apple, Mangosteen Pomegranate, Binjai, White star apple, Satinleaf, , Bael fruit, Sun sapote, white sapote (*Casmiroa*) and hybrids of these.
Pineapple	Pineapple, jackfruit, durian, breadfruit, Monstera, Champadek, Marang, Monkeyfruit, Screwpine, Pandanus
Jackfruit	Jackfruit, durian, breadfruit, Monstera, Champadek, Marang, Monkeyfruit, Screwpine, Pandanus
Guava*	Guava, Para Guava, Costa Rican Guava (All Psidium spp. and their hybrids), feijoa, jaboticaba, wax jambu, star fruit, passion fruit, (All *Passiflora* spp. and their hybrids), Japanese persimmon, common persimmon (All Diospyros spp. and their hybrids), Blimbe, Cashew apple, Imbu, Natal plum, Otaheite gooseberry, Mountain papaya, Pomerac, Rose apple, Sentul, Marmaladebox, Naranjilla, Noni, Uvalha, Lucmo, Gandaria, Maprang, Mabolo, Ciruela verde, Water Rose apple, star fruit, wax jambu
Persimmon *(Japanese)	Guava, Para Guava, Costa Rican Guava (All Psidium spp. and their hybrids), feijoa, jaboticaba, wax jambu, star fruit, passion fruit, (All *Passiflora* spp. and their hybrids), Japanese persimmon, common persimmon (All Diospyros spp. and their hybrids), Blimbe, Cashew apple, Imbu, Natal plum, Otaheite gooseberry, Mountain papaya, Pomerac, Rose apple, Sentul, Marmaladebox, Naranjilla, Noni, Uvalha, Lucmo, Gandaria, Maprang, Mabolo, Ciruela verde, Water Rose apple, star fruit, wax jambu
Jujube*	Jujube, Chinese jujube, Indian jujube, Surinam cherry (All Eugenia spp. and their hybrids), Acerola, Jaboticaba, Purple mombin, Yellow mombin, Governor's Plum, Imbe, Craboo, Jamaica cherry, Bignay, Cajou, Guava berry, Monos plum,

	Cherry of the Rio Grande, Brazil cherry, Pitomba, Black plum(Vitex doniana), Abyssinian Gooseberry, Ceylon Gooseberry, Florida gooseberry, Kei apple, Maya breadfruit, Chinese white olive, Karanda, Egyptian carissa, Coco plum, Wampi, Aisen, Almondette, Chirauli nut, Galonut, Burmese grape, Kapundung, Phyllanthus emblica, Miracle fruit, Velvet tamarind, Dialium indum, Java plum, Tamarind of the Andes, Tallowood, Waterberry, Loquat, African plum, Hog plum or Ambra, Herbert river cherry, Seagrape, Cattley guava, Puerto Rican Guava
Surinam Cherry*	Jujube, Chinese jujube, Indian jujube, Surinam cherry (All Eugenia spp. and their hybrids), Acerola, Jaboticaba, Purple mombin, Yellow mombin, Governor's Plum, Imbe, Craboo, Jamaica cherry, Bignay, Cajou, Guava berry, Monos plum, Cherry of the Rio Grande, Brazil cherry, Pitomba, Black plum(Vitex doniana), Abyssinian Gooseberry, Ceylon Gooseberry, Florida gooseberry, Kei apple, Maya breadfruit, Chinese white olive, Karanda, Egyptian carissa, Coco plum, Wampi, Aisen, Almondette, Chirauli nut, Galonut, Burmese grape, Kapundung, Phyllanthus emblica, Miracle fruit, Velvet tamarind, Dialium indum, Java plum, Tamarind of the Andes, Tallowood, Waterberry, Loquat, African plum, Hog plum or Ambra, Herbert river cherry, Seagrape, Cattley guava, Puerto Rican Guava

* Tropical Fruit, Edible Peel

The IR-4 Project

Providing Safe and Effective Pest Management Solutions for Specialty Crop Growers

IR-4/USDA Crop Grouping Symposium

Temperate Tree and Small Fruits (Includes Stone fruits, Pome Fruits, Berries, Small Fruits, and Tree Nuts)

Workgroup #5

Crop Group 11: Pome Fruits

Crop Group 12: Stone Fruits

Crop Group 13: Berries

Crop Group 14: Tree Nuts

Crop Group C: Small Fruits (to be placed into CG13)

Temperate Tree and Small Fruits
(Includes Stone fruits, Pome Fruits, Berries, Small Fruits, and Tree Nuts)

Workgroup #5

IR-4/USDA Crop Grouping Symposium
7-8 October 2002
Arlington, Virginia

Chair: Van Starner
Co-Chairs: Craig Hunter, Rick Loranger, Rick Melnicoe, Chris Olinger, John Wise.

Workgroup #5's mission was to review, evaluate and validate the established Crop Groups 11,12,13 and 14, and the proposed Crop Group C to include additional crops.

Note: The established Crop Groups reflected the US EPA's 40 CFR 180.41, Health Canada's Pest Management Regulatory Agency's Directive 98-02, and Mexico's Crop Grouping System which are identical.

Workgroup # 5
Crop Groups 11, 12, 13, 14 and Proposed Crop Group C

Crop Group 11. Pome Fruits Crop Groups US = 11 Canada = 11 Codex = FP Mexico = 11			Author's Classification of Pome Fruits Crop Groups US = 11 Canada = 11 Codex = FP Mexico = 11	
Rep. Commodities	**Established Commodities**	**Validate:Y/N**	**Proposed Commodity Additions/Changes**	**Validate:Y/N**
Apple, and Pear	Apple (022)	Y	Medlar (372)	Y
	Crabapple (197)	Y		
	Loquat (346)	Y		
	Mayhaw (368)	Y		
	Pear (454)	Y		
	Pear/oriental (454)	Y		
	Quince (501)	Y		

Workgroup Worksheet
Workgroup #: ___5_____Crop Group: __11_____

Additions to Established Crop Groups and Subgroups							
Common Name	**Scientific Name**	**Group/SG Pacement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate:Y/N**
11.1 Peron	*Malus domestica* (Rosaceae)	11	Apple	Fruit	Mexico	Name for apple in Mexico, add common name. ALSO ADD THIS COMMON NAME TO (O22) IN GREEN BOOK	Y
11.2 Tejocote	*Crataegus pubescens* (Rosaceae)	11	Apple	Fruit	Mexico	Mealy fruit used in preserves, etc. Manzanilla. ALSO ADD TO (368) IN GREEN BOOK	Y
11.3 Sea Buckthorn	*Hippophae rhamnoides* (Elaegnaceae)	11	Apple	Fruit	D. Billet (Canada)	Seaberry, acid fruit. IS A WOODY SHRUB – POSSIBLY CONSIDER ANOTHER GROUP	AI
11.4 Apple Subgroup	*Malus* (Rosaceae)	11A	Apple	Fruit	IR-4	Include Apple, Quince, and Crabapple	NO, BUT YES TO A DEFINITION

11.5 Pear Subgroup	*Pyrus*, etc (Rosaceae)	11B	Pear	Fruit	IR-4	Include Pear, Loquat, Mayhaw, ORIENTAL OR ASIAN PEAR*	NO, BUT YES TO A DEFINITION
11.6 Western Crabapple	*Malus fusca* (Rosaceae)	11	Apple	Fruit	M. Braverman	Jelly, Oregon Crab	Y
WORKGROUP 5: ADDITIONS FROM THE WORKGROUP							
ROSE HIPS	ROSE SPP	POME (11) TEAS (H)		FRUIT	R. MELNICOE	NEED ADDITIONAL INFORMATION FOR POME FRUIT CLASSING	AI
PAWPAW (445)	ASIMINA SPP.	POME (11) TROPICAL (E)		FRUIT	J. WISE	NEED ADDITIONAL INFORMATION FOR POME FRUIT CLASSING	AI

*RECOMMENDATION: ADD ORIENTAL OR ASIAN PEAR TO THE APPLE CROP DEFINITION

Crop Group 12. Stone Fruit **Crop Groups** **US = 12 Canada = 12 Codex = FS Mexico = 12**			**Author's Classification of Stone Fruit** **Crop Groups** **US = 12 Canada = 12 Codex = FS Mexico = 12**	
Rep. Commodities	**Established Commodities**	**ValidateY/N**	**Proposed Commodity Additions/Changes**	**Validate Y/N**
Sweet or tart cherry, peach, and plum or fresh prune	Apricot (023)	Y	Cherry/black ((144)	Y**
	Cherry/sweet ((146)	Y**	Cherry/Nanking (145)	Y**
	Cherry/tart (147)	Y**	Plum/American (477)	Y*
	Nectarine (452)	Y	Plum/cherry (482)	Y*
	Peach (452)	Y		
	Plum (476)	Y*		
	Plum/Chickasaw (479)	Y*		
	Plum/Damson (480)	Y*		
	Plum/Japanese (481)	Y*		
	Plumcot (482)	Y		
	Prune (fresh) (476)	Y*		

*IN THE CROP GROUP TABLE FOR STONE FRUIT, THE COMMODITIES "PLUMS" SHOULD BE IDENTIFIED AS FOLLOWS:
"PLUM, INCLUDING ALL SPECIES OF *PRUNUS* IDENTIFIED AS PLUM, SUCH AS, BUT NOT LIMITED TO, CHICKASAW, DAMSON, JAPANESE, PRUNE, AMERICAN, CHERRY, ETC., AND CULTIVARS AND HYBRIDS OF THESE."
IF THIS RECOMMENDATION IS NOT ACCEPTABLE, THEN ALL INDIVIDUAL PLUMS SHOULD BE LISTED.

** IN THE CROP GROUP TABLE FOR STONE FRUIT, THE COMMODITIES “CHERRIES” SHOULD BE IDENTIFIED AS FOLLOWS: “CHERRIES, INCLUDING ALL SPECIES OF PRUNUS IDENTIFIED AS CHERRY, SUCH AS, BUT NOT LIMITED TO, SWEET, TART, BLACK, NANKING, CAPULIN, CHOKECHERRY, ETC., AND CULTIVARS AND HYBRIDS OF THESE.”
IF THIS RECOMMENDATION IS NOT ACCEPTABLE, THEN ALL INDIVIDUAL CHERRIES SHOULD BE LISTED.

Workgroup Worksheet
Workgroup #: ___5_____Crop Group: __12_____

Additions to Established Crop Groups and Subgroups							
Common Name	**Scientific Name**	**Group/SG Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate: Y/N**
12.1 Chokecherry	*Prunus virginiana* (Rosaceae)	12	Cherry	Fruit	R. Esau (Canada)		Y**
12.2 Capulin Cherry (144)	*Prunus serotina* (Rosaceae)	12	Cherry	Fruit	Mexico	Capuli Subsp. capuli	Y**
ADDITIONS TO CROP GROUP 12 BY WORKGROUP # 5							
CROP GROUP 12	ALL *PRUNUS* HYBRIDS	STONE FRUIT	AS IS	FRUIT	R. MELNICOE	ADD THE WORDS “PRUNUS HYBRIDS” IN CROP GROUP COMMODITY LIST TO CAPTURE ALL PRUNUS HYBRIDS	Y

** SEE DOUBLE STARS UNDER CROP GROUP 12 ABOVE

Editor’s Note:

Under Crop Group 12 (Stone Fruit), the Editors propose the additions of subgroups and expanded or new crop definitions for the representative crops of Crop Group 12: Peach, Cherry and Plum.

Crop Group 13~~. Berries~~ SMALL FRUIT Crop Groups US = 13 Canada = 13 Codex = FB Mexico = 13			Author's Classification of ~~Berries~~ SMALL FRUIT Crop Groups US = 13 Canada = 13 Codex = FB Mexico = 13	
Rep. Commodities	**Established Commodities**	**Validate Y/N**	**Proposed Commodity Additions/Changes**	**Validate Y/N and Subgroup**
Any one blackberry or any one raspberry, and blueberry	Blackberry, including bingleberry (074), boysenberry (074, 222), dewberry (074, 222), lowberry (074), marionberry (074), olallieberry (074), youngberry (074, 116, 222)	Y	Aronia berry (025)	Y – 13B
	Blueberry (077*)* (078)*	Y	Bearberry (062)	Y – 13B
	Currant (212, 213)/RED AND BLACK	Y	Bilberry (070)	Y – 13B
	Elderberry (229)	Y	Blackberry (074, 116)	NO**
	Gooseberry (260)	Y	Blueberry/lowbush (078)	NO**
	Huckleberry (077, 287)	Y	Caneberries ((116)	NO**
	Loganberry (074, 116, 222)	Y	Cloudberry (164)	Y – 13A
	Raspberry~~/black and red~~ (116, 502)	Y	Currant/black (212)	NO**
			Currant/red ((213)	NO**
			Dewberry (074, 222)	NO**
			Highbush cranberry (281)	Y – 13B
			Jostaberry (304)	Y – 13B
			Juneberry (307)	Y – 13B
			Lingonberry (343)	Y – 13B
			Mulberry (389)	Y – 13A
			Partridgeberry (442)	Y – 13B
			Raspberry (116, 502)	NO**
			Salal (528)	Y – 13B
			Seagrape (540)	MOVE TO TROPICALS
			Serviceberry (307, 542)	Y – 13B

*LIST AS: BLUEBERRY, CULTIVARS AND/OR HYBRIDS OF THESE

**ALREADY IN ESTABLISHED CROP GROUP

Subgroups for crop Group 13:~~Berries~~ SMALL FRUIT

Subgroup 13A. Caneberry (blackberry and raspberry) subgroup (Established)		
Rep. Commodities	**Commodities**	**Validate Y/N**
Any one blackberry or any one raspberry	Blackberry; loganberry; ~~red and black~~ raspberry; cultivars and/or hybrids of these New: ~~Caneberries~~; Cloudberry~~; Dewberry~~; Mulberry; KIWIFRUIT	YES WITH MODIFICATIONS SHOWN
Subgroup 13b. Bushberry subgroup (Established)		
Rep. Commodities	**Commodities**	**Validate Y/N**
Blueberry, ~~highbush~~	Blueberry~~, highbush and lowbush~~; currant; elderberry; gooseberry; huckleberry New: Aronia berry; Bearberry; Bilberry; Currant/black; Currant/red; Highbush cranberry; Jostaberry; Juneberry; Lingonberry; Partridgeberry; Salal; ~~Seagrape~~; Serviceberry; Cranberry	YES WITH MODIFICATIONS SHOWN

Workgroup Worksheet
Workgroup #: ___5_____ Crop Group: ___13_____

Additions to Established Crop Groups and Subgroups							
Common Name	**Scientific Name**	**Group/SG Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate: Yes or No**
13.1 Saskatoon Berry	*Amelanchier alnifolia* (Rosaceae)	13B	Blueberry	Fruit	Canada	Same as Juneberry in Authors Classification Monograph 307	Y
13.2 Highbush Cranberry	*Viburnum trilobum* (Caprifoliaceae)	13B	Blueberry	Fruit	Canada	Monograph 281	Y
13.3 Lingonberry	*Vaccinium vitis-idaea* (Ericaceae)	13B	Blueberry	Fruit	Canada	Monograph 343	Y
13.4 Che	*Cudrania tricuspidata* (Moraceae)	13B	Blueberry	Fruit, Berry	IR-4		AI
13.5 Andean Blackberry	*Rubus glaucus* (Rosaceae)	13A	CANEBERRY	Fruit	M. Braverman		Y

13.6 Buffalo Currant	*Ribes odoratum* (Grossulariaceae)	13B	Blueberry	Fruit	M. Braverman		Y
13.7 Sea Buckthorn	*Hippophae rhamnoides* (Elaeagnaceae)	13B	Blueberry	Fruit	M. Braverman		AI
13.8 European Barberry	*Berberis vulgaris* (Berberidaceae)	~~13B~~ 13A	Blueberry Caneberry	Fruit	M. Braverman		AI
13.9 Blueberry (Lowbush) Subgroup	*Vaccinium spp.* (Ericaceae)	13C	Lowbush Blueberry	Fruit	IR-4	Include Lowbush Blueberry, Lingonberry, Huckleberry	NO
13.10 Blueberry (Highbush) Subgroup	*Vaccinium spp.* (Ericaceae)	13D	Highbush Blueberry	Fruit	IR-4	Include Blueberry, Currant, Gooseberry, Elderberry, Salal, Juneberry	NO
13.11 Blueberry (Lowbush)	New Subgroup 13E	13E	Lowbush Blueberry	Fruit	IR-4	Includes all crops in 13B	NO
ADDITIONS TO CROP GROUP 13 BY WORKGROUP							
AMUR RIVER GRAPE	*VITIS AMURENSIS*	13C	GRAPE	FRUIT	M. BRAVERMAN		Y
CHINESE EGG GOOSEBERRY	*ACTINIDIA RUBRICALLUS*	13C	GRAPE	FRUIT	M. BRAVERMAN		Y
TAYBERRY	*RUBUS*	13/13A	BLACK-BERRY AND RASPBERRY	FRUIT	C. HUNTER	SMALL ACREAGE.; NATIVE OF SCOTLAND	Y

PROPOSAL TO REWORK CROP GROUP 13 (DEVELOPED AS A JOINT EFFORT BY ALL WORKGROUP #5 MEMBERS)

1. CHANGE CG NAME FROM “BERRIES” TO “SMALL FRUITS”
2. MAINTAIN SUBGROUPS 13A AND 13B, AS MODIFIED ABOVE.
3. ADD KIWIFRUIT AS A COMMODITY IN 13A
4. ADD CRANBERRY AS A COMMODITY IN 13B
5. ADD SUBGROUP 13C: GRAPE; WITH GRAPE AS THE REP CROP; WITH COMMODITIES GRAPE, KIWIFRUIT, AND MAYPOP
6. ADD GRAPE AND STRAWBERRY AS REP CROPS FOR SMALL FRUITS CROP GROUP 13

Crop Group 14. Tree Nuts Crop Groups US = 14 Canada = 14 Codex = TN Mexico = 14			Author's Classification of Tree Nuts Crop Groups US = 14 Canada = 14 Codex = TN Mexico = 14	
Rep. Commodities	**Established Commodities**	**ValidateY/N**	**Proposed Commodity Additions/Changes**	**Validate Y/N**
Almond and Pecan	Almond (012)	Y	Almond/tropical (013)	Y
	Beechnut (063)	Y	Betelnut (069)	Y
	Brazil nut (087)	Y	Coconut (185,432)	Y
	Butternut (087, 104)	Y	Ginkgo (256)	Y
	Cashew (130)	Y	Hazelnut (278)	Y
	Chestnut (150)	Y	Heartnut (279)	Y
	Chinquapin (150)	Y	Oak (406~~,407,410~~)	Y
	Filbert (hazelnut) (278)	Y	Pili nut (469)	Y
	Hickory nut (280)	Y	Pine nut (471)	Y
	Macadamia nut (353)	Y	Pistachio (473)	Y
	Pecan (455)	Y	Walnut/black (640)	No*
	Walnut, black and English (640, 641)	Y	Walnut/English (641)	No*
			Filbert (hazelnut) changed to Hazelnut (278) MAKE IT HAZELNUT (FILBERT))	Y
			Walnut, black and English changed to Walnut/Black (640); Walnut/English (641)	No*

* ALREADY IN ESTABLISHED CROP GROUP
RECOMMENDATION: REPLACE SOME PECAN RESIDUE TRIALS WITH WALNUT TRIALS, ON A CASE-BY-CASE BASIS

Workgroup Worksheet
Workgroup #: ___5_____ Crop Group: ____14_____

Additions to Established Crop Groups and Subgroups							
Common Name	**Scientific Name**	**Group/SG Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate: Yes or No**
14.1 Guana	*Hildegardia cubensis* (Sterculiaceae)	14 Tree Nut	Pecan	Seed	Mexico	Edible oil?	AI
14.2 Nut-O-Nogal (Nogal)	*Juglans* spp. (Juglandaceae)	14	Pecan	Nut	Mexico	4 spp. = *J. regia, J. cinerea, J. nigra, J. hindii*	YES-ADD THIS COMMON NAME TO (640) OR (641)

14.3 Pistachio	*Pistacia vera* (Anacardiaceae)	14	Almond	Nut	IR-4		Y
14.4 Cajou	*Anacardium giganteum* (Anacardiaceae)	14	Pecan	Nut	M. Braverman	Cashew-like nuts	Y
14.5 Dalison	*Terminalia edulis* (Combretaceae)	14	Pecan	Nut	M. Braverman		Y ADD THIS COMMON NAME UNDER (013) ALMOND, TROPICAL
14.6 Okari Nut	*Terminalia kaernbachii* (Combretaceae)	14	Pecan	Nut	M. Braverman		Y ADD THIS COMMON NAME UNDER (013) ALMOND, TROPICAL
14.7 Nut Subgroup Temperate		14A	Almond	Nut	IR-4		NO
14.8 Nut Subgroup Tropical/ Subtropical		14B	Pecan/ Walnut	Nut	IR-4		NO
14.9 Bunya Bunya	*Araucaria bidwillii* (Araucariaceae)	14	Pecan	Nut	M. Braverman (IR-4)		Y
14.10 Candlenut	*Aleurites moluccana* (Euphorbiaceae)	14	Pecan	Nut	M. Braverman (IR-4) HI	Country Walnut	Y

Editor's note: We propose crop definitions for the Tree Nut representative crops, Almond and Pecan.

WORKGROUP #5 INTENDS TO PLACE PROPOSED CROP GROUP C INTO SUBGROUP 13C

Proposed Crop Group C: Small Fruits **Current Crop Group** **US = Miscellaneous Canada = None Codex = FB Mexico = None**	
Author's Commodity List (Greenbook) **Greenbook monograph number follows the crop name**	**ValidateY/N**
Cranberry (200)	**
Grape (266)	**
Kiwifruit (316)	**
Maypop (369, 444)	**

Strawberry (580)	**
See Work sheets for additions for proposed CG C	
Cranberry moved to 13b	**

Proposed subgroups for Group C

Subgroup: Ca (Proposed)		
Rep. Commodities	**Commodities**	**ValidateY/N**
Grape; Strawberry	Grape; Kiwifruit; Maypop; Strawberry	N
Subgroup: Cb (Proposed)		
Rep. Commodities	**Commodities**	**ValidateY/N**
Grape	Grape; Kiwifruit; Maypop	**N**

SUMMARY FOR WORKGROUP 5
BY VAN STARNER

**Workgroup #5 reviewed crop groups 11, 12, 13, 14 and proposed CG ‘C’, and general questions IN THE MCL book. The most significant changes were proposed within Crop Group 13. For this “Berries” Crop Group, we changed the name to “Small Fruit”, added a third Subgroup (13C), and added grape and strawberry as rep. crops for the whole group. Participants commented favorably on the success achieved through this process. EPA co-chairs provided extremely valuable insight and helped guide us to maintain as much flexibility as possible in the crop group system. The proposed Crop Group ‘C’ was deleted from the proposal.

WG # 5.4 12/11/02

The IR-4 Project

Providing Safe and Effective Pest Management Solutions for Specialty Crop Growers

IR-4/USDA Crop Grouping Symposium

Cereal Grains and Grasses, including Forage, Fodder and Hay

Workgroup # 6

Crop Group 15: Cereal Grains

Crop Group 16: Forage, Fodder and Straw of Cereal Grains

Crop Group 17: Grass, Forage, Fodder and Hay Group

Cereal Grains and Grasses, including Forage, Fodder and Hay

Workgroup # 6

IR-4/USDA Crop Grouping Symposium
7-8 October 2002
Arlington, Virginia

Chair: Marija Arsenovic
Co-Chairs: Danette Drew, Dudley Smith, Dave Soderberg, Robert Travaglini

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Workgroup #6's mission was to review, evaluate and validate the established Crop Groups 15,16 and 17 to include additional crops.

Note: The established Crop Groups reflected the US EPA's 40 CFR 180.41, Health Canada's Pest Management Regulatory Agency's Directive 98-02, and Mexico's Crop Grouping System which are identical

Workgroup # 6
Crop Groups 15, 16 and 17

Crop Group 15. Cereal Grains **Crop Groups** **US = 15 Canada = 15 Codex = TN Mexico = 15**			**Author's Classification of Cereal Grains** **Crop Groups** **US = 15 Canada = 15 Codex = TN Mexico = 15**	
Rep. Commodities	**Established Commodities**	**Validate: Y/N**	**Proposed Commodity Additions/Changes**	**Validate: Y/N**
Corn (sweet and field), Rice, Sorghum, and Wheat	Barley (044)	Y	Amaranth/grain (015)	Y
	Buckwheat (097)	Y	Canarygrass/annual (114)	Y
	Corn (193)	Y	Millet/foxtail (378)	Y
	Millet/ pearl (380)	Y	Oat (407)	Y
	Millet/ proso (381)	Y	Oat/Abyssinian (408)	NO*
	Oats (407)	Y	Oat/animated (409)	NO*
	Popcorn (193)	Y	Oat/common (410)	NO*
	Rice (513)	Y	Oat/naked (411)	NO*
	Rye (521)	Y	Oat/sand (412)	NO*
	Sorghum/(~~milo~~) (555) (grain)	Y	Psyllium (493)	Y
	Teosinte (193)	NO	Quinoa (502)	Y
	Triticale (622)	Y	Teff (609)	Y
	Wheat (651)	Y	Wheat (651)	Y
	Wild rice (643, 681)	Y	Wheat/club (652)	NO*
			Wheat/common (653)	NO*
			Wheat/durum (654)	NO*
			Wheat/einkorn (655)	NO*
			Wheat/Emmer (656)	NO*
			Wheat/macha (657)	NO*
			Wheat/oriental (658)	NO*
			Wheat/Persian (659)	NO*
			Wheat/Polish (660)	NO*
			Wheat/poulard (661)	NO*
			Wheat/short (662)	NO*
			Wheat/spelt (663)	NO*
			Wheat/timopheevi (664)	NO*
			Wheat/vavilovi (665)	NO*

			Wheat/wild einkorn (666)	NO*
			Wheat/wild emmer (667)	NO*
			Sorghum/(milo) changed to Sorghum/ grain (555)	Y

*JUST USE GENERIC TERM ‘WHEAT’ OR ‘OAT’.

Workgroup Worksheet
Workgroup #: ___6_____Crop Group: __15/16_____

Additions to Established Crop Groups and Subgroups							
Common Name	**Scientific Name**	**Group/SG Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate: Yes or No**
15.1 Canarygrass, Annual	*Phalaris canariansis* (Poaceae)	15 and 16	Wheat	Seed	Canada, Mexico	Authors Monograph (114)	Y
15.2 Small Grains Subgroup	Crops scientific names listed in Green Book	15A and 16	Wheat	Seed	M. Ross (MD) IR-4	Small grains Subgroup to include Barley, Triticale, Buckwheat, Oat, Rye, WHEAT	Y SEE ADDITIONS BELOW
15.3 Corn Subgroup	*Zea mays* (Poaceae)	15B and 16	Corn, field	Seed	IR-4	Corn grain subgroup to include Field corn and Popcorn	Y
15.4 Cereal Grasses	Wheat/Rye/Oat	15 and 16	Wheat	Top FRESH	IR-4	Subgroup for Wheatgrass	Y
15.5 Romerito	*Suaeda moquinii* (Chenopodiaceae)	15 and 16	Wheat	Seed	Mexico	Like Grain Amaranth Monograph (015)	Y
15.6 Rice Subgroup	*Oryza and Zizania* (Poaceae)	15C	Rice	Seed	IR-4	Include Rice and Wild Rice	Y
15.7 Grain Sorghum Subgroup	*Sorghum, Panicum and Pennisetum* (Poaceae)	15D	Sorghum Grain	Seed	IR-4	Include Sorghum, and Millet	Y SEE ADDITIONS BELOW
15.8 (Reserved)							Y
15.9 Rice and Wheat Subgroup	New Subgroup 15E	15E	Rice and Wheat	Seed	IR-4	Include Barley, WHEAT; Buckwheat, Oat, Rice, Rye, ~~Teosinte~~, Triticale, Wild Rice	Y WITH CHANGES

15.10 Grain Corn and Sorghum Subgroup	New Subgroup 15F	15F	Corn (Sweet and Field) and Sorghum	Seed	IR-4	Include Corn (field, sweet, pop), Millet, Sorghum	Y SEE ADDITIONS BELOW
15.11 Corn Subgroup	New Subgroup 15G	15G	Corn (Sweet and Field)	Seed	IR-4	Include corn (sweet and field)	Y
15.12 Sweet Sorghum	Monograph 556	15	Sorghum (grain) ~~top~~ STOVER	Top	W. Nesmith (KY)	Also see Crop Group J	Y
ADDITIONS TO CROP GROUP 15 BY WORKGROUP # 6							
Small Grains Subgroup (15.2)	Crops scientific names listed in Green Book	15A and 16	Wheat	Seed	M. Ross (MD) IR-4	Small grains Subgroup to include Barley, Triticale, Buckwheat, Oat, Rye MILLET, PROSO; MILLET, PEARL; WHEAT; TEFF; AMARANTH; ROMERITO; QUINOA	Y
Grain Sorghum Subgroup (15.7)	Sorghum, Panicum and Pennisetum (Poaceae)	15D	Sorghum Grain	Seed	IR-4	Include Sorghum – GRAIN, SWEET, FORAGE, and Millet – PEARL, PROSO	Y
Grain Corn and Sorghum Subgroup (15.10)	New Subgroup 15F	15F	Corn (Sweet and Field) and Sorghum, GRAIN	Seed	IR-4	Include Corn (field, sweet, pop), Millet – PROSO , PEARL; Sorghum – GRAIN, SWEET, FORAGE; JAPANESE MILLET	Y
CORN SORGHUM WHEAT	NEW SUBGROUP 15 H	15H	CORN, WHEAT, SORGHUM	SEED	WORK GROUP	NO RICE	Y

Crop Group 16. Forage, Fodder and Straw of Cereal Grains Crop Groups US = 16 Canada = 16 Codex = AF and AS Mexico = 16			Author's Classification of Forage, Fodder and Straw of Cereal Grains Crop Groups US = 16 Canada = 16 Codex =AF and AS Mexico = 16	
Rep. Commodities	**Established Commodities**	**Validate: Y/N**	**Proposed Commodity Additions/Changes**	**Validate: Y/N**
Corn, Wheat, and Any other cereal grain crop	Forage, fodder and straw of all commodities included in the cereal grains group	Y	Amaranth/grain (015)	Y
			Barley ((044)	Y
			Buckwheat (097)	Y
			Canarygrass/annual (114)	Y
			Corn (193)	Y
			Millet/pearl (380)	Y
			Millet/proso (381)	Y
			Oat (407)	NO*
			Oat/ Abyssinian (408)	NO*
			Oat/animated (409)	NO*
			Oat/common (410)	NO*
			Oat/naked (411)	NO*
			Oat/sand (412)	NO*
			Rice (513)	Y
			Rye (521)	Y
			Sorghum/ grain (555)	Y
			Teff (609)	Y
			Triticale (622)	Y
			Wheat (651)	Y
			Wheat/club (652)	NO*
			Wheat common (653)	NO*
			Wheat/durum (654)	NO*
			Wheat/einkorn (655)	NO*
			Wheat/Emmer (656)	NO*
			Wheat/macha (657)	NO*
			Wheat/oriental (658)	NO*
			Wheat/Persian (659)	NO*
			Wheat/Polish (660)	NO*
			Wheat/poulard (661)	NO*

			Wheat/short (662)	NO*
			Wheat/spelt (663)	NO*
			Wheat/timopheevi (664)	NO*
			Wheat/vavilovi (665)	NO*
			Wheat/wild einkorn (666)	NO*
			Wheat/wild emmer (667)	NO*
			Wild rice (643,681)	Y

* ONLY USE GENERIC TERM ‘WHEAT’ OR ‘OAT’.

Crop Group 17. Grass, Forage, Fodder and Hay **Crop Groups** **US = 17 Canada = 17 Codex = AS Mexico = 17**		**Author’s Classification of Grass, Forage, Fodder and Hay** **Crop Groups:** **US = 17 Canada = 17 Codex = AS Mexico = 17**			
Rep. Commodities	**Commodities**	***Additions and Subgroup**	***Additions and Subgroup**	***Additions and Subgroup**	***Additions and Subgroup**
Bermuda grass; bluegrass; and bromegrass or fescue	Any grass, Gramineae family (either green or cured) except sugarcane and those included in the cereal grains group, that will be fed to or grazed by livestock, all pasture and range grasses and grasses grown for hay or silage	Alakali sacaton (009) - B	Eastern gamma grass - B	Oniongrass - B	St. Augustine grass - B
		Alkaligrass (010)	Feather fingergrass - B	Orchardgrass - A	Sunolgrass
		Arizona cottontop (024) - B	Tall Fescue grass A	Pangolagrass - B	Tall dropseed - B
		Bahiagrass (038) B	Forage grass	Panicgrass - B	Tall oatgrass
		Beachgrass (046)	Galleta grass - B	Panicgrass/ Introduced - B	Tanglehead - B
		Bentgrass (067) A	Gaint cane - B	Paspalum - B	Timothy- -A
		Bermudagrass (068) - B	Grama grass - B	Perennial veldtgrass	Timothy/alpine - A
		Blowoutgrass (076) - B	Green sprangletop - B	Pine dropseed - B	Tufted hairgrass

		Bluegrass (679) - A	Hardinggrass - A	Plains bristlegrass - B	Vaseygrass - B
		Bluestem/ Australian (080) - B	Hooded windmillgrass - B	Polargrass	Velvetgrass - A
		Bluestem/big (081) - B	Indian ricegrass - B	Prairie sandreed - B	Wheatgrass - A
		Bluestem/ Caucasian (082) - B	Indiangrass - B	Quackgrass - B	Wheatgrass/bluebunch - A
		Bluestem/diaz (083) - B	Junegrass - B	Redtop - B	Wheatgrass/ Crested - A
		Bluestem/yellow (084) - B	Limpograss - B	Reedgrass -	Wheatgrass/fairway - A
		Broadleaf carpet grass (089) - B	Little bluestem - B	Rhodesgrass - B	Wheatgrass/ intermediate - A
		Bromegrass (093) B	Lovegrass - B	Ryegrass/Italian - A	Wheatgrass/ pubescent - A
		Bromegrass/ minor annual (094) - A	Maidencane - B	Ryegrass/ perennial - A	Wheatgrass/Siberian - A
		Broomsedge (095) - B	Mannagrass	Sand bluestem - B	Wheatgrass/ slender - A
		Buffalograss (099, 576) - B	Marshhay cordgrass - B	Sand dropseed - B	Wheatgrass/ Streambank - A
		Buffelgrass (100) - B	Meadow foxtail	Silver bluestem - B	Wheatgrass/tall - A
		Canarygrass/reed (115) - B	Millet/foxtail - B	Sixweeks treeawn B	Wheatgrass/ thickspike - A
		Caribgrass (126)	Millet/Japanese - B	Sloughgrass - B	Wheatgrass/ Western - A
		Carpet grass - B	Molassesgrass - B	Smilograss	Wildrye grass - A
		Centipedegrass - B	Muhly grass - B	Sorghum, GRAIN, FORAGE, SWEET B	Zoysia grass - B

		Crabgrass - B	Napiergrass - B	South African bluestem - B	
		Creeping foxtail - B	Needlegrass	Spike bentgrass - A	
		Curley mesquite B	Oat/slender - A	Spike trisetum - A	
		Dallisgrass - B	Oat/wild - A	Spikeoat - A	
			Oatgrass - A	Squirreltail - A	

***Proposed additions, please cross out the ones not validated (ALL GRASSES VALIDATED [Y] FOR CROP GROUP 17). ALSO INCLUDED ARE PROPOSED SUBGROUPS 17A(A) OR 17B(B).**

Workgroup Worksheet
Workgroup #: __6_____ Crop Group: __17_____

Additions to Established Crop Groups and Subgroups							
Common Name	**Scientific Name**	**Group/SG Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate: Y/N**
17.1 Mixed Stands	Grasses plus Legumes (alfalfa)	Crop Definition 180.1 (h)	Alfalfa	Top	IR-4	Add to crop Definition: mixed stands for grass and alfalfa, etc.	Y
17.2 Grasses Grown for Seed	Grass (seed crops)	Screenings, etc.	Grasses	Top	IR-4	Residue requirements discussion	Y
ADDITIONS TO CROP GROUP 17 BY WORKGROUP # 6							
BERMUDAGRASS		17	FESCUE	TOP	WORKGROUP		Y
BLUEGRASS		17	BLUE GRASS	TOP	WORKGROUP		Y
BROMEGRASS		17	FESCUE	TOP	WORKGROUP		Y
REED CANARY GRASS		17					Y
SWITCH GRASS		17					Y
CLAIM GRASS		17					Y
SUDAN GRASS		17					Y
MILLET, FOXTAIL		16 AND 17					Y
MILLET, JAPANESE		16 AND 17					Y
ROMERITO		15 AND 16					Y

SORGHUM, FORAGE		17					Y
PSYLLIUM		15					Y
QUINOA		15					Y
QUINOA (LEAF)		LEAFY VEG.					Y
CICER MILKVETCH		18			PMRA (CANADA)	ALREADY IN	Y
ALTAI WILDRYE		17		FODDER FORAGE HAY	PMRA		Y
DAHURIAN WILDRYE		17		FODDER FORAGE HAY	PMRA		Y
NORTHERN WHEAT GRASS		17		FODDER FORAGE HAY	PMRA		Y
CREEPING RED FESCUE		17		FODDER FORAGE HAY	PMRA		Y
MILLET, SOW	PANICUM HIRTICAULE VAR. HIRTICAULE	17			ARS (WIERSEMA)		Y
LITTLE MILLET	PANICUM SUMATRENSE	17			ARS		Y
WILDRYE	SECALE STRICTUM	17			ARS		Y
GAMBA GRASS	ANDROPOGON GAYANUS VAR. BISQUA MULATUS	17			ARS		Y
NELSON'S NEEDLEGRASS	ACHNATERUM NELSONII SUB SP. MELSONII	17			ARS		Y
	ANDROPOGON SPP.	17			ARS		Y

	BOUTELOUA SPP.	17			ARS		Y
	BROMUS SPP.	17			ARS		Y
	CENCHRUS SPP.	17			ARS		Y
	CYNODON SPP.	17			ARS		Y
	DIGITARIA SPP.	17			ARS		Y
	ERAGROSTIS	17			ARS		Y
	FESTUCA SPP.	17			ARS		Y
	LEYMUS SPP.	17			ARS		Y
REED CANARY GRASS		17			WORKGROUP		Y
	PHALARIS	17			WORKGROUP		Y
SWITCH GRASS		17			WORKGROUP		Y
CLAIM GRASS		17			WORKGROUP		Y
SUDAN GRASS		17					Y

Note: All the forage Poaceae listed on the ARS (Wiersema) GRIN database and absent from “Food and Feed Crops of the United States” were validated (Y).

GRIN List

FORAGE: forage - *Achnatherum lettermanii* (Letterman's needlegrass) [Poaceae]
FORAGE: forage - Achnatherum *nelsonii* subsp. *dorei* (Columbia needlegrass) [Poaceae]
FORAGE: forage - *Achnatherum nelsonii subsp. nelsonii* (Nelson's needlegrass) [Poaceae]
FORAGE: forage - *Acroceras amplectens* [Poaceae]
FORAGE: forage - *Acroceras macrum* (Nyl grass; Nile grass) [Poaceae]
FORAGE: forage - *Acroceras zizanioides* [Poaceae]
(A) FORAGE: forage - *Aegilops speltoides* [Poaceae]
(A) FORAGE: forage - *Aira caryophyllea* (silver hair grass) [Poaceae]
(A) FORAGE: forage - *Aira cupaniana* [Poaceae]
(A) FORAGE: forage - *Aira elegantissima* (delicate hair grass) [Poaceae]
(A) FORAGE: forage - *Aira praecox* (early hair grass) [Poaceae]
(A) FORAGE: fodder - *Alopecurus geniculatus* (water foxtail; marsh foxtail) [Poaceae]

(B) FORAGE: forage - *Andropogon gayanus* var. *bisquamulatus* (gamba grass) [Poaceae]
(B) FORAGE: forage - *Andropogon tectorum* [Poaceae]
FORAGE: forage - *Anthephora pubescens* (wool grass) [Poaceae]
FORAGE: forage - *Astrebla elymoides* (hoop Mitchell grass) [Poaceae]
FORAGE: forage - *Astrebla lappacea* (curly Mitchell grass) [Poaceae]
FORAGE: fodder, forage - *Astrebla pectinata* (barley Mitchell grass) [Poaceae]
FORAGE: forage - *Astrebla squarrosa* (bull Mitchell grass) [Poaceae]
(B) FORAGE: forage - *Axonopus micay* [Poaceae]
(B) FORAGE: forage - *Axonopus scoparius* (imperial grass) [Poaceae]
FORAGE: forage - *Bambusa bambos* (giant thorny bamboo; thorny bamboo; spiny bamboo) [Poaceae]
(B) FORAGE: forage - *Bothriochloa barbinodis* (cane bluestem) [Poaceae]
(B) FORAGE: fodder, forage - *Bothriochloa insculpta* (sweet-pit grass; pinhole grass; creeping-bluegrass) [Poaceae]
(B) FORAGE: forage - *Bothriochloa macra* (red-leg grass) [Poaceae]
(B) FORAGE: forage - *Bothriochloa pertusa* (pitted-bluestem; hurricane grass; Indian couch grass) [Poaceae]
(B) FORAGE: forage - *Bouteloua barbata* var. rothrockii [Poaceae]
(B) FORAGE: forage - *Bouteloua curtipendula* (tall grama grass; side-oats grama) [Poaceae]
(B) FORAGE: forage - *Bouteloua hirsuta* (hairy grama) [Poaceae]
(B) FORAGE: forage - *Brachiaria eruciformis* (sweet signal grass) [Poaceae]
(B) FORAGE: forage - *Brachiaria nigropedata* (spotted signal grass) [Poaceae]
(A) FORAGE: forage - *Briza humilis* (spiked quaking grass) [Poaceae]
(A) FORAGE: forage - *Briza media* (totter grass; quaking grass; perennial quaking grass) [Poaceae]
(A) FORAGE: forage - *Bromus lanceolatus* (Mediterranean brome) [Poaceae]
(A) FORAGE: fodder, forage - *Bromus riparius* (meadow brome)(meadow bromegrass) [Poaceae]
(A) FORAGE: forage - *Bromus rubens* (red brome; foxtail chess)(foxtail brome) [Poaceae]
(A) FORAGE: forage - *Bromus stamineus* (grazing brome) [Poaceae]
FORAGE: fodder - *Calliandra calothyrsus* (red calliandra; calliandra) [Fabaceae]
(B) FORAGE: forage - *Cenchrus pennisetiformis* (buffel grass) [Poaceae]
FORAGE: forage - *Centotheca lappacea* [Poaceae]
(B) FORAGE: fodder - *Chloris divaricata* (star windmill grass; star grass; slender chloris) [Poaceae]
(B) FORAGE: forage - *Chloris pilosa* [Poaceae]
(B) FORAGE: fodder, forage - *Chloris pycnothrix* (spiderweb chloris) [Poaceae]
FORAGE: forage - *Chrysopogon aciculatus* (pilipiliula; love grass; amorseco) [Poaceae]
FORAGE: forage - *Chrysopogon orientalis* [Poaceae]

FORAGE: forage - *Crypsis aculeata* [Poaceae]
FORAGE: forage - *Cymbopogon refractus* (soap grass; barbwire grass) [Poaceae]
FORAGE: forage - *Cymbopogon schoenanthus* (camel grass) [Poaceae]
(B) FORAGE: forage - *Cynodon aethiopicus* (star grass; Nakuru grass) [Poaceae]
(B) FORAGE: forage - *Cynodon nlemfuensis* (robust star grass; Rhodesian star grass) [Poaceae]
(B) FORAGE: fodder, forage - *Cynodon plectostachyus* (star grass)(giant star grass) [Poaceae]
FORAGE: fodder, forage - *Cynosurus cristatus* (crested dog-tail) [Poaceae]
(B) FORAGE: fodder, forage - *Dactyloctenium aegyptium* (finger comb grass; duck grass; crowfoot grass; comb fringe grass) [Poaceae]
(B) FORAGE: forage - *Dactyloctenium australe* (Natal crowfoot; Durban grass) [Poaceae]
(A) FORAGE: forage - *Danthonia auriculata* (lobed wallaby grass) [Poaceae]
(A) FORAGE: forage - *Danthonia caespitosa* (whitetop; ringed wallaby grass) [Poaceae]
(A) FORAGE: forage - *Danthonia carphoides* (short wallaby grass) [Poaceae]
(A) FORAGE: forage - *Danthonia compressa* (mountain oat grass; flat-stem oat grass) [Poaceae]
(A) FORAGE: forage - *Danthonia duttoniana* (brown-back wallaby grass) [Poaceae]
(A) FORAGE: forage - *Danthonia eriantha* (hill wallaby grass) [Poaceae]
(A) FORAGE: forage - *Danthonia pilosa* [Poaceae]
(A) FORAGE: forage - *Danthonia richardsonii* [Poaceae]
(A) FORAGE: forage - *Danthonia setacea* (small-flower wallaby grass) [Poaceae]
FORAGE: fodder - *Desmostachya bipinnata* [Poaceae]
(B) FORAGE: fodder, forage - Dichanthium caricosum [Poaceae]
(B) FORAGE: fodder - *Digitaria cruciata* [Poaceae]
(B) FORAGE: fodder - *Digitaria exilis* (hungry-rice; fonio millet) [Poaceae]
(B) FORAGE: forage - *Digitaria ischaemum* (smooth crabgrass)(small crabgrass) [Poaceae]
(B) FORAGE: forage - *Digitaria milanjiana* (woolly finger grass; digit grass; Milanje finger grass) [Poaceae]
(B) FORAGE: forage - *Digitaria setigera* (bristly crabgrass) [Poaceae]
(B) FORAGE: forage - *Distichlis spicata* var. *stricta* (interior salt grass; inland salt grass; desert salt grass) [Poaceae]
(B) FORAGE: forage - *Echinochloa colona* (shama millet; millet-rice; jungle-rice; jungle ricegrass) [Poaceae]
(B) FORAGE: forage - *Echinochloa polystachya* [Poaceae]
(B) FORAGE: forage - *Echinochloa pyramidalis* (limpopo grass; antelope grass) [Poaceae]
(B) FORAGE: fodder - *Echinochloa stagnina* (long-awn water grass; hippo grass; burgu grass) [Poaceae]
(B) FORAGE: forage - *Echinochloa turneriana* (channel millet) [Poaceae]
(A) FORAGE: fodder, forage - *Elymus dahuricus* (Dahurian wild rye) [Poaceae]
(A) FORAGE: forage - *Elymus hoffmannii* [Poaceae]

(A) FORAGE: forage - *Elymus trachycaulus* subsp. *subsecundus* (bearded wheatgrass) [Poaceae]
(A) FORAGE: forage - *Elymus virginicus* (Virginia wild rye) [Poaceae]
FORAGE: forage - *Elytrophorus spicatus* (spike grass) [Poaceae]
(B) FORAGE: forage - *Eragrostis atrovirens* [Poaceae]
(B) FORAGE: forage - *Eragrostis barrelieri* (pitted love grass; Mediterranean love grass) [Poaceae
(B) FORAGE: forage - *Eragrostis ciliaris* (woolly love grass) [Poaceae]
(B) FORAGE: fodder, forage - *Eragrostis superba* (sawtooth love grass; Wilman love grass) [Poaceae]
(B) FORAGE: forage - *Eragrostis tenuifolia* (elastic grass) [Poaceae]
(B) FORAGE: forage - *Eragrostis trichophora* (Atherstone love grass) [Poaceae]
(B) FORAGE: forage - *Eragrostis unioloides* [Poaceae]
(B) FORAGE: forage - *Eriochloa australiensis* [Poaceae]
(B) FORAGE: forage - *Eriochloa pseudoacrotricha* (perennial cup grass; early spring grass) [Poaceae]
(B) FORAGE: forage - *Eustachys retusa* [Poaceae]
(A) FORAGE: forage - *Festuca arizonica* (Arizona fescue)(pinegrass; mountain bunchgrass) [Poaceae]
(A) FORAGE: forage - *Festuca valesiaca* [Poaceae]
(A) FORAGE: forage - *Festuca viridula* (mountain bunchgrass; green fescue) [Poaceae]
FORAGE: forage - *Hesperostipa comata* (needle-and-thread grass; needlegrass) [Poaceae]
(B) FORAGE: fodder, forage - *Hyparrhenia filipendula* (fine thatching grass; Tambookie grass) [Poaceae]
(B) FORAGE: fodder - *Hyparrhenia rufa* (jaragua grass)(giant thatching grass) [Poaceae]
(B) FORAGE: forage - *Ischaemum ciliare* (smut grass; batiki-bluegrass) [Poaceae]
(B) FORAGE: fodder - *Ischaemum muticum* (seashore centipede grass; drought grass) [Poaceae]
(B) FORAGE: forage - Ischaemum rugosum (wrinkled grass; wrinkled duck-beak; saramatta grass; muraino grass) [Poaceae]
(B) FORAGE: fodder - *Iseilema* laxum [Poaceae]
(B) FORAGE: fodder - *Iseilema prostratum* [Poaceae]
FORAGE: fodder - *Lasiurus scindicus* [Poaceae]
(B) FORAGE: fodder, forage - *Leersia hexandra* (cutgrass) [Poaceae]
(A) FORAGE: forage - *Leymus angustus* (Altai wild rye) [Poaceae]
(A) FORAGE: fodder - *Leymus arenarius* (lyme grass)(rancheria grass; European dune grass; sea lyme grass; beach wild rye) [Poaceae]
(A) FORAGE: fodder - *Leymus chinensis* [Poaceae]
(A) FORAGE: fodder - *Leymus divaricatus* [Poaceae]
(A) FORAGE: fodder - *Leymus multicaulis* [Poaceae]
(A) FORAGE: fodder - *Leymus ramosus* [Poaceae]
(A) FORAGE: forage - *Leymus triticoides* (beardless wild rye) (creeping wild rye) [Poaceae]

(A) FORAGE: fodder, forage - *Lolium x hybridum* (intermediate ryegrass) (hybrid ryegrass) [Poaceae]
FORAGE: forage - *Microlaena stipoides* (weeping grass) [Poaceae]
FORAGE: forage - *Monachather paradoxa* (bandicoot grass) [Poaceae]
FORAGE: forage - *Nassella pulchra* (purple needlegrass) [Poaceae]
(B) FORAGE: forage - *Oryza longistaminata* (red rice) [Poaceae]
(B) FORAGE: forage - *Ottochloa nodosa* (slender panic grass) [Poaceae]
(B) FORAGE: fodder, forage - *Panicum brevifolium* (shortleaf panic grass) [Poaceae]
(B) FORAGE: forage - *Panicum bulbosum* (turnip grass; bulb panic grass) [Poaceae]
(B) FORAGE: fodder - *Panicum schinzii* (land grass) [Poaceae]
(B) FORAGE: forage - *Panicum subalbidum* (elbow buffalo grass) [Poaceae]
(B) FORAGE: forage - *Panicum turgidum* (desert grass) [Poaceae]
(B) FORAGE: forage - *Paspalum conjugatum* (sour grass)(sour paspalum; carabao grass; buffalo grass) [Poaceae]
(B) FORAGE: forage - *Paspalum nicorae* (Brunswick grass) [Poaceae]
(B) FORAGE: forage - *Paspalum repens* [Poaceae]
(B) FORAGE: fodder, forage - *Paspalum scrobiculatum* (kodo millet)(water couch; ditch millet; creeping paspalum; Indian paspalum) [Poaceae]
(B) FORAGE: fodder, forage - *Pennisetum clandestinum* (Kikuyu grass) [Poaceae]
(B) FORAGE: fodder, forage - *Pennisetum flaccidum* (flaccid grass) [Poaceae]
(B) FORAGE: fodder - *Pennisetum pedicellatum* (kyasuwa grass; kayasuwa grass; annual kyasuwa grass) [Poaceae]
(B) FORAGE: fodder - *Pennisetum setosum* [Poaceae]
(A) FORAGE: fodder, forage - *Phalaris minor* (little-seed Canary grass)(small Canary grass) [Poaceae]
(A) FORAGE: forage - *Phalaris x daviesii* [Poaceae]
(A) FORAGE: forage - *Phleum bertolonii* (turf timothy; smaller cat's-tail; small timothy) [Poaceae]
(B) FORAGE: forage - *Pleuraphis mutica* (tobosa grass) [Poaceae]
(B) FORAGE: forage - *Pleuraphis rigida* (big galleta) [Poaceae]
(A) FORAGE: forage - *Poa alpina* (alpine bluegrass)(bluegrass; alpine meadow grass) [Poaceae]
(A) FORAGE: fodder, forage - *Poa palustris* (swamp meadow grass; fowl bluegrass) [Poaceae]
FORAGE: forage - *Schismus arabicus* (Arabian grass) [Poaceae]
FORAGE: forage - *Schismus barbatus* (Mediterranean grass) [Poaceae]
(A) FORAGE: fodder - *Secale strictum* subsp*. strictum* (mountain rye) [Poaceae]
(B) FORAGE: forage - *Setaria barbata* (bristly foxtail grass) [Poaceae]
(B) FORAGE: forage - *Setaria flavida* [Poaceae]
(B) FORAGE: forage - *Setaria geminata* [Poaceae]

(B) FORAGE: fodder, forage - Setaria pumila subsp. pumila (yellow foxtail) (yellow bristle grass; pidgeon grass; pale pidgeon grass) [Poaceae]
(B) FORAGE: forage - Setaria sphacelata var. anceps [Poaceae]
(B) FORAGE: forage - Setaria sphacelata var. sphacelata [Poaceae]
(B) FORAGE: fodder, forage - Setaria sphacelata var. splendida (splendida setaria; broadleaf setaria) [Poaceae]
(B) FORAGE: forage - Sorghum arundinaceum (common wild sorghum) [Poaceae]
(B) FORAGE: forage - Sorghum nitidum [Poaceae]
FORAGE: forage - Themeda triandra (red-oat grass; red-oat; red grass; kangaroo grass) [Poaceae]
FORAGE: forage - Thysanolaena latifolia (tiger grass) [Poaceae]
FORAGE: forage - Trifolium africanum [Fabaceae]
FORAGE: forage - Trifolium ambiguum (Kura clover)(pellett clover; honey clover; Caucasian clover) [Fabaceae]
FORAGE: forage - Trifolium arvense (rabbit-foot clover)(stone clover; hare-foot clover) [Fabaceae]
FORAGE: forage - Trifolium berytheum (Beirut clover) [Fabaceae]
FORAGE: fodder, forage - Trifolium medium (zigzag clover) [Fabaceae]
FORAGE: forage - Trifolium rueppellianum [Fabaceae]
FORAGE: forage - Trifolium semipilosum (Kenya clover) [Fabaceae]
FORAGE: forage - Trifolium squamosum (sea clover) [Fabaceae]
FORAGE: forage - Trifolium squarrosum [Fabaceae]
(B) FORAGE: forage - Tripsacum andersonii (Guatemalan grass) [Poaceae]
FORAGE: fodder - Trisetum flavescens (yellow oat grass; golden oat grass) [Poaceae]
(B) FORAGE: forage - Urochloa arrecta (tanner grass) [Poaceae]
(B) FORAGE: forage - Urochloa brizantha (signal grass; palisade grass)(bread grass; Surinam grass) [Poaceae]
(B) FORAGE: forage - Urochloa decumbens (signal grass)(Basilisk signal grass; Surinam grass) [Poaceae]
(B) FORAGE: forage - Urochloa distachya (green summer grass; armgrass millet) [Poaceae]
(B) FORAGE: forage - Urochloa fusca [Poaceae]
(B) FORAGE: forage - Urochloa humidicola (koronivia grass; creeping signal grass) [Poaceae]
(B) FORAGE: fodder - Urochloa lata [Poaceae]
(B) FORAGE: forage - Urochloa mosambicensis (sabi grass) [Poaceae]
(B) FORAGE: forage - Urochloa ruziziensis (ruzi grass)(Congo signal grass; Congo grass) [Poaceae]
(B) FORAGE: forage - Urochloa subquadripara (cori grass; green summer grass) [Poaceae]
FORAGE: forage - Yushania microphylla [Poaceae]
(B) FORAGE: forage - Zea luxurians (southern Guatemalan teosinte; Florida teosinte) [Poaceae]

Summary for Workgroup # 6
Crop Groups 15, 16 and 17
By Marija Arsenovic

Crop Group 15: Cereal Grains
In this Crop Group we deleted the following commodities: Sorghum, milo (555) and Teosinte (193). We also validated the new list of crops from the Greenbook and decided to have only Oats (407) and to eliminate all other oats variety names. We decided to have only Wheat (651) as the commodity name and to delete all other wheat variety names. In addition, we suggested the preferable term for Sorghum/milo should be Sorghum/grain (555).

Additions to Established Crop Groups: The Workgroup developed new subgroups for Crop Group 15:
15.2 – Small Grain Subgroup (15A)
15.3 – Corn Subgroup (15B)
15.4 – Cereal Grasses (-)
15.6 – Rice Subgroup (15C)
15.7 – Grain Sorghum Subgroup (15D)
15.9 – Rice and Wheat Subgroup (15E)
15.10 – Grain Corn and Subgroup (15F)
15.11 – Corn Subgroup (15G)
15.13 – Corn/Sorghum/Wheat Subgroup (15H)

In addition, Canarygrass, annual (15.1) and Romerito (15.5) are included in Crop Group 15.

Crop Group 16: Forage, Fodder and Straw of Cereal Grains
The existing EPA Crop Group was validated. No changes were made. The new list of crops from the Greenbook was validated. The Workgroup eliminated all oat varieties other than Oats (407) and all wheat varieties other than Wheat (651).

Crop Group 17: Grass, Forage, Fodder and Hay
The Workgroup validated the existing Crop Group 17 and suggested 2 new crop subgroups:
17.1 – Mixed Stands Crop Definition
17.2 – Grasses Grown for Seeds (-)
17.3 – Bermudagrass Subgroup (17B)
17.4 - Bluegrass Subgroup (17A)
17.5 - Bromegrass or Fescue Subgroup (17A)

We also validated the Author's Classification columns for CG 17, added and validated all new grass crops.

Petition To Establish Sub-Groups for Pesticide Residue Assessments in Forage Grasses (Crop Group 17) [1]

Prepared November 15, 2002 by Dudley T. Smith and Monte Rouquette, Professors, Department of Soil and Crop Sciences, Texas A&M University, College Station and Overton, Texas, respectively. Appreciation is expressed to Dr. Tom Cothern for his advice on grass physiology, Dr. Bryon Burson for reviewing listings of western range grasses, and Dr. David Bade for advice on conservation uses of grasses.

Background

Annual and perennial forage grasses provide the basic feed stuffs in the production of beef in the U.S. and hold similar importance in the diets of other ruminant livestock, including replacement dairy cattle, sheep and goats, and managed bison herds. In terms of land area, grasslands totally dwarf the acreage devoted to agronomic and horticultural crops, well exceeding 100 million acres in the U.S. and similarly in Mexico and Canada. Grasslands are the "residual claimant" for the use of agricultural land, grown where soils, climate, and/or rainfall are not suitable for other crops.

In the eastern North America, forage grasses are typically grown in managed, fertilized pastures and hay meadows to take advantage of natural rainfall. Since production is decidedly higher than in semi-arid western rangelands, plant pests present greater economic threats. Ruminant livestock are the most cost-effective means of harvesting and converting grasses into useful meat, milk, and fiber products. More than 92% of all grass production in North America is harvested by grazing livestock. In times of excess production (usually in spring) some pasture grasses may be harvested as hay or silage.

Forage grasses are also economically important in the semi-arid and arid west, generally defined as west of the 20-inch rainfall meridian, which runs north and south through the Great Plains region (through central Kansas). Most of the forage grasses in this region are native or introduced sustainable species. Production is dependent on seasonal rainfall and is highly variable between years. Pesticides are only used occasionally in these western grasslands, generally for periodic brush and weed control and grasshopper outbreaks.

Present Groupings for Grasses

A substantial amount of the forage grass production for North America is well covered in Crop Groups 15 and 16. Cereal Grains (Group 15) include cool-season grasses of wheat, oats, cereal rye (not to be confused with ryegrass), triticale (a wheat/rye cross), and other "small grains", plus warm season grasses such as the millets. Many of these grain crops are grazed in the vegetative stage. Crop Group 16 includes the forage, fodder, and straw of the grain crops in Group 15. All of these crops are annual grasses, consisting of both warm-season ("summer") and cool-season ("fall and winter") species.

The field testing and residue requirements for Crop Groupings 15 and 16 in Markle et al (1998) were reviewed by the authors. The representative crops of corn (maize), sorghum, and wheat and the other major species in these groups very adequately cover the geographic diversity and the biological/plant growth traits included in these Groups.

Crop Group 17 was originally established for grasses typically grown just for forage (grazed or harvested), fodder, and hay and silage (stored grasses). These grasses are grown primarily for ruminant livestock, receive limited fertilization or pesticides, and have few alternative uses. The present Group 17 includes all of Gramineae species used by livestock, with no distinction or sub-grouping on the basis of types of species, growth habits, or seasonality of production.

Representative crops in Group 17 include **bermudagrass, bluegrass, and bromegrass or fescue**. These species are grown in widely diverse areas and are rational choices as Representative Crops for the Group. However, some sub-groups within Group 17 are advisable for pesticide registration purposes.

Physiological basis for sub-groupings forage grasses

Grasses are commonly divided into either C-3 or C-4 groups by agronomists, basic differences in the physiology and plant metabolism. Cool-season grasses are commonly known as "C-3 grasses" and warm-season species are "C-4 grasses". Explanations of the differences in traits and metabolic pathways of C-3 and C-4 species can be found in nearly any modern plant physiology textbook or on the web. But some brief explanations and comparisons are useful in advocating sub-groupings for grasses.

C-3 Grasses

In the C-3 grasses, the first photosynthetic product from CO_2 fixation is PGA (phosphoglyceric acid), which is a three-carbon sugar molecule that is rapidly transformed into glucose or other simple sugars. These C-3 plants function under the Calvin cycle and are efficient under conditions of low light and lower temperatures and are more commonly found in the temperate/northern regions of the U.S. or during winter periods in the southern latitudes. Photorespiration (carbon losses during the day) tends to be higher in C-3's, compared to C-4 plants. Cool-season C-3 species produce biomass under cool, cloudy conditions that would be adverse to warm-season grasses. Present representative crops of bluegrass, bromegrass, and fescue would be included here.

C-4 Grasses

The enzymatic activity in C-4 plants is outlined in the Hatch-Slack cycle and is substantially different from that of C-3 plants. In C-4 grasses, the first stable photosynthetic product from the incorporation of atmospheric CO_2 is malate, a four-carbon organic acid that is further metabolized into sugars and starch. C-4 grasses are found in the hotter, drier regions of North America and have higher light and temperature requirements than C-3 plants. Further, C-4 plants have lower photorespiration and hence have a higher net assimilation of CO_2 and superior ability to utilize solar energy, especially at high light intensities. Hence C-4 plants are more "energy expensive" to sustain but tend to produce more biomass per land unit. Present representative crop of bermudagrass would be included here.

Proposed Sub-groups

All known annual and perennial grasses grown for forages and livestock use can be included in the two proposed sub-groups for Crop Group 17, based on the C-3 / C-4 or cool season/warm season growth habits. The similarities of metabolic pathways within each sub-group suggest similarities

in pesticide uptake and fate within each sub-group. Further, these groupings (proposed as 17A and 17B) would nicely accommodate similarities in geographic adaptation, seasonal growth habits and other traits, including similarities in pasture or harvested forage used by domestic livestock.

The following lists of forage grasses were reviewed and species allocated to 17A or 17B:

1. From the IR-4/USDA Crop Grouping Symposium - Oct 7-8, 2002.
   List from the MCl (yellow book) showing allocations of all listed species to a sub-group as noted in this section, and the "USDA listing of Food, food-additive, or forage crops absent from Food and Feed Crops of the United States" from the GRIN data base showing recommended allocations to either 17A or 17B sub-groupings for Gramineae (Poaceae genera) from the ARS Germplasm Data Base, noted in this section.
2. All of the remaining forage grasses listed in Markle et al (1998) could be classified into one of these two sub-groups.

RECOMMENDED: Two sub-groupings for Forage Grasses

Sub-group 17A Cool-Season Forage Grasses
Sub-group 17B Warm-Season Forage Grasses

Based on discussions at the IR-4/EPA Workshop on Crop Groupings (C/G 15-17 session) and subsequent reviews and studies by the authors, it is recommended that two sub-groups be established within the present C/G 17 on Forage Grasses. These subgroups would retain the use of the present Representative Species but more scientifically refine and define the hundreds of grass species grown in the U.S. for pasturage or harvested forage. The proposed sub-groups are described in more detail below:

1. **Sub-group 17A: Cool-Season Forage Grasses**

* This subgroup would include any and all cool-season annual and perennial grasses not already covered by Groups 15 and 16.

* Would include the C-3 grasses that use the Calvin metabolic cycle for carbon accumulation in plants; species that are typically found in the temperate areas of the U.S. and Canada

* **Major C-3 grasses (representative species)** of economic importance include:

bluegrass	a cool-season perennial sod-forming
bromegrasses	a cool-season perennial bunch-type
fescue	a cool-season perennial bunch-type

* **Other C-3 species include**:
  timothy, Reed canarygrass, wheatgrass, ryegrass and orchardgrass.

2. **Sub-group 17B: Warm-Season Forage Grasses**

* This subgroup would include any and all warm-season annual and perennial grasses not already covered by Groups 15 and 16

* Would include C-4 grasses that use the Calvin metabolic cycle for carbon accumulation; species typically found in southern climatic regions of the U.S. and Canada

* **Major C-4 grasses (representative species)** of economic importance include:
bermudagrass a sod-forming perennial grass, including Common and all hybridized cultivars of bermudagrass, such as 'Coastal'

* **Other C-4 species** include:
bahiagrass a perennial bunch grass
dallisgrass, rhodesgrass, gramagrass, buffalograss, lovegrass, buffelgrass, kleingrass, napiergrass, and numerous native western range grasses.

References and sources for additional information

Anon. 1948. Grasses. Yearbook of Agriculture. USDA. 892p. (overview and indices of grasses)

Barnes, Miller, and Nelson. 1995. Forages: the science of grassland agriculture. 5th ed. Iowa State Press. (contains information on all of the economically important forage grasses in the U.S.)

Gould, F. W. 1975. Grasses of Texas. Texas A&M Press. 653p. (an excellent summary of grasses important in western rangelands)

Hitchcock, A. S. 1951. Manual of the grasses of the United States. USDA Misc. Pub. 200. 1051p (reference on grasses and families for forage and conservation uses)

Markle, G. M., J. J. Baron, and B. A. Schneider. 1998. Food and feed crops of the United States: a regulatory food safety focus. Meister Pub., Willoughby, OH. 517 p.

Moser, L. E., D. R. Buxton, and M. D. Casler (ed.). Cool-season forage grasses. Amer. Soc. Agron., Agronomy Series Pub. No. 34. 841p.

The IR-4 Project

Providing Safe and Effective Pest Management Solutions for Specialty Crop Growers

IR-4/USDA Crop Grouping Symposium

Herbs and Spices

Workgroup # 8

Crop Group 19: Herbs and Spices

Herbs and Spices

Workgroup # 8

IR-4/USDA Crop Grouping Symposium
7-8 October 2002
Arlington, Virginia

Chair: David Thompson
Co-Chairs: Charles Coiner, Sarah Levy, Tom McGovern, Christina Swartz

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Workgroup # 8's mission was to review, evaluate and validate the established Crop Group #19 to include additional Crops.

Note: The established Crop Group reflected the US EPA's 40 CFR 180.41, Health Canada's Pest Management Regulatory Agency's Directive 98-02, and Mexico's Crop Grouping System which are identical

Workgroup # 8
Crop Group 19
Monograph numbers from the Greenbook are set off by parentheses
Information printed in capital letters and all strikethroughs have been added to the original document by Workgroup # 8

O = OIL F = FRESH DR = DRIED
SUBGROUPS ARE: A(19A, A.1, A.2)/B (19B)/C (19C)/D (19D)/ E (19E)
19 A.1 = FRESH 19 A.2 = DRIED 19 C = SPICES 19 D = DISTILLED OILS (ESSENTIAL OILS)

Crop Group 19: Herbs and Spices **Crop Groups** **US = 19 Canada = 19 Codex = HH ,HS, DH Mexico = 19**			**Author's Classification of Herbs and Spices** **Crop Groups** **US = 19 Canada = 19 Codex = HH, HS, DH Mexico = 19**	
Rep. Commodities	**Established Commodities**	**Validate: Y/N and SG**	**Proposed Commodity Additions**	**Validate: Y/N and proposed subgroup**
Basil (fresh & dried); black pepper; chive; and celery seed or dill seed	Allspice (011)	Y, B	Agrimony (005) DR	Y, A
	Angelica (018) DR	Y, A	Anise hyssop (020) F/DR	Y, A
	Anise (019)	Y, B	Asafetida (034) DR	Y, C
	Anise/star (-)	Y, B	Black bread weed (072) DR	Y, C
	Annatto (seed) (021)	Y, B	Burnet salad (103)	SEE BURNET
	Balm (039) F/DR	Y, A	Calamus-root (110) DR	Y, C
	Basil (045) F/DR/O	Y, A	Caper (120)	SEE CAPER BUDS
	Borage 086, 245) F/DR	Y, A	Cardamon-amomum (124) DR	Y, C
	Burnet (103) F/DR	Y, A	Cassia (132) DR	Y, C SEE CASSIA BUDS
	Camomile (112, 245) F/DR	Y, A	Celery (celery seed) (138)	SEE CELERY SEED
	Caper buds (120)	Y, B	Chaya (141) F	**Y, A**
	Caraway (121)	Y, B	Chia (151) DR	Y, C

	Caraway/black (122)	Y, B	Clove (165) DR	Y, C SEED OR BUDS
	Cardamom (123)	Y, B	Coneflower/ purple (190) F/DR/O	Y, A
	Cassia bark (132)	Y, B	Coriander (seed) (191)	SEE CORIANDER SEED
	Cassia buds (132)	Y, B	Coriander/false (192)	SEE CILANTRO
	Catnip (135) F/DR	Y, A	Curry (214)	SEE CURRY LEAF
	Celery seed (138)	Y, B	Daylily (221, 245) F/DR	Y, A
	Chervil (dried) (144) F/DR	Y, A	Dill (223,345)	SEE DILLWEED
	Chive (154) F/DR	Y, A *	Dock (224, ~~557, 558~~) F/DR	**Y, A**
	Chive/Chinese (155, 245) F/DR	Y, A *	Dokudami (225) F/DR	Y, A
	Cinnamon (158)	Y, B	Elecampane (230) DR	Y, C
	Clary (163) DR	Y, A	Epazote (232) F/DR	Y, A
	Clove buds (165)	Y, B	Evening Primrose/ common (234) F/DR/O	Y, A
	Coriander leaf (cilantro or Chinese parsley) (191) F/DR/O	Y, A	Fennel (238, 245)	SEE COMMON FENNEL
	Coriander seed (cilantro) (191)	Y, B	Fennel/Florence (239)	SEE FLORENCE FENNEL
	Costmary (195) DR	Y, A	Flower/edible (245) F/DR	**Y, A**
	Culantro (leaf) (191, 192) F/DR	Y, A	Galangal (247) F/DR	Y, C
	Culantro (seed) (191, 192)	Y, B	Geranium/ scented (251) F/DR	Y, A
	Cumin (209)	Y, B	Ginger/white (245,255) F/DR	Y, C

	Curry (leaf) (214) F/DR	Y, A	Gingko (256) F/DR	Y, A
	Dill (dillweed) (223) F/DR	Y, A	Gumweed/curleytop (274) F/DR	Y, A
	Dill (seed) (223)	Y, B	Honewort (282,301) F/DR	Y, A
	Fennel (common) (238, 245) F/DR	Y, A	Hop (284) DR	Y, A
	Fennel/Florence (seed) (239)	Y, B	Indian borage (295) F/DR	Y, A
	Fenugreek (240)	Y, B	Juniper (309) DR	Y, C
	Grains of paradise (264)	Y, B	Laurel/cherry (322) F/DR/O	Y, A
	Horehound (151, 285) DR	Y, A	Lemon verbena (~~245~~) (327) F/DR	Y, A
	Hyssop (290) F/DR	Y, A	Licorice (338) DR	Y, C
	Juniper berry (309)	Y, B	Lovage (348)	SEE LOVAGE LEAF
	Lavender (245, 323) F/DR	Y, A	~~Marigold/pot (245~~, 360) CALENDULA F/O	Y, A
	Lemongrass (328) F/DR	Y, A	Mexican mint marigold (376) F/DR	**Y, A**
	Lovage (leaf) (348) F/DR	Y, A	Mexican oregano (377) F/DR	Y, A
	Lovage (seed) (348)	Y, B	Mint (245, 382) For mint oil and dry leaf see J.2 and H.2 F/DR/O REP. CROP FOR ESSENTIAL OILS	Y, A/C/D
	Mace (405)	Y, B	Mioga (245, 383) F/DR	Y, A
	Marigold (245, 359) F/DR	Y, A	Monarda (245, 385) F/DR	Y, A
	Marjoram (245, 361) F/DR	Y, A	Mountainmint (387) F/DR	Y, A

	Mustard (seed) (398)	Y, B	Mustard seed (398)	Y, C, SEE MUSTARD (SEED)
	Nasturtium (245, 401) F/DR	Y, A	Parsley (439) ** F/DR/O	Y, A
	Nutmeg (405)	Y, B	Pennyroyal/ American (457) F/DR/O	Y, A
	Parsley (dried) (439) F/DR	Y, A	Pepper (459, 462) DR	Y, A
	Pennyroyal (456) F/DR	Y, A	Pepper/long (460) F/DR	Y, C
	Pepper, black (459)	Y, B	Pepperleaf (461) F/DR	Y, A
	Pepper, white (459)	Y, B	Perilla (245, 467) **F/DR**	Y, A
	Poppy (seed) (488)	Y, B	Poppy seed (488) DR	Y, C
	Rosemary (516) F/DR	Y, A	Safflower (524) (FLOWER) F/DR/O FIXED OIL	Y, C
	Rue (519) F/DR	Y, A	Saffron crocus (525)	SEE SAFFRON
	Saffron (525)	Y, B	Savory/summer (539)	SEE SAVORY
	Sage (245, 526) F/DR/O	Y, A	Savory/winter (539)	**SEE SAVORY**
	Savory/summer and winter (539) F/DR	Y, A	Sesame (seed) (543) DR/O (FIXED OIL)	Y, C
	Sweet bay (591) F/DR	Y, A	Sorrel, French (557) F/DR	Y, A
	Tansy (604) DR	Y, A	Sorrel, Garden (558) F/DR	Y, A
	Tarragon (607) F/DR	Y, A	Southernwood (561) F/DR	Y, A
	Thyme (245, 612) F/DR	Y, A	Spanish fennel (564) F/DR	Y, A
	Vanilla (629)	Y, B	Stevia (579) F/DR (SEE SWEETENERS)	Y, A

	Wintergreen (683) DR	Y, A	Sumac/smooth (586) F/DR	**Y, A**
	Woodruff (684) F/DR	Y, A	Swamp leaf (590) F/DR	**Y, A**
	Wormwood (232, 685) DR	Y, A	Sweet cicely (148, 592) F/DR	**Y, A**
			Tonka bean (620) DR	**Y, C**
			Turmeric (624) DR	Y, C
			Vietnamese coriander (638) F/DR	Y, A
			Violet (245,639) F/DR	Y, A
			Waterchestnut SEED (646) DR	Y, C
			Yarrow (689) F/DR	Y, A

*CHIVE AND CHINESE CHIVE ALSO TO CG 3 COVERED BY GREEN ONION
**NEED FRESH AND DRIED PARSLEY FOR CROP GROUP 4

Subgroup 19 A – Established Subgroup
Subgroup 19 A.1 – New Subgroup
Subgroup 19 A.2 – New Subgroup
Subgroup 19 B – Established Subgroup
Subgroup 19 C – New Subgroup
Subgroup 19 D – New Subgroup
Subgroup 19 E – New Subgroup

Subgroups for Crop Group 19: Herbs and Spices

Subgroup 19 A. Herb subgroup (ESTABLISHED)		
Rep. Commodities	**Commodities**	**Validate: Y/N**
Basil (fresh & dried) and chive	Angelica; balm; basil; borage; burnet; camomile; catnip; chervil (dried); chive; chive/Chinese; clary; coriander (leaf); costmary; culantro (leaf); curry (leaf); dillweed; horehound; hyssop; lavender; lemongrass; lovage (leaf); marigold; marjoram; nasturtium; parsley (dried); pennyroyal; rosemary; rue; sage; savory/summer and winter; sweet bay; tansy; tarragon; thyme; wintergreen; woodruff; and wormwood	NO
SUBGROUP 19 A.1 FRESH HERBS (PROPOSED)		
Rep. Commodities	**Commodities**	**Validate:Y/N**
FRESH BASIL OR FRESH MINT; FRESH DILL. (FOUR TRIALS OF EACH)	SAME CROPS AS 19A BUT DELETE CHIVE AS REP CROP AND ADD MINT, ETC AS NOTED ABOVE FOR 19A	Y
SUBGROUP 19 A.2 DRIED HERBS (PROPOSED)		
Rep. Commodities	**Commodities**	**Validate:Y/N**
DRIED BASIL OR DRIED MINT, DRIED DILL. (4 TRIALS OF EACH)	SAME AS 19 A EXCEPT DELETE CHIVE AS REP CROP AND ADD MINT, ETC, AS NOTED ABOVE	Y
Subgroup 19 B. Spice subgroup (ESTABLISHED)		
Rep. Commodities	**Commodities**	**Validate: Y/N**
Black pepper; and celery seed or dill seed	Allspice; anise (seed); anise/star; annatto (seed); caper (buds); caraway; caraway/black; cardamom; cassia (buds); celery (seed); cinnamon; clove (buds); coriander (seed); culantro (seed); cumin; dill (seed); fennel/common; fennel/Florence (seed); fenugreek; grains of paradise; juniper (berry); lovage (seed); mace; mustard (seed); nutmeg; pepper/black; pepper/white; poppy (seed); saffron; and vanilla New adds - cardamon-amonum; chia (seed); sesame seed; Spanish fennel (seed), sweet cicely seed; tonka bean; cassia (bark)	NO
SUBGROUP 19 C SPICES (PROPOSED)		
Rep. Commodities	**Commodities**	**Validate:Y/N**
DRIED HERBS.	USE DRIED HERBS FROM SUBGROUP 19 A.2 AND INCLUDE ALL SPICES FROM 19 B ABOVE INCLUDING ADDS	Y

SUBGROUP 19 D HERB ESSENTIAL OILS (PROPOSED)		
Rep. Commodities	**Commodities**	**Validate: Y/N**
MINT (2 PROCESSING MINT TRIALS, 1 PNW, 1 MIDWEST)	SEE ABOVE LIST OF CROPS AS ESSENTIAL OILS, E.G. MINT, DILL (DO NOT INCLUDE ABOVE OIL CROPS FOR FIXED OILS WHICH ARE IN PROPOSED CROP GROUP F).	Y
Subgroup 19E Spice Subgroup, Except Black and White Pepper (PROPOSED)		
Rep. Commodities	**Commodities**	**Validate: Y/N**
Dill seed or Celery seed and Mustard Seed	Allspice; anise (seed); anise/star; annatto (seed); caper (buds); caraway; caraway/black; cardamom; cassia (bark); cassia (buds); celery (seed); cinnamon; clove (buds); coriander (seed); culantro (seed); cumin; dill (seed); fennel/common; fennel/Florence (seed); fenugreek; grains of paradise; juniper (berry); lovage (seed); mace; mustard (seed); nutmeg; poppy (seed); saffron; and vanilla New - cardamon-amonum; chia (seed); sesame seed; Spanish fennel (seed); sweet cicely seed; tonka bean	NO

Workgroup #: __8_____Crop Group: __19_____

Additions to Established Crop Groups and Subgroups							
Common Name	**Scientific Name**	**Group/SG Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate:Y/N and subgroup**
19.1 Hemp Seed	*Cannabis sativa* (Cannabidaceae)	19B	Spice	Seed and oil	Rose Kachadoorian (OR)		Y, C
19.2 Lemon Myrtle	*Backhousia citriodora* (Leptospermaceae)	19A	Basil	Leaves, fresh and dried	G. Bulow (Australia)	Anise flavor, essential oil used as flavoring of foods.	Y, A
19.3 Mint, fresh	*Mentha* spp. (Lamiaceae)	19A	Basil	Leaves, (fresh)	R. Lundy (MIRC) and H. Chen		Y, A
19.4 Saururus	*Houttuynia cordata* (Saururaceae)	19A	Basil	Tender shoots and stems	H. Chen	Monograph 225	Y, A
19.5 Seleng Wormwood	*Artemesia selengensis* (Asteraceae)	19A	Basil	Tender shoots and stems	H. Chen		Y, A

19.6 Shepherds Purse	*Capsella bursa-pastoris* (Brassicaceae)	19A	Basil	Young plants	H. Chen		Y, A
19.7 Black Cohosh	Actaea racemosa (Ranunculaceae)	19A	Basil	Leaves	M. Braverman		Y, A
19.8 Witch Hazel	Hamamelis virginiana (Hamamelidaceae)	19A	Basil	Leaves	M. Braverman		Y, A
19.9 (Reserved)							
19.10 Feverfew (fresh and dried)	*Tanacetum parthemium* (Asteraceae)	19A	Basil	Top	J. Rabin (NJ)		Y, A
19.11 Edible Flowers	List in monograph 245	19A	Basil	Flowers	IR-4		Y, A
19.12 Chinese Box Orange Leaf	*Severinia buxifolia* (Rutaceae)	19A	Basil	Leaves	M. Braverman	China	Y, A
19.13 Barberry leaf	*Berberis vulgaris* (Berberidaceae)	19A	Basil	Leaves	M. Braverman	Dried leave for tea	Y, A
19.14 Garlic mustard	*Alliaria petiolata* (Brassicaceae)	19A	Basil	Leaves	M. Braverman	Flavoring	Y, A
19.15 Ramsons, Bears Garlic	*Allium ursinum* (Liliaceae)	19A	Basil	Leaves and bulbs (top)	M. Braverman	Flavoring, CG 3	NO
19.16 Sweet Rocket	*Hesperis matronalis* (Brassicaceae)	19A	Basil	Tops	M. Braverman	Young leaves, flowers, seed pods and seed are edible	Y, A
19.17 Biting Stonecrop	*Sedum acre* (Crassulaceae)	19A	Basil	Leaves	M. Braverman	Leaves dried and ground for seasoning	Y, A
19.18 Red Valarian	*Centranthus ruber* (Valarianaceae)	19A	Basil	Young Leaves	M. Braverman	Eaten raw in salads	Y, A

19.19 Showy Calamint	*Calamintha grandifolia* (Lamiaceae)	19A	Basil	Leaves	M. Braverman	Leaves mint-like seasoning or tea	Y, A
19.20 Lesser Calamint	*Calamintha nepeta* (Lamiaceae)	19A	Basil	Leaves	M. Braverman		Y, A
19.21 Calamint	*Calamintha sylvatica* (Lamiaceae)	19A	Basil	Leaves	M. Braverman	Roman style vegetable	Y, A
19.22 Scotch Broom	*Cytisus scoparius* (Fabaceae)	19A	Basil	Flower buds and tops	M. Braverman		Y, A
19.23 Lady's Mantle	*Alchemilla xanthochlora* (Rosaceae)	19A	Basil	Leaves	M. Braverman		Y, A
19.24 Mullein	*Verbascum thapsus* (Scrophulariaceae)	19A	Basil	Leaves	M. Braverman	Fresh or dried leaves used in tea	Y, A
19.25 Foxglove	*Digitalis purpurea* (Scrophulariaceae)	19A	Basil	Leaves	M. Braverman	Dried leaves source of Digitalis	NO
19.26 New Spice Subgroup with Black Pepper		19B	Dill Seed or Celery Seed, Mustard Seed or Black Pepper	Seed	M. Braverman		NO
19.27 New Spice Subgroup without Pepper		19C	Dill Seed or Celery Seed, Mustard Seed	Seed	M. Braverman		NO
19.28 Fresh Herbs to 4A	See 19A list for fresh herbs attached	19A to 4A	Lettuce or Spinach	Leaves	C. Coiner (FL)	C. Meister (FL) Move all fresh herbs in 19A to 4A	Y

19.29 Ylang Ylang	*Cananga odorata* (Annonaceae)	19A		Flowers	M. Braverman	Essential oil in flowers used to flavor candies, etc.	Y, A/D
19.30 Upland Cress Seed	*Barbarea vulgaris* (Brassicaceae)	19B/19C	Dill seed, Mustard Seed	Seed	D. Smith (TX)	Seeds used like coriander seed Monograph 203	Y, C

ADDITIONS TO CROP GROUP 19 BY WORKGROUP # 8

Common Name	Scientific Name	Group/SG Placement	Rep Crop	Edible Part	Person(s) Requesting	Comments	Validate: Y/N
BETEL VINE	*PIPER BETEL*	19				FOOD USE	AI
SWEETLEAF BUSH	*SAUROPUS ANDROGYNOUS*	19 A/B/C	DILL, MINT F/DR	TENDER SHOOTS, YOUNG AND OLD LEAVES, FLOWERS AND FRUITS			Y, A
SCREWPINE BAI TOEY DOON PANDAN	*PANDANUS AMARYLLIFOLIUS*	19 A	DILL, MINT F/DR	LEAF	M. KAWATE		Y, A
KAFFIR LIME LEAF	*CITRUS HYSTRIX*	19A/19B	DILL, MINT F/DR	LEAF	M. BRAVERMAN		Y, A

COMMENT BY C. COINER:
“THE WORKGROUP PUT MEDICINAL HERBS/PLANTS IN CROP GROUP 19 FOR TOLERANCE PURPOSES, ONLY IF USED FOR FOOD OR BEVERAGE. IF MEDICINAL ONLY OR NO INFO AVAILABLE, IT WAS EXCLUDED.”

SUMMARY OF WORKGROUP # 8
BY DAVE THOMPSON

Initially, mint and dill were chosen as rep crops for fresh and dried herbs. In further discussion basil was brought up as a possible replacement for dill. Dill was initially chosen to provide dill seeds for the spices. When we decided/proposed that dried herbs cover spices, we no longer needed dill to be a rep crop, so basil was chosen. Basil has an absorbent, not shiny smooth leaf and high moisture content, so the difference between fresh and dried will be maximized (worst case).

Regarding the oils, we identified two main types: 1) Essential oil (distilled or volatile oil) like mint and dill which is primarily steam distilled; 2) Fixed oil (pressed mechanically and/or solvent extracted) from seeds or other plant parts, like sesame, flax, peanut, safflower, etc.

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Fresh Culinary Herbs
(Already in Crop Group 4A)

1. Amaranth
2. Arugula
3. Chervil
4. Chrysanthemum
5. Corn Salad
6. Cress, Upland
7. Dandelion
8. Dock
9. Endive
10. Orach
11. Parsley
12. Purslane
13. Radicchio (Red Chicory)

Reference:

1) US EPA 40 CFR 180.41
2) *Food and Feed crops of the United States*, 1998 by George Markle, Jerry Baron and Bernard Schneider

Fresh Culinary Herbs
19 A to 3:

1. Fresh chives
2. Chinese chives

Add to 4 A:

1. Chicory leaf (Frisse/Frisee)
2. Beet top
3. Swiss chard

Add to 5 B

1. Turnip top

19 A to 4A:

1. Angelica
2. Balm*
3. Basil*
4. Borage
5. Burnet
6. Camomile
7. Catnip*
8. Chervil
9. Clary
10. Coriander leaf (Cilantro, Chinese parsley)
11. Costmary
12. Culantro
13. Curry leaf
14. Dillweed
15. Horehound*
16. Hyssop*
17. Lavender*
18. Lemongrass
19. Lovage (leaf)
20. Marigold
21. Marjoram* (Oregano)
22. Nasturtium
23. Parsley
24. Rosemary*
25. Rue
26. Sage*
27. Savory, summer*
28. Savory, winter*
29. Sweet bay
30. Tansy
31. Tarragon
32. Thyme*
33. Wintergreen
34. Woodruff
35. Wormwood
36. Pennyroyal*

*Lamiaceae/mint family

Reference:

3) US EPA 40 CFR 180.41
4) *Food and Feed crops of the United States*, 1998 by George Markle, Jerry Baron and Bernard Schneider

WG # 8.3 12/10/02

The IR-4 Project

Providing Safe and Effective Pest Management Solutions for Specialty Crop Growers

IR-4/USDA Crop Grouping Symposium

Oilseed

Workgroup # 9

Crop Group F (20): Oilseed

Oilseed

Workgroup # 9

IR-4/USDA Crop Grouping Symposium
7-8 October 2002
Arlington, Virginia

Chair: Frederick Salzman
Co-Chairs: Felicia Fort, Bill Smith, Rich Zollinger

Workgroup # 9's mission was to review, evaluate and validate the established Crop Group # 20 for Canada and Mexico and the Proposed Crop Group F for the U.S. to include additional crops.

Note: The established Crop Group reflected the US EPA's 40 CFR 180.41, Health Canada's Pest Management Regulatory Agency's Directive 98-02, and Mexico's Crop Grouping System which are identical, except for Crop Group #20 which is identical for Canada and Mexico only.

Workgroup # 9
Crop Group F
Monograph numbers from the Greenbook are set off by parentheses
Information printed in capital letters and all strikethroughs have been added to the original document by Workgroup # 9

Proposed Crop Group F: Oilseed **Current Crop Group** **US = Miscellaneous Codex = SO, OR, OC**		**Oilseed Crop Grouping (20) for Canada and Mexico**
Author's Commodity List (Greenbook) **Greenbook monograph number follows the crop name**	**Validation: Y/N**	Rapeseed *(Brassica napus*)
Ben moringa seed (066) TREE (Subgroup Fh)	Y	Rapeseed, Indian (*Brassica campestris*)
Borage (086)	Y ALSO IN HERBS (19) AND/OR LEAFY GREENS (4)	Mustard seed, Indian (*Brassica juncea*)
Buffalo gourd (098) TUBERS IN ROOT AND TUBER	Y	Mustard seed Field (*Brassica campestris*)
Castor oil plant (133)	Y	Flax, Linseed (*Linum usitatissimum*)
Coconut (185) TREE	Y	Sunflower seed (*Helianthus annuus*)
Cottonseed (196)	Y	Safflower (*Carthamus tinctorius*)
Crambe (199) NON-FOOD OIL	Y*	
Cuphea (210)	Y	
Euphorbia (233) NON-FOOD OIL	Y*	
Evening primrose/common (234)	Y INCLUDE ALSO WITH LEAFY GREENS (4)	
Flax (244)	Y	
Jojoba (303) NON-FOOD OIL	Y*	

Kapok oil (313) TREE	Y	
Lesquerella (332) NON-FOOD OIL	Y*	
Meadowfoam (371) NON-FOOD OIL	Y*	
Mustard seed (398)	Y	
Niger seed (404)	Y*	
Olive (418) TREE	Y	
Palm oil (433) TREE	Y	
Peanut (453)	Y	
Poppy seed (488)	Y	
Rape (seed) (507)	Y	
Safflower (524)	Y	
Sesame (543)	Y	
Shea butter tree (546) TREE	Y	
Soybean (562)	Y	
Sunflower (587)	Y	
Vernonia (633) NON-FOOD OIL	Y*	
See Work sheets for Additions for Proposed CG F		

*NON-FOOD OIL – WHAT IS THE IMPACT OF PUTTING THE OIL USE IN A CROP GROUP? THE GROUP FELT THAT IT IS BEST TO SEPARATE OUT THE NON-FOOD OIL CROPS WITH EDIBLE MEAL ONLY INTO SUBGROUP Fe (1).

Proposed Subgroups for Group F

Subgroup: F a		
Rep. Commodities	**Commodities**	**Validate: Y/N**
Sunflower, rapeseed, cottonseed, and soybean	~~Ben moringa seed~~; Borage; ~~Buffalo gourd~~; Castor oil plant (ANNUAL); ~~Coconut~~; Cottonseed; ~~Crambe~~; Cuphea~~; Euphorbia~~; ~~Evening primrose/common~~; Flax; ~~Jojoba~~; ~~Kapok oil~~; ~~Lesquerella~~; ~~Meadowfoam~~; Mustard seed~~; Niger seed~~; ~~Olive; Palm oil~~; Peanut; Poppy seed; Rape (seed); Safflower; Sesame; ~~Shea butter tree~~; Soybean; Sunflower; ~~Vernonia~~	Y

Subgroup: F b		
Rep. Commodities	**Commodities**	**Validate: Y/N**
Sunflower and rapeseed	Borage; ~~Crambe~~; Flax; ~~Meadowfoam~~; Mustard seed; Rapeseed; Safflower; Sunflower	Y

Subgroup: F c		
Rep. Commodities	**Commodities**	**Validate: Y/N**
Rapeseed	Borage; ~~Crambe~~; Flax; ~~Meadowfoam~~; Mustard seed; Rapeseed; ~~Safflower~~	Y

NEW SUBGROUP: F d		
Rep. Commodities	**Commodities**	**Validate: Y/N**
SUNFLOWER	SUNFLOWER; SAFFLOWER	Y

Subgroup: ~~Fd~~ Fe		
Rep. Commodities	**Commodities**	**Validate: Y/N**
Soybean and Cottonseed	~~Ben moringa seed~~; ~~Buffalo gourd~~; Castor oil plant (ANNUAL); ~~Coconut~~; Cottonseed; Cuphea; ~~Euphorbia~~; ~~Evening primrose/common~~; ~~Jojoba~~; ~~Lesquerella~~; ~~Niger seed~~; ~~Olive~~; ~~Palm oil~~; Peanut; Poppy seed; Sesame; ~~Shea butter tree~~; Soybean; ~~Vernonia~~ BORAGE; FLAX	Y

NEW SUBGROUP: F e (1)		
Rep. Commodities	**Commodities**	**Validate: Y/N**
SOYBEAN MEAL OR COTTONSEED MEAL	CRAMBE SEED MEAL; EUPHORBIA SEED MEAL; JOJOBA SEED MEAL; NIGER SEED MEAL; LESQUERELLA SEED MEAL; MEADOWFOAM SEED MEAL; VERNONIA SEED MEAL; SOYBEAN MEAL; COTTONSEED MEAL	Y

Subgroup: ~~Fe~~ Ff		
Rep. Commodities	Commodities	**Validate: Y/N**
Soybean	~~Ben moringa seed~~; ~~Buffalo gourd~~; Castor oil plant (ANNUAL); ~~Coconut~~; Cuphea~~; Euphorbia; Evening primrose/common~~; ~~Jojoba; Lesquerella; Niger seed; Olive; Palm oil~~; Peanut; Poppy seed; Sesame; ~~Shea butter tree~~; Soybean; ~~Vernonia~~; BORAGE; FLAX	Y
Subgroup: ~~Ff~~ fg		
Rep. Commodities	**Commodities**	**Validate: Y/N**
Cottonseed	~~Ben moringa seed; Buffalo gourd~~; Castor oil plant (ANNUAL); ~~Coconut~~; Cuphea; ~~Euphorbia; Evening primrose/common; Jojoba; Lesquerella; Niger seed; Olive; Palm oil; Peanut~~; Poppy seed; Sesame; ~~Shea butter tree; Soybean; Vernonia~~; COTTONSEED	Y

NEW SUBGROUP Fh		
Rep. Commodities	**Commodities** OIL SEED PLANTS GROWN MORE THAN ONE YEAR	**Validate: Y/N**
OLIVE	BEN MORINGA SEED; COCONUT; KAPOK OIL; OLIVE; PALM OIL; SHEA BUTTER TREE; CASTOR OIL PLANT (PERENNIAL); BUFFALO GOURD; EVENING PRIMOSE/COMMON; TEA OIL PLANT	Y

Workgroup Worksheet
Workgroup #: ___9_____ Crop Group: _ 20 (F) Oilseed_____

Additions to Proposed Crop Groups and Subgroups							
Common Name	**Scientific Name**	**Group/Subgroup Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate: Y/N**
F.1 Gold of Pleasure	*Camelina sativa* (Brassicaceae)	Oilseed (for 20)	Rapeseed	Seed and oil	Dow	Oil. Also fresh leaves eaten like arugula	AI

F.2 Cool climate oil seed crops subgroup	Canada's Crop Group 20, page IX of Green Book	Oilseed Subgroup	Rapeseed and Sunflower	Seed and oil	IR-4 Braverman	For crops, see Authors Classification, page 380 of Green Book	YES SEE SUB GROUP Fb
F.3 Warm climate oilseed crops subgroup	See Authors Classification	Oilseed Subgroup	Cotton and Soybean	Seed and oil	IR-4 Braverman	For crops, see Authors Classification, page 380 of Green Book	YES SEE SUBGROUP Fe
F.4 Rapeseed (Canola)	*Brassica napus* (Brassicaceae)	Canada's Crop Group 20	Rapeseed	Seed and oil	L. Zang (Syngenta)		Y
F.5 Mustard	*Brassica hirta*, spp. (Brassicaceae)	Canada's Crop Group 20	Rapeseed	Seed and oil	L. Zang (Syngenta)		Y
F.6 Safflower	*Carthamus tinctorious* (Asteraceae)	Canada's Crop Group 20	Sunflower	Seed and oil	L. Zang (Syngenta)		Y
F.7 Flax	*Linum usitatissimum* (Linaceae)	Canada's Crop Group 20	Rapeseed	Seed and oil	L. Zang (Syngenta)	Monograph 244	Y
F.8 Sunflower	*Helianthus annus* (Asteraceae)	Canada's Crop Group 20	Sunflower	Seed and oil	L. Zang (Syngenta)		Y
F.9 Soybean Oil	Soybean Subgroup	F – Crop Group 20	Soybean	Seed and oil	IR-4	Subgroup	Y
F.10. Cottonseed	Cottonseed Subgroup	F – Crop Group 20	Cottonseed	Seed and oil	IR-4	Subgroup	Y
ADDITIONS TO PROPOSED CROP GROUP F BY WORKGROUP # 9							
TEA-OIL PLANT	*CAMELLIA OLEIFERA* THEACEAE	OILSEED	COTTONSEED	SEED FOR OIL	J. RUTER (GA)	TEMPURA OIL FRUIT PLUM SIZE WITH 1-4 SEEDS. CAN FEED FRUIT PULP. SHRUB LIKE BLUEBERRY	Y

1. Change the following crop definitions as follows:

A.) Rapeseed……..Brassica napus, B. campestris, and ~~crambe abyssinica~~ (oilseed-producing varieties only which include canola and ~~crambe~~.)

B.) Peas…….(include chickpea ~~and~~ "or" garbanzo beans)

2. To include a crop in this group, the following questions were addressed:

A.) How do these plants grow? (Annual vs. perennial, tree vs. herbaceous)

B.) Is the oil edible?

C.) Is the meal that remains after the oil is pressed/extracted edible or a component of animal feed?

3. For all the oilseed additions on the ARS list below, additional information is needed

FOOD, FOOD-ADDITIVE, OR FORAGE CROPS ABSENT FROM *Food and Feed Crops of the United States*

FOOD: beverage base, oil/fat, starch, vegetable - *Acrocomia aculeata* (coyoli palm; macaw palm; gru-gru palm; Paraguay palm) [Arecaceae]
FOOD: oil/fat - *Afraegle paniculata* (Nigerian powder-flask-fruit) [Rutaceae]
FOOD: oil/fat - *Allanblackia floribunda* [Clusiaceae]
FOOD: fruit, oil/fat - *Astrocaryum aculeatum* (tucuma; tucum palm) [Arecaceae]
FOOD: vegetable - *Astrocaryum jauari* [Arecaceae]
FOOD: oil/fat - *Astrocaryum vulgare* (tucuma palm; tucum palm; awarra palm) [Arecaceae]
FOOD: oil/fat - *Attalea cohune* (cohune palm) [Arecaceae]
FOOD: oil/fat - *Attalea funifera* (pissaba palm; coquilla-nut; Bahia piassava palm) [Arecaceae]
FOOD: oil/fat, vegetable - *Attalea speciosa* (babassu) [Arecaceae]
FOOD: oil/fat - *Baillonella toxisperma* (djave) [Sapotaceae]
FOOD: fruit, oil/fat - *Balanites maughamii* (manduro) [Balanitaceae]
FOOD: oil/fat - *Brassica rapa subsp. campestris* (colza; bird rape; annual turnip rape; wild turnip) [Brassicaceae]
FOOD: nut, oil/fat - *Canarium indicum* (galipnut; galip) [Burseraceae]
FOOD: nut, oil/fat - *Carya hunanensis* [Juglandaceae]
FOOD: oil/fat - *Conringia orientalis* (hare's-ear mustard)(hare's-ear cabbage) [Brassicaceae]
FOOD: oil/fat, vegetable - *Crambe hispanica* [Brassicaceae]
FOOD: oil/fat - *Cucumeropsis mannii* (white-seed-melon) [Cucurbitaceae]
FOOD: oil/fat - *Garcinia morella* [Clusiaceae]
FOOD: oil/fat - *Hesperis matronalis* (sweet rocket; dame's-violet; dame's rocket; damask-violet) [Brassicaceae]
FOOD: oil/fat - *Hodgsonia macrocarpa* (Chinese lardfruit) [Cucurbitaceae]

FOOD: oil/fat - *Lophira lanceolata* [Ochnaceae]
FOOD: oil/fat - *Olea tsoongii* [Oleaceae]
FOOD: nut, oil/fat - *Pangium edule* [Flacourtiaceae]
FOOD: oil/fat - *Pentaclethra macrophylla* (owala-oil-tree; oilbeantree; atta-bean) [Fabaceae]
FOOD: fruit, oil/fat - *Poraqueiba sericea* [Icacinaceae]
FOOD: oil/fat, vegetable - *Raphanus sativus* var. *oleiformis* (oil radish; fodder radish) [Brassicaceae]
FOOD: oil/fat - *Renealmia alpinia [*Zingiberaceae]
FOOD: nut, oil/fat - *Schinziophyton rautanenii* (mugongo; mongongo) [Euphorbiaceae]
FOOD: oil/fat, vegetable - *Sesamum radiatum* [Pedaliaceae]
FOOD: oil/fat - *Syagrus coronata* (ouricury palm; licuri palm) [Arecaceae]
FOOD: oil/fat, vegetable - *Telfairia occidentalis* (oysternut)(fluted-pumpkin; fluted gourd) [Cucurbitaceae]
FOOD: fruit, oil/fat - *Telfairia pedata* (oysternut; Zanzibar oilvine) [Cucurbitaceae]
FOOD: oil/fat, seeds - *Torreya nucifera* (Japanese-nutmeg; Japanese torreya) [Taxaceae]
FOOD: oil/fat - *Triadica sebifera* (Chinese tallowtree) (tallowtree; popcorntree; candleberry-tree) [Euphorbiaceae]
FOOD: oil/fat - *Virola surinamensis* (white ucuba; ucahub-nut) [Myristicaceae]
FOOD: fruit, oil/fat - *Ximenia americana* (tallowwood; tallow nuts; false sandalwood) [Olacaceae]

4. The group did not discuss the following oils, but they should be addressed: oils from pumpkin seed, avocado, hemp, rose hip, apricot, grape seed, hazelnut, kiwi seed, macadamia, passionflower, pecan and pistachio.

The IR-4 Project

Providing Safe and Effective Pest Management Solutions for Specialty Crop Growers

IR-4/USDA Crop Grouping Symposium

Sugar and Stimulant Crops, including Sugar and Syrups Crops, Seeds for Beverages and Sweets, and Teas

Workgroup #10

Crop Group G: Dried Edible Plant Tops (Stimulants)

Crop Group H (24): Plants Grown for Extracts and Dried, Above-Ground Plant Parts

Crop Group I (25): Tropical and Subtropical Plants with Edible Seeds for Beverages and Sweets

Crop Group J (26): Grasses for Sugar or Syrup

Crop Group K: Forestry

Sugar and Stimulant Crops, including Sugar and Syrups Crops, Seeds for Beverages and Sweets, and Teas.

Workgroup #10

IR-4/USDA Crop Grouping Symposium
7-8 October 2002
Arlington, Virginia

Chair: Kenneth Samoil
Co-Chairs: Jeff Herndon, Mike Kawate, Bob Osgood, John Punzi

Workgroup #10's mission was to review, evaluate and validate the proposed Crop Groups G, H, I, J, and K to include additional crops.

Note: No established Crop Groups for these commodities exist in U.S, Canada and Mexico

Workgroup #10
Proposed Crop Groups G, H, I, J and K

Monograph numbers from the Greenbook are set off by parentheses
Information printed in capital letters and all strikethroughs have been added to the original document by Workgroup # 10

Proposed Crop Group G: Dried Edible Plant Tops (Stimulants) **Current Crop Group** **US = Miscellaneous Canada = None Codex = DT Mexico = None**	
Author's Commodity List (Greenbook) **Greenbook monograph number follows the crop name**	**Validation:** **Yes or No**
Tea (608)	NO
Tobacco (616)	NO
See Work sheets for Additions to Proposed CG G	
Tea – Move to proposed group H	YES
Tobacco – move to Proposed group H	NO

Workgroup Worksheet
Workgroup #: ___10_____Crop Group: _ G (Dried Plant Tops – Dried Top)__

Additions to <u>Proposed</u> Crop Groups and Subgroups							
Common Name	**Scientific Name**	**Group/SG Placement**	Rep Crop	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate :Y/N**
G.1 Tea	*Camellia sinensis* (Theaceae)	G	Tea	Leaves	IR-4	Monograph 608 Move to Crop Group H	NO
G.2 Tobacco	*Nicotiana tabacum* (Solanaceae)	G		Leaves	IR-4	Monograph 616 Delete tobacco	NO

Proposed Crop Group H: ~~Teas~~ PLANTS GROWN FOR EXTRACTS AND DRIED, ABOVE-GROUND PLANT PARTS **Current Crop Group** **US = Miscellaneous Canada = None Codex = DT Mexico = None**	
Author's Commodity List (Greenbook) **Greenbook monograph number follows the crop name**	**Validation:** **Yes or No**
Comfrey ((189)	YES
Limeblossom (341)	YES
Stevia (579)	YES
Tea (608)	YES

Tobacco (616)	NO
See Work sheets for Additions for Proposed CG H	

Proposed subgroups for group H

Subgroup Ha		
Rep. Commodities	**Commodities**	**Validate:Y/N**
Tea and Tobacco	Comfrey; Limeblossom; Stevia; Tea; Tobacco; Rooibos	NO
Subgroup Hb		
Rep. Commodities	**Commodities**	**Validate: Y/N**
Tea	Comfrey; Limeblossom; Stevia; Tea; Rooibos	NO

Workgroup Worksheet
Workgroup #: ___10_____Crop Group: _ H ~~(Tea) (Dried Top)~~____

Additions to Proposed Crop Groups and Subgroups							
Common Name	**Scientific Name**	**Group/SG Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate: Yes or No**
H.1 ~~Sorrel~~ ~~Nut~~ ROSELLE	*Hibiscus sabdariffa* (Malvaceae)	H		Seed	(USDA)	Used as tea, also see 8.3 CHANGE COMMON NAME TO ROSELLE	YES
H.2 Mint Oil and Dry Leaves	*Mentha spp.* (Lamiaceae)	H	Mint FRESH, DRIED, OIL	Oil, dry tea leaves	R. Lundy (MIRC)	Oil from dried plant and tea from dried leaves	YES
H.3 Rooibos	*Aspalathus linearis* (Fabaceae)	H		Leaves	IR-4	Redbush used as tea	YES
H.4 Hop	*Humulus lupulus* (Cannabinaceae)	H		Cone extract	IR-4		YES

ADDITIONS TO PROPOSED CROP GROUP H BY WORKGROUP 10							
Common Name	**Scientific Name**	**Group/SG Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate: Yes or No**
LEMONGRASS (328)		H	MINT - FRESH, DRIED	DRIED LEAVES	R. LUNDY		YES
LAVENDER (323)		H	MINT – FRESH, DRIED, OIL	DRIED LEAVES AND OIL	R. LUNDY		YES

DILL (223)		H	MINT – FRESH, DRIED, OIL	DRIED LEAVES AND OIL	R. LUNDY		YES
MAMAKI TEA	*PIPTURUS ALBIDUS*	H	MINT – FRESH, DRIED	DRIED LEAVES	R. OSGOOD	NONI TEA	YES
CHAMOMILE (112)		H	MINT – FRESH, DRIED, OIL	DRIED LEAVES AND OIL	R. LUNDY		YES
CLARY SAGE	*SALVIA SP.*	H	MINT – FRESH, DRIED, OIL	DRIED LEAVES AND OIL	R. LUNDY		YES
BASIL (O45)		H	MINT – FRESH, DRIED, OIL	DRIED LEAVES AND OIL	R. LUNDY		YES
CATNIP (135)		H	MINT – FRESH, DRIED, OIL	DRIED LEAVES AND OIL	R. OSGOOD		YES
COFFEE LEAVES (299)		H	MINT – FRESH, DRIED	DRIED LEAVES	R. OSGOOD		YES
WINTERGREEN (683)		H	MINT – FRESH, DRIED, OIL	DRIED LEAVES AND OIL	R. LUNDY		YES
WORMWOOD (232)		H	MINT – FRESH, DRIED, OIL	DRIED LEAVES AND OIL	R. LUNDY		YES
SWEET BIRCH	*BETUAL LENTA*	H			R. LUNDY		YES
DALMATIAN SAGE	*SALVIA SP.*	H			R. LUNDY		YES
LEMON VERBENA	*ALOYSIA TRIPHYLLA*	H			R. LUNDY		YES
LEMON BALM	*MELISSA OFFICINALIS*	H			R. LUNDY		YES
CORIANDER/ CILANTRO	*CORIANDRUM SATIVUM*	H			R. LUNDY		YES
PARSLEY	*PETROSELINIUM* SP.	H			R. LUNDY		YES
TURMERIC (624)	*CURCUMA*	H			R. LUNDY		YES
MUGWORT	*ARTEMISIA VULGARIS*	H			R. LUNDY		YES
OREGANO	*ORIGANUM SP.*	H			R. LUNDY		YES
ORANGE BERGAMOT	*MENTHA CITRATA*	H			R. LUNDY		YES
TARRAGON	*ARTEMISIA SP.*	H			R. LUNDY		YES

ROSEMARY	*ROSMARINUS OFFICINALIS*	H			R. LUNDY		YES
ALL SAGES	ALL *SALVIA SP.*	H			R. LUNDY		YES
ECHINACEA	ALL *ECHINACEA SP.*	H			R. LUNDY		YES
ANISE HYSSOP	*AGASTACHE FOENICULUM*	H			R. LUNDY		YES
GINSENG (257)		H			R. LUNDY		YES
RED CLOVER (176)		H			R. LUNDY		YES
ST. JOHN'S WORT	*HYPERICUM*	H			R. LUNDY		YES

PROPOSED CROP DEFINITION: MINT OIL = LAVENDER OIL, DILL OIL, CHAMOMILE OIL, WINTERGREEN OIL, BASIL OIL, CLARY SAGE OIL, WORMWOOD OIL, CATNIP OIL

Proposed Crop Group I: Tropical and Subtropical ~~Trees~~ PLANTS with Edible Seeds for Beverages and Sweets **Current Crop Group** **US = Miscellaneous Canada = None Codex = SB, SM Mexico = None**	
Author's Commodity List (Greenbook) **Greenbook monograph number follows the crop name**	**Validation:** **Yes or No**
Cacao bean *(108)	YES
Coffee (186) * *REP CROP	YES
Cola (187)	YES
Guarana (272)	YES
See Work sheets for Additions for Proposed CG I	

*PROPOSED CROP DEFINITION: CACAO = CUPUACU

* *INCLUDES ALL SPECIES

Proposed Subgroup for Crop Group I

Subgroup: I a		
Rep. Commodities	**Commodities**	**Validation:** **Yes or No**
Coffee	Cacao bean; Coffee; Cola; Guarana SUBGROUP NOT NEEDED	NO

Workgroup Worksheet

Workgroup #: ___10_____Crop Group: I (Tropical/Subtropical ~~Trees~~ PLANTS with Edible Seeds for Beverages and Sweets)

Additions to Proposed Crop Groups and Subgroups							
Common Name	**Scientific Name**	**Group/SG Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate: Yes or No**
I.1 Cupuacu	*Theobroma grandiflorum* (Sterculiaceae)	I	Cacao	Seed and fruit pulp	S. Perry (MI) Brazil	Chocolate called Cupulate from seed. Juices from white pulp	Y
I.2 Acai	*Euterpe ~~precatoria~~* (~~Sterculiaceae~~)	I	Coconut and Pejibaye	Pulp and buds	S. Perry (MI) Brazil	Pulp used form beverage. Buds used for Hearts of Palm	NO
I.3 Soapberry	*Balanites aegyptiaca* (Balanitaceae)	I			M. Braverman	Desert Date, syrup	NO

Proposed Crop Group J: Grasses for Sugar or Syrup **Current Crop Group** **US = Miscellaneous Canada = None Codex = GS Mexico = None**	
Author's Commodity List (Greenbook) **Greenbook monograph number follows the crop name**	**Validation: Yes or No**
Sorghum/sweet (556) Also include in CG 15	Y
Sugarcane (585)	Y
See Work sheets for Additions for Proposed CG J	
Sugar maple (584)	NO

Workgroup Worksheet

Workgroup #: ___10_____Crop Group: _ J (Grasses for Sugar or Syrup)____

Additions to Proposed Crop Groups and Subgroups							
Common Name	**Scientific Name**	**Group/Subgroup Placement**	**Rep Crop**	**Edible Part**	**Person(s) Requesting**	**Comments**	**Validate : Yes or No**
J.1 Guayule	*Parthenium argentatum* (Asteraceae)	J	Sugarcane	Top extracted	D. Swiger	Chewing gum, etc.	NO

J.2 Mint Oil	*Mentha* spp. (Lamiaceae)	J	Sugarcane	Top extracted	D. Kunkel IR-4		NO
J.3 Sugar Maple	*Acer saccharum* (Aceraecea)	J or K	Sugarcane	Sap	M. Braverman	Move from proposed Group K to J	NO
J.4 Stevia	*Stevia rebaudiana* (Asteraceae)	J	Sugarcane	Extracts and leaves	D. Kunkel IR-4	Monograph 579	NO

Proposed Crop Group K: FORESTRY **Current Crop Group** **US = Miscellaneous Canada = None Codex = None Mexico = None**	
Author's Commodity List (Greenbook) **Greenbook monograph number follows the crop name**	**Validation:** **Yes or No**
Sugar Maple (584)	NO
See Work sheets for Additions to Proposed CG K	
Move Sugar Maple to proposed group J	NO

SUMMARY OF WORKGROUP #10
BY KEN SAMOIL

1) Workgroup #10 discussed proposed Crop Groups G, H, I, J and K, and validated H, I and J. Crop Group G was merged with H (with the exclusion of tobacco), and Crop Group K was eliminated; sugar maple remains an orphan crop. Acai, soapberry, and guayule were also excluded from crop groups; however, eleven crops were added to Group H. Eight of the twelve "general proposals" were validated, and a ninth was approved on a case by case basis.

After the completion of the breakout session I learned that mint had been chosen as a rep crop for Herbs as well as for Proposed Crop Group H. I recommend that Crop Group H become a subgroup within Crop Group 19 (Herbs), and that Crop Group 19 be named "Plants Grown for Extracts and Dried, Above-Ground Plant Parts".

2) I have listed below the crop groups that we validated:

a) Crop Group H: Plants Grown for Extracts and Dried, Above Ground Plant Parts
Mint (rep crop)

Comfrey
Limeblossom
Stevia
Tea
Basil
Catnip
Chamomile
Clary Sage
Dill
Lavender
Lemongrass
Mamaki
Wintergreen
Wormwood
Roselle (was “sorrel nut”)
Rooibos
Hop
Coffee Leaves

b) Proposed Crop Definition: Mint Oil = Lavender Oil, Dill Oil, Wintergreen Oil, Camomile Oil, Basil Oil, Clary Sage Oil, Wormwood Oil, Catnip Oil.

c) Crop Group I: Tropical and Subtropical Plants with Edible Seeds for Beverages and Sweets

Coffee (rep crop; includes all species)
Cacao Bean
Cola
Guarana
Cupuacu

d) Proposed Definition: Cacao = Cupuacu

e) Crop Group J: Grasses for Sugar or Syrup

Sugarcane (rep crop)
Sweet Sorghum

3) Responses to General Proposals by WG # 10

1. Include all common names in crop groups. Revised to: Include known common names in crop groups. YES
2. Drop the 5X residue requirement. NO
3. Crop Definitions. YES
4. Remove systemic pesticide requirement. NO
5. Create Seed Treatment Crop Group. YES
6. Add statement to establish CG that seed treatments also apply. Revised to: Add statement to established crop group tolerances to clarify that seed treatments also apply. YES
7. Create new crop group for greenhouse crops (tomato = rep crop; bell pepper; cucumber). NO
8. Include non-English common names in the crop group regulation. YES
9. List all crops in a crop group on registered labels. YES
10. Continue super crop groups when appropriate. YES.
11. Use greenhouse residue data to cover regional food uses. YES, on a case-by-case basis.
12. Establish the number of trials needed for post-harvest uses (reduction from field requirements). YES

The IR-4 Project

Providing Safe and Effective Pest Management Solutions for Specialty Crop Growers

IR-4/USDA Crop Grouping Symposium

Ornamentals

Workgroup #11

Crop Group L (28): Ornamentals

Ornamentals

Workgroup #11

IR-4/USDA Crop Grouping Symposium
7-8 October 2002
Arlington, Virginia

Chair: J. Ray Frank
Co-Chairs: Gary Bangs, Jeff Evans, Jim Locke

Workgroup #11's mission was to review, evaluate and validate the proposed Crop Group L to include additional sites/commodities.

Note: No established Crop Group for Ornamentals exist in U.S., Canada and Mexico.

Ornamental Crop Grouping Symposium

Twenty scientists and stakeholders representing USEPA, USDA-ARS, Land Grant Universities, professional associations, growers and USDA, IR-4, participated in the first Ornamental Crop Grouping Symposium at Arlington, Virginia. The rationale and criteria for establishment of representative ornamental crop groups were related to worker exposure issues, pesticide risk factors and the efficiency, simplicity and consistency of project issues. Project assignments were discussed for project implementation and performance, labeling/registration and worker exposure concerns. Ornamental classes decided were flowering crops, bedding plants, cut flower crops, flowering potted plants, foliage plants, herbaceous perennials, ornamental grasses, broadleaf deciduous trees and shrubs, broadleaf evergreen trees and shrubs, narrow leaf evergreen trees and shrubs, turf grass, hydroponic crops, ornamental grasses, aquatic crops, and palms. Sites related to growing patterns were designated as follow: in-ground field, field container production, greenhouse, interior plantscape, commercial landscape, cold storage, propagation, aquatic crop production, utility rights-of-way, forestry production, and turf.

Plant Group	**Representative Plant**
Broadleaf Evergreen Trees	Magnolia, Holly
Broadleaf Evergreen Shrubs	Azalea, Boxwood, Camellia, Magnolia, Holly, Ligustrum, Rhododendron
Narrow Leaf Evergreen Trees/Shrubs	Firs, Hemlock, Leyland Cypress, Pine, Spruce
Deciduous Trees	Birch, Cherry, Crabapple, Dogwood, Honeylocust, Maple, Oak, Poplar
Deciduous Shrub/Vines	Abelia, Azalea, Butterfly Bush, Euonymus, Red Twig Dogwood, Forsythia, Lilac, Silver Lace Vine
Tropical Foliage Plants	Aglaonema, Dieffenbachia, Ferns, Ficus, Pothos, Schefflera, Spathiphyllum, Syngonium
Hardy Ground Cover Foliage	Ajuga, English Ivy, Euonymus, Pachysandra, Vinca, Ferns
Flowering Bedding Plants	Ageratum, Begonia, Chrysanthemum, Dahlia, Daisy, Daylily, Delphinium, Digitalis, Fuchsia, Geranium, Gypsophila, Hollyhock, Hosta, Impatiens, Lupine, Marigold, Pansy, Petunia, Phlox, Rubeckia, Vinca, Zinnia
Flowering Cut Flowers	Anthurium, Asiatic Lilies, Carnation, Chyrsanthemum, Orchid, Gerbera Daisy, Gladiolus, Rose, Snapdragon
Flowering Potted Plants	Azalea, Asiatic Lilies, Carnation, Chrysanthemum, Easter Lily, Fuchsia, Geranium, Hibiscus, Gerbera Daisy, Poinsettia, Primrose, Rose, Rhododendron
Flowering Bulbs	Gladiolus, Narcissus, Tulips, Caladium

Plant Group (Con't)	Representative Plant (Con't)
Turf	Fescue, Bentgrass, Bluegrass, Bermuda, St. Augustine, Creeping Bentgrass
Ornamental Grasses	Feathertop, Pampas grass
Aquatic Plants	Water Lilies, Lotus, Arrowroot, Papyrus, Cattail
Palms	Washingtonia, Pigmy Date Palm, Coconut Palm, Queen Palm, Sable Palm, Cabbage Palm

Site List

BROADLEAF EVERGREEN/DECIDUOUS TREE
Sweet Bay (Magnolia virginiana)

BROADLEAF EVERGREEN/DECIDUOUS TREE/SHRUB
Azalea (Rhododendron)
Magnolia
Rhododendron

BROADLEAF EVERGREEN/DECIDUOUS SHRUB
Abelia
Barberry (Berberis)
Cotoneaster
False Heather, Elfin Herb (Cuphea hyssopifolia)
Firethorn (Pyracantha)
Honeysuckle (Lonicera)
Privet (Ligustrum)

BROADLEAF EVERGREEN TREE
Anise Tree (Illicium sp.)
Balfour Aralia (Polyscias Balfouriana)
Bayberry (Myrica pensylvanica)
Bottle Tree (Brachychiton populneus)
Buttonwood (Conocarpus erectus)
Camphor Tree (Cinnamomum Camphora)
Carob, St.Johns-Bread (Ceratonia siliqua)
Carrot Wood (Cupaniopsis anacardiopsis)
Citrus (Non-Bearing) (Citrus sp.)
Eucalypt, Australian Gum (Eucalyptus)
Grapefruit (Non-Bearing)(Citrus sp.)
Holly, English (Ilex aquifolium)
Loblolly Bay (Gordonia lasianthus)
Loquat (Eriobotrya japonica)
Magnolia, Southern (Magnolia grandiflora)
Manzanita Strawberry Tree (Arbutus)
Olive (Non-Bearing)(Olea europaea)
Orange (Non-Bearing)(Citrus sp.)
Russian Olive (Elaeagnus angustifolia)
Silver Tree (Leucodendron argenteum)
Ternstroemia

BROADLEAF EVERGREEN TREE/SHRUB
Bottlebrush (Callistemon)
Boxwood (Buxus)
Holly (Ilex)
Holly Olive;False (Osmanthus heterophyllus)
Holly, American (Ilex opaca)
Holly, Chinese (Ilex cornuta)
Holly, Fosters (Ilex x attenuata)

Photinia
Redroot (Ceanothus)
Spindle Tree (Euonymus japonica)
Wax Myrtle (Myrica cerifera)
Xylosma

BROADLEAF EVERGREEN SHRUB
Alpine Azalea (Loiseleuria procumbens)
Andromeda (Pieris)
Aralia Ivy (Fatshedera)
Aucuba
Azalea, Formosa (Rhododendron sp.)
Bearberry (Arctostaphylos)
Blue Hibiscus (Alyogyne Huegelii)
Bog Rosemary (Andromeda Polifolia)
Camellia
Cape Honeysuckle (Tecomaria capensis)
Ceniza, Barometer Bush (Leucophyllum frutescens)
Cleyera (Cleyera japonica)
Coyote Brush (Baccharis)
Cranberry (Non-Bearing)(Vaccinium macrocarpon)
Creeping Wintergreen (Gaultheria)
Daphne
Egyptian-Star-Cluster (Pentas lanceolata)
Fetterbush, Drooping Leucothoe (Leucothoe)
Flame-Of-The Woods (Ixora coccinea)
Four-Wing Saltbush, Cenizo (Atriplex canescens)
Galphimia Glauca
Gardenia
Glory-Bower, Tube Flower (Clerodendrum)
Heavenly Bamboo (Nandina domestica)
Hebe (Veronica)
Holly, Blue (Ilex x meserveae)
Holly, Japanese (Ilex crenata)
Hopbush (Dodonaea cuneata)
Indian Hawthorn (Raphiolepis indica)
Inkberry (Ilex glabra)
Japanese Andromeda (Pieris japonica)
Japanese Pittosporum (Pittosporum tobira)
Jasmine, Cape, Common Gardenia (Gardenia)
Jasmine, Jessamine (Jasminum)
Jojoba (Simmondsia chinensis)
Laurel (Kalmia)
Leatherleaf, Mahonia (Mahonia Bealei)
Loropetalum
Myrtle, Greek;Swedish (Myrtus communis)
Natal Plum (Carissa grandiflora)
Oleander, Rosebay (Nerium Oleander)
Oregon Boxwood (Paxistima Myrsinites)
Oregon Grape (Mahonia aquifolium)
Pincushion (Leucospermum)
Pink Escallonia (Escallonia laevis)
Purple Anise (Illicium floridanum)
Purpleleaf Wintercreeper (Euonymus radicans)
Sage Common (Artemesia tridentata)
Silver Berry (Escallonia)
Skimmia (Skimmia japonica)
Toyon, Christmas Berry (Heteromeles arbutifolia)
Viburnum (Viburnum suspensum)
Water Willow (Justicia)

NARROW LEAF EVERGREEN TREE
Arborvitae, False (Thujopsis)
Bald Cypress (Taxodium distichum)
Broad-Leaf Arborvitae (Thujopsis)
Cedar (Cedrus)
Cedar, Atlas (Cedrus atlantica)
Cedar, Western Red (Thuja plicata)
Conifer (Seedbeds/Seedlings)
Cypress (Cupressus)

Cypress, Leyland(Cupressocyparis leylandii)
Dawn Redwood (Metasequoia)
Fir (Abies)
Fir, Balsam (Abies balsamea)
Fir, Cannan (Abies)
Fir, China (Cunninghamia)
Fir, Concolor (Abies)
Fir, Douglas (Pseudotsuga menziesii)
Fir, Fralsam (Abies)
Fir, Fraser (Abies)
Fir, Grand; Giant Fir (Abies grandis)
Fir, Noble (Abies procera)
Giant Sequoia;Redwood (Sequoiadendron giganteum)
Golden Larch (Pseudolarix)
Hemlock (Tsuga)
Hemlock, Canada (Tsuga canadensis)
Hemlock, Japanese (Tsuga sieboldii)
Hemlock, Western (Tsuga heterophylla)
Japanese Cedar (Cryptomeria)
Pine, Australian, Beefwood (Casuarina)
Pine, Austrian (Pinus nigra)
Pine, Bosnian (Pinus leucodermis)
Pine, Bristle-Cone (Pinus aristata)
Pine, Canary Island (Pinus canariensis)
Pine, Jack (Pinus banksiana)
Pine, Jap. Black (Pinus thunbergiana)
Pine, Jap.Umbrella (Sciadopitys verticillata)
Pine, KMX (Pinus attenuata x pinus)
Pine, Loblolly (Pinus taeda)
Pine, Longleaf (Pinus palustris)
Pine, Monterey (Pinus radiata)
Pine, Norfolk Isle (Araucaria heterophylla)
Pine, Pitch (Pinus rigida)
Pine, Ponderosa Western Yellow (Pinus ponderosa)
Pine, Red (Pinus resinosa)
Pine, Scotch (Pinus sylvestris)
Pine, Shortleaf (Pinus echinata)
Pine, Slash (Pinus Elliottii)
Pine, Spruce (Pinus glabra)
Pine, Virginia (Pinus virginiana)
Pine, Western Red, Rimu (Dacrydium cupressinum)
Pine, Western White (Pinus monticola)
Pine, White (Pinus strobus)
Redwood (Sequoia sempervirens)
Southern Yew (Podocarpus macrophyllus)
Spruce (Picea)
Spruce, Black (Picea mariana)
Spruce, Colorado (Picea pungens)
Spruce, Norway (Picea abies)
Spruce, Serbian (Picea Omorika)
Spruce, White; Cat (Picea glauca)

NARROW LEAF EVERGREEN TREE/SHRUB
Arborvitae (Thuja)
Carolina Hemlock (Tsuga caroliniana)
Cedar, Red (Juniperus virginiana)
False Cypress (Chamaecyparis)
Japanese Plum Yew (Cephalotaxus)
Pine (Pinus)
Pine, Lodgepole (Pinus contorta v latifolia)
Pine, Pinyon (Pinus edulis)
Powderpuff (Calliandra)
Spruce, Dwarf Alberta (Picea glauca conica)
Yew (Taxus)

NARROW LEAF EVERGREEN SHRUB
Breath Of Heaven (Diosma ericoides L.)
Broom, Andorra (Cytisus purgans)
Heath (Erica)
Heather (Calluna)

Juniper (Chinensis)
Juniper (Juniperus)
Juniper Creeping (Juniperus horizontalis)
Pine, Mugo & Mugho (Pinus Mugo)
Rosemary (Ceratiola ericoides)
Rosemary (Rosemarinus officinalis)
Russian Arborvitae (Microbiota)
St.Daboec's Heath, Irish Heath (Daboecia sp.)
Tamarisk, Salt Cedar (Tamarix)
Woadwaxen, Dyers Greenweed (Genista tinctoria)

DECIDUOUS TREE

Alder, European (Alnus glutinosa)
Almond (Non-Bearing)(Prunus dulcis)
Apple (Non-Bearing) (Malus)
Apricot (Non-Bearing)(Prunus armeniaca)
Ash (Fraxinus)
Ash, Black (Fraxinus nigra)
Ash, Green (Fraxinus pennsylvanica)
Ash, White (Fraxinus americana)
Asiatic Sweetleaf (Symplocos paniculata)
Aspen (Populus)
Beech (Fagus)
Birch (Betula)
Birch, Paper (Betula papyrifera)
Birch, River (Betula nigra)
Black Locust (Robinia Pseudoacacia)
Black Olive (Non-Bearing)(Bucida buceras)
Blackgum, Sourgum (Nyssa)
Box elder (Acer negundo)
Cherry (Non-Bearing)(Prunus sp.)
Cherry, Black (Non-Bearing)(Prunus serotina)
Cherry, Pin/Wild Red (Non-Bearing)(Prunus pensylvanica)
Cherry, Sand (Non-Bearing) (Prunus besseyi)
Chestnut (Non-Bearing) (Castanea)
Chilean Mesquite (Prosopis chilensis)
Chinese Pistachio (Pistacia chinensis)
Chinese Tallow Tree (Sapium sebiferum)
Cottonwood, Fremont (Populus fremontii)
Crabapple (Non-Bearing)(Malus)
Crape Myrtle (Lagerstroemia indica x Fauriei)
Dogwood, Flowering (Cornus florida)
Dogwood, Kousa (Cornus kousa)
Dogwood, Pagoda; Green Osier (Cornus alternaria)
Dove Tree (Davidia)
Elm (Ulmus)
Elm, Chinese (Ulmus parvifolia)
Elm, Winged (Ulmus alata)
European Larch (Larix decidua)
False Larch (Pseudolarix)
Filbert, Hazelnut (Non-Bearing) (Corylus)
Frangipani, Temple Tree (Plumeria)
Franklin Tree (Franklinia)
Fringed Tree, Old Mans Beard (Chionanthus)
Golden-Chain (Laburnum anagyroides)
Golden-Rain Tree (Koelreuteria bipinnata)
Hackberry (Celtis)
Hawthorn (Crateagus)
Hawthorn, Green (Crataegus viridis)
Hemsley Snowbell (Styrax Hemsleyana)
Hickory (Carya)
Honey Locust (Gleditsia)
Hop Hornbean (Ostrya virginiana)
Hornbean, European (Carpinus betulus)
Hornbean, Ironwood (Carpinus japonica)
Horse Chestnut (Aesculus)
Indian Cigar Tree (Catalpa)
Japanese Flowering Cherry (Prunus sp.)
Japanese Pagoda Tree (Sophora japonica)
Japanese Zelkova (Z. serrata)

Katsura-Tree (Cercidiphyllum japonicum)
Kentucky Coffee Tree (Gymnocladus dioica)
Larch (Larix)
Linden, Basswood (Tilia)
Locust, Black (Robinia pseudoacacia)
Magnolia, Saucer (Magnolia x Soulangiana)
Magnolia, Star (Magnolia stellata)
Maidenhair Tree (Ginkgo biloba)
Maple (Acer)
Maple, Norway (Acer platanoides)
Maple, Paperbark (Acer griseum)
Maple, Red (Acer rubrum)
Maple, Silver (Acer saccharinum)
Maple, Sugar (Acer saccharum)
Maple, Tatarian (Acer tataricum)
Maple, Trident (Acer Buergeranum)
Mimosa Silk Tree (Albizia Julibrissin)
Mountain Ash (Sorbus)
Mountain Mahogany, Cherry Birch (Betula lenta)
Mulberry (Morus)
Oak, Black (Quercus velutina)
Oak, Bur (Quercus macrocarpa)
Oak, Laurel (Quercus laurifolia)
Oak, Live;Southern (Quercus virginiana)
Oak, Northern Pin (Quercus ellipsoidalis)
Oak, Northern Red (Quercus rubra)
Oak, Pin (Quercus palustris)
Oak, Post (Quercus stellata)
Oak, Red (Quercus rubra)
Oak, Sawtooth (Quercus acutissima)
Oak, Shumard Red (Quercus Shumardii)
Oak, Southern/Spanish Red (Quercus falcata)
Oak, White (Quercus alba)
Oak, Willow (Quercus phellos)
Oak, Yellow Chestnut (Quercus Muehlenbergii)
Old-Mans-Beard (Chionanthus virginicus)
Osage Orange (Maclura pomifera)
Palo Verde (Cercidium floridum)
Pea Shrub, Siberian (Caragana arborescens)
Peach (Non-Bearing)(Prunus persica)
Pear (Non-Bearing)(Pyrus communis)
Pear, Bradford (Non-Bearing) (Pyrus Calleryana)
Pecan (Non-Bearing)(Carya illinoinensis)
Persian Parrotia (Parrotia)
Persimmon, Common (Non-Bearing)(Diospyros virginiana)
Pistachio (Non-Bearing)(Pistacia vera)
Plane Tree (Platanus)
Plum (Non-Bearing)(Prunus sp.)
Pomegranate (Non-Bearing) (Punica Granatum)
Poplar (Populus)
Red Bud, Eastern (Cercis canadensis)
Red Bud, Western (Cercis reniformis)
Sassafras
Sourwood, Sorrel Tree (Oxydendrum arboreum)
Sweetgum (Liquidambar)
Sycamore (Platanus)
Sycamore, California (Platanus racemosa)
Tulip Tree (Liriodendron tulipifera)
Varnish Tree (Koelreuteria paniculata)
Walnut, Black (Non-Bearing) (Juglans nigra)
Weeping Willow (Salix babylonica)
West Indian Mahogany (Swietenia Mahogani)
White Fringetree (Chionanthus retusus)
Willow (Salix)
Yellowwood (Cladrastis)

DECIDUOUS TREE/SHRUB
Alder (Alnus)
Button Bush (Cephalanthus)
Crape Myrtle (Lagerstroemia indica)

Devils Walking Stick (Aralia spinosa)
Dogwood (Cornus)
Maple, Amur (Acer ginnala)
Maple, Japanese (Acer palmatum)
Oak (Quercus)
Pea Shrub, Pea Tree (Caragana)

DECIDUOUS SHRUB/VINE

Alpine Currant (Ribes alpinum)
Antelope Bush (Purshia tridentata)
Arrowwood (Viburnum)
Beach Plum (Prunus maritima Marsh)
Beautyberry (Callicarpa)
Beautybush (Kolkwitzia amabilis)
Bittersweet (Celastrus)
Bluebeard (Caryopteris)
Blueberry (Non-Bearing)(Vaccinium sp.)
Bridal-Wreath (Spirea)
Buckthorn (Rhamnus)
Buffalo Berry (Shepherdia argentea)
Bunchberry (Cornus canadensis)
Bush Honeysuckle (Diervilla)
Butterfly Bush (Buddleaia davidii)
Butterfly Bush, Silver (Buddleaia alternifolia)
Camellia, Mountain (Stewartia)
Caneberry (Non-Bearing)(Rubus)
Chaste Shrub (Vitex)
Chokeberry (Aronia)
Chokecherry (Prunus virginiana)
Coralberry, Snowberry (Symphoricarpos orbiculatus)
Deutzia
Dogwood, Gray (Cornus racemosa)
Dogwood, Red Osier (Cornus sericea)
Dogwood, Silky (Cornus amomum)
Elder, Elderberry (Sambucus)
Enkianthus
Flowering Quince (Chaenomeles)
Forsythia
Golden Bells (Forsythia)
Golden Currant (Ribes aureum)
Goldthread (Coptis)
Grape (Non-Bearing)(Vitis sp.)
Heptacodium Miconiodes
Hibiscus
Hydrangea
Hydrangea, Oakleaf (Hydrangea quercifolia)
Indigo Bush, False Indigo (Amorpha fruiticosa)
Japanese Barberry (Berberis thunbergii)
Japanese Kerria, Japanese Rose (Kerria japonica)
Japanese Quince (Cydonia sinensis)
Japanese Rose, Turkestan Rose (Rosa rugosa)
Kirilow Indigo (Indigofera kirilowii)
Kiwi (Non-Bearing) (Actinidia)
Korean Abelia-Leaf(Aboliophyllum distichum)
Lace Shrub (Stephanandra incisa)
Lilac (Syringa)
Marsh Mallow (Althaea)
Mock Orange (Philadelphus)
Oak, Bear (Quercus ilicifolia)
Ocean-Spray,Creambush(Holodiscus discolor)
Patchouli (Pogostemon cabin)
Pearlbush (Exochorda)
Pepper Tree (Drimys lanceolata)
Rose-Of-Sharon, Althaea (Hibiscus syriacus)
Russian Porcelain (Ampelopsis)
Sage, Common;Basin (Artemesia tridentata)
Salt Cedar (Tamarix)
Senna, Shower Tree (Cassia)
Serviceberry (Amelanchier)
Silver Lace Vine (Polygonum Aubertii)

Smoke Tree;Bush (Cotinus)
Snowbell (Styrax)
Snowberry, Waxberry (Symphoricarpos albus)
Spicebush, Benjamin Bush (Lindera Benzoin)
Spirea (Spiraea)
Squaw-Apple (Perathyllum ramsossimum)
Strawberry (Non-Bearing)(Fragaria sp.)
Sumac (Rhus)
Summersweet (Clethra alnifolia)
Sunflower (Helianthus)
Sweetshrub (Calycanthus)
Trumpet Creeper (Campsis)
Trumpet Tree (Tabebuia)
Twinflower (Linnaea borealis)
Virginia Sweetspire (Itea virginica)
Virgins Bower (Clematis)
Weigela
Winged Euonymus (Euonymus alata)
Winter Hazel (Corylopsis)
Winterberry (Ilex verticillata)
Wisteria
Witch Alder (Fothergilla Gardenii)
Witch Hazel (Hamamelis)

FOLIAGE TROPICAL PLANT
Aglaonema
Aluminum Plant (Pilea Cadierei)
Amaranth (Amaranthus)
Bromeliads
Cactus
Cactus, Easter (Rhipsalidopsis)
Calathea
Chameleon Plant (Houttuynia cordata)
Cast-Iron Plant, Ker-Gawl (Aspidistra elatior)
Cathedral-Windows Peacock Plant (Calathea)
Century Plant (Agave)
Ceriman (Monstera deliciosa)
Chloranthus (Chloranthus inconspicuus)
Christmas Fern (Polystichum acrostichoides)
Coffee (Non-Bearing) (Coffea)
Coleus
Coleus, Flamenettle (Coleus)
Copperleaf, Three Seeded Mercury (Acalypha)
Corn Plant (Dracaena fragrans)
Croton, Variegated Laurel (Codiaeum variegatum)
Draceana Marginata
Dumb Cane (Dieffenbachia)
Elephant's-Ear, Angel-Wings (Caladium)
English Lavender (Lavandula angustifolia)
False Aralia (Dizygotheca)
Fern (Polypodium)
Fern, Asparagus (Asparagus setaceus)
Fern, Autumn & Wood (Dryopteris)
Fern, Autumn, Shield, Wood (Dryopteris)
Fern, Boston, Sword (Nephrolepis exaltata)
Fern, Hayscented (Dennstaedtia punctilobula)
Fern, Holly (Cyrtomium falcatum)
Fern, Japanese Painted (Athyrium goeringianum)
Fern, Leatherleaf (Rumohra adiantiformis)
Fern, Maidenhair (Adiantum)
Fern, Myers (Asparagus densiflorus myersii)
Fern, Rabbits-Foot (Davallia fejeensis)
Fern, Royal, Flowering Fern (Osmunda)
Fern, Shaggy Shield (Dryopteris)
Fern, Shield, Christmas Fern (Polystichum)
Fern, Sprengeri (Asparagus densiflorus)
Fern, Sword (Nephrolepis exaltata)
Fern, Toothed Wood (Dryopteris spinulosa)
Fern, Tree (Asparagus virgatus)
Fern, Uncrested Lady (Athyrium)

Fern, Wood (Dryopteris recurvata)
Good-Luck Plant (Sansevieria)
Good-Luck Plant,Ti Plant (Cordyline terminalis)
Grape Ivy (Cissus)
Holly, West Indian (Leea coccinea)
Hottentot Fig (Carpobrotus)
Jade Plant (Crassula argentea)
Japanese Fatsia, Formosa Rice Tree (Fatsia)
Jasmine, Asian (Trachelospermum asiaticum)
Jasmine, Star;Confederate (Trachelospermum jasminoides)
Lavander Cotton(Santolina Chamaecyparissus)
Lawn Leaf (Dichondra carolinensis)
Leatherleaf Fig (Ficus)
Leatherleaf,Cassandra(Chamaedaphne calyculata)
Mexican Giant Hyssop (Agastache mexicana)
Mosaic Plant, Silvernet Plant (Fittonia verschaffeltii)
Mugwort, Western (Artemesia ludoviciana)
Nephthytis,African Evergreen(Syngonium podophyllum)
Ornamental Gourd (Cucumis pepo)
Palm-Beach-Bells (Kalanchoe)
Philodendron
Piggyback Plant, Pickaback Plant (Tolmiea menziesii)
Pine, Air (Aechmea)
Pothos (Epipremnum aureum)
Pothos (Scindapsus aureus)
Prayer Plant (Maranta leuconeura)
Radiator Plant (Peperomia)
Soap Tree (Yucca elata)
Song Of Jamaica, Pleomele (Dracaena cincta)
Spice Cactus (Hatiora salicornioides)
Spider Plant (Chlorophytum comosum)
Spiderwort (Tradescantia)
Stromanthe
Sweet Potato Vine (Impomea batatas)
Swordbrake (Pteris ensiformis)
Tupidanthus (T. calyptratus)
Umbrella Tree (Schefflera)
Variegated Wax, Vine Natal Ivy (Senecio macroglossus)
Velvet Plant (Gynura aurantiaca)
Wandering Jew (Tradescantia albiflora)
Wax Vine, Porcelain Flower (Hoya)
Weeping Fig, Benjamin Tree (Ficus benjamina)
Zebra Plant, Saffron Spike (Aphelandra squarrosa)

FOLIAGE HARDY GROUND COVER

Adams-Needle (Yucca filamentosa)
Algerian Ivy (Hedera canariensis)
Artemesia
Aubrieta (Aubrieta deltoidea)
Aztec Grass (Ophiopogon Jaburan)
Bamboo (Phyllostachys)
Bear Grass (Dasylirion)
Bishops Weed, Goutweed (Aegopodium podagaria)
Boston Ivy (Parthenocissus tricuspidata)
Bugleweed (Ajuga)
Butchers Broom, Israeli Ruscus(R.aculeatus)
Carpet Bugleweed (Ajuga reptans)
Catnip (Nepeta cataria)
Crown Vetch (Coronilla)
Crown-Of-Thorns (Euphorbia milii)
Dusty-Miller (Centaurea gymnocarpa)
English Ivy (Hedera helix)
Fern, Bird's-Nest (Asplenium serratum)
Hardy Ice Plant (Delosperma nubigenum)
Houseleek (Sempervivum)
Iceplant, Capeweed (Arctotheca)
Japanese Hydrangea-Vine (Schizophragma)
Japanese Spurge (Pachysandra terminalis)
Lily, Plantain (Hosta)
Lilyturf (Liriope)

Lilyturf, Big Blue;Giant (Liriope muscari)
Lilyturf, Creeping (Liriope spicata)
Mondo Grass (Ophiopogon)
Mugwort (Artemisia)
Mugwort, White (Artemisia lactiflora)
Mugwort, Wormwood (Artemisia)
Ornamental Cabbage (Brassica sp.)
Ornamental Kale (Brassica sp.)
Pennywort (Hydrocotyl sibthoripiodes)
Periwinkle (Vinca)
Rupture Wort (Herniaria glabra)
Shrub Verbena (Lantana)
Snow-In-Summer (Cerastium tomentosum)
Snow-On-The-Mountain (Euphorbia marginata)
Spanish-Bayonet (Yucca aloifolia)
Spanish-Dagger (Yucca carnerosana)
Sweet Woodruff (Galium odoratum)
Thyme (Thymus)
Wooly Thyme (Thymus pseudolanuginosis)
Va Creeper (Parthenocissus quinquefolia)

FLOWERING BEDDING PLANTS
African Daisy (Osteospermum)
Ageratum
Alpine Willowherb (Epilobium Fleischeri)
Alumroot (Heuchera)
Angelica
Angelonia (Angelonia angustifolia)
Anise Hyssop (Agastache)
Annual Phlox (Phlox Drummondii)
Apache Plume (Fallugia paradoxa)
Aster, Bolton (Boltonia)
Aster, Japanese (Kalimeris)
Aster, Michaelmas (A.dumosus x A. novibelgii)
Aster, New York (A. novibelgii)
Balsam (Impatiens)
Basket-Of-Gold (Aurinia saxatilis)
Beach Naupaika (Scaevola frutescens)
Beard-Tongue (Penstemon sp.)
Bee Balm (Monarda didyma)
Bellflower (Campanula)
Black-Eyed Susan (Rudbeckia hirta)
Blanket Flower (Gaillardia)
Blazing-Star, Gayfeather (Liatris)
Bleeding Heart (Dicentra)
Blue False Indigo (Baptisia australis)
Blue Trumpet Vine (Thunbergia grandiflora)
Bluestar (Amsonia)
Boston Daisy (Argyranthemum)
Broom (Cytisus)
Bugloss (Anchusa)
Bush Violet (Browallia)
Buttercup (Ranunculus)
Butterfly Blue, Scabious (Scabiosa columbara)
Butterfly Flower (Asclepias)
Calamint (Calamintha)
California Fuschia (Zauschneria californica)
California Poppy (Eschscholzia)
Campion, Catchfly (Lychnis)
Campion, Sea (Silene vulgaris maritima)
Candytuft (Iberis)
Canna
Canterbury-Bells (Campanula Medium)
Cape Weed (Arctotheca calendula)
Cardinal Flower, Indian Pink (Lobelia cardinalis)
Carolinia Jessamine; Evening Trumpet Flower (Gelsemium)
Cheddar Pink (Dianthus gratianopolitanus)
China Aster (Callistephum chinensis)
Cinquefoil (Potentilla sp.)
Cockscomb, Wool Flower (Celosia)

Columbine (Aquilegia)
Coneflower (Rudbeckia)
Coral Bells, Alumroot (Heuchera sanquinea)
Coral Porterweed (Stachytarpheta mutablis)
Cosmos
Creeping Phlox, Moss Pink(Phlox subulata)
Creeping St.-Johns-Wort (Hypericum calycinum)
Cupid's-Dart (Catananche)
Cushion Spurge (Euphorbia)
Cypress, Standing (Ipomopsis rubra)
Dahlberg Daisy, Golden-Fleece (Dyssodia tenuiloba)
Daisy, Silver & Gold (Ajania)
Daylily (Hemerocallis)
Dead Nettle (Lamium)
Elionum
English Daisy (Bellis perennis)
Evening Primrose, Sundrops (Oenothera)
Evolvulus (E. nuttalianus)
False Dragon Head,Lion's Heart (Physostegia)
False Indigo (Amorpha)
False Queen Annes Lace, Bishops Weed (Ammi majus)
False Spirea (Astilbe)
False Sunflower (Oxeye Heliopsis)
Feverfew (Chrysanthemum parthenium)
Field Bindweed (Convolvulus arvensis)
Fleabane (Erigeron)
Fleece Flower, Knotweed (Polygonum)
Flowering Tobacco (Nicotiana)
Foamflower, False Miterwort (Tiarella)
Foamy Bells (Heucherella)
Forget-Me-Not, Garden (Myosotis sylvatica)
Four O'clock (Mirabilis)
Foxglove (Digitalis)
Fuchsia
Gaura (Gaura lindheimeri)
Gayfeather (Liatris spicata)
Globe Amaranth (Gomphrena)
Globe Thistle (Echinops)
Goatsbeard (Aruncus)
Godetia, Farewell-To-Spring (Clarkia)
Gold Flower (Hypericum x Moseranum)
Golden Ray (Ligularia)
Golden Star (Chrysogonum)
Golden Trumpet (Allamanda)
Goldenrod (Solidago)
Goldenrod, Dwarf (Solidago sphacelata)
Goldstrum (Rudbeckia fulgida)
Helen's Flower, Sneezeweed (Helenium)
Heliotrope (Heliotropium sp)
Hollyhock (Alcea rosea)
Hosta
Hydrangea, Climbing (Hydrangea anomala)
Hyssop, Sunset;Giant (Agastache rupestris)
Jacob's Ladder (Polemonium)
Lady's-Mantle (Alchemilla)
Lamb's-Ears (Stachys byzantina)
Lance Coreopsis (Coreopsis lanceolata L.)
Larkspur (Delphinium)
Lavender (Lavandula)
Leadwort (Ceratostigma plumbaginoides)
Leadwort, Cape (Plumbago auriculata)
Leavenworths (Coreopsis)
Leopards-Bane (Doronicum)
Lisanthus
Lithodora
Little-Pickles (Othonna capensis)
Lobelia
Loosestrife, Circle Flower (Lysimachia)
Lungwort (Pulmonaria)
Lupine (Lupinus)

Madwort (Alyssum)
Mallow (Malva)
Mallow, Rose Mallow (Hibiscus)
Maple, Flowering (Abutilon)
Marigold (Tagetes)
Mazus (Mazus reptans)
Mexican Heather
Mexican Petunia (Ruellia carolinensis)
Michaelmas Daisy (Aster)
Money Plant, Honesty (Lunaria)
Moneywort (Lysimachia nummilaria)
Monkshood, Aconite (Aconitum)
Montauk Daisy (Chrysanthemum keibels)
Montebretia (Crocosmia)
Moon Flower (Ipomea)
Moonbeam, Tickseed (Coreopsis verticillata)
Moss Rose (Portulaca)
Mullein (Verbascum)
Namaqualand Daisy (Venidium)
Nemesia
New Guinea Impatiens (I. Wallerana)
Ninebark (Physocarpus)
Nipponanthemum
Orchid, Moth (Phalaenopsis)
Oriental Poppy (Papaver orientale)
Pasqueflower (Anemone pulsatilla L.)
Patience Plant, Zanzibar Balsam (Impatiens Wallerana)
Phlox
Phlox (Phlox laphamii)
Phlox, Perennial (Phlox paniculata)
Phlox, Variegated (Phlox x procumbens foliovariegated)
Phuopsis (Phuopsis stylosa)
Pincushion Flower (Scabiosa)
Pinks (Dianthus)
Plantain Lily (Hosta fortunei)
Poker Plant, Red-Hot-Poker (Kniphofia)
Poppy (Papaver)
Poppy Mallow (Callirhoe involucrata)
Primrose (Primula)
Protea
Purple Coneflower (Echinacea)
Purple Loosestrife (Lythrum)
Pussy-Toes, Everlasting (Antennaria)
Queen Anne's Lace (Daucus)
Queen-Of-The-Prairie, Meadowsweet (Filipendula)
Red Hot Poker (Kniphofia)
Reubellum
River Daisy (Brachycome)
Rock Cress (Aubrieta)
Rocky Mt. Columbine (Aquilegia caerulea)
Rodgersia
Rose Mallow (Hibiscus)
Rose Periwinkle (Catharanthus roseus)
Sage (Salvia daghestanica)
Sage (Salvia x sylvestris)
Sage, Himalayan (Phlomis cashmeriana)
Sage, Jerusalem (Phlomis fruticosa)
Sage, Mexican (Salvia leucantha)
Sage, Ramona (Salvia x sylvestris)
Sage, Russian (Perovskia)
Sage, Russian;Blue Spire (Perovskia)
Sage, Scarlet (Salvia splendens)
Sandwort (Arenaria)
Sea Holly (Eryngium maritimum)
Sea Lavender, Marsh Rosemary (Limonium latifolium)
Sea Pink, Thrift (Armeria)
Shrub Bush Clover (Lespedeza bicolor)
Silver Mound (Artemisia schmidtiana)
Skullcap (Scutellaria resinosa)
Solidaster (S. luteus)

Spathe Flower (Spathiphyllum)
Speedwell, Brooklime (Veronica)
Stokes Aster (Stokesia)
Stonecrop (Sedum spectabile)
Stonecrop (Sedum spurium)
Stonecrop (Sedum x sylvestris)
Stonecrop (Sedum)
Stonecrop Ella. (Sedum kamtschaticum)
Sun Fern, Tansy (Tanecetum)
Sun Rose, Rock Rose (Helianthemum)
Sunset Hyssop (Agastache rupestris)
Swan River Daisy (Brachycome iberidifolia)
Sweet William (Dianthus barbatus)
Tansy, Sun Fern (Tanacetum)
Thistle, Japanese;Plume (Cirsium japonicum)
Thoroughwax (Bupleurum)
Thrift, Sea Pink (Armeria maritima)
Throatwort (Trachelium caeruleum)
Thyme, Creeping (Thymus praecox)
Tickseed (Coreopsis)
Trailing Iceplant (Drosanthemum)
Trailing Iceplant (Lampranthus spectabilis)
Trailing Lantana (Lantana montevidensis)
Treasure Flower (Gazania)
Turtlehead, Snakehead (Chelone)
Twinspur (Diascia barberae)
Twinspur (Diascia integerrima)
Valerian, Centranth (Centranthus)
Vervain (Verbena)
Wall Germander (Teucrium)
Water Hyssop (Bacopa)
Watercress (Nasturtium)
White Iceplant (Delosperma alba)
Wild Sweet William (Phlox maculata)
Wishbone Flower (Torenia)
Yarrow (Achillea Millifolium)
Yarrow, Woolly (Achillea tomentosa)
Yellow Archangel (Lamiastrum Galeobdolon)
Yellow Shrimp Plant (Pachystachys lutea)

FLOWERING BEDDING PLANT/CUT FLOWER
Batchelor's Button (Centaurea)
Cornflower, Batchelor's-Button (Centaurea cyanus)
Field Marigold (Calendula)
Peony (Paeonia)
Strawflower (Helichrysum bracteatum)

FLOWERING BEDDING/CUT/POTTED PLANT
Aster
Chrysanthemum
Dahlia
Dendranthema
Hardy Mum (Dendranthema x morifolium)
Marigold, Field/Pot (Calendula)
Pyrethum, Painted Daisy (Chrysanthemum coccineum)
Rose (Rosa)
Shasta Daisy (Chrysanthemum x superbum)
Snapdragon (Antirrhinum majus)
Transvaal Daisy (Gerbera)
Zinnia

FLOWERING BEDDING PLANT/CUT FLOWER/POTTED/BULB PLANT
Daffodil (Narcissus)
Japanese Iris (Iris Kaempferi)
Lily, Calla (Zantedeschia)
Lily-Of-The-Valley (Convallaria majalis)
Tulip (Tulipa)

FLOWERING BEDDING PLANT/CUT FLOWER/BULB

PLANT
Corn Flag, Sword Lily (Gladiolus)
Gladiolus
Lily, Natal (Moraea)
Lily, Tiger (Lilium catesbaei)

FLOWERING BEDDING/POTTED PLANT
Begonia
Chilean Jasmine (Mandevilla laxa)
Cup Flower (Nierembergia)
Firecracker Flower (Crossandra)
Geranium (Geranium sp.)
Geranium (Pelargonium)
Impatiens
Irish Shamrock, European Wood Sorrel (Oxalis acetosella
Johnson's Blue Geranium(Geranium)
Ladies-Eardrops (Fuchsia)
Pansy (Viola)
Petunia
Pocketbook Flower, Slipperwort (Calceolaria)

FLOWERING BEDDING/POTTED/BULB PLANT
Hyacinth (Hyacinthus)
Lily-Of-The-Incas (Alstroemeria)
Lily-Of-The-Nile (Agapanthus)
Windflower, Lily-Of-The-Field (Anemone)

FLOWERING CUT FLOWER
Avens (Geum)
Baby's-Breath (Gypsophila elegans)
Bird-Of-Paradise (Strelitzia)
Carnation (Dianthus caryophyllus)
German Statice (Goniolimon tataricum)
Statice (Limonium)
Statice, Caspian (Limonium bellidifolium)
Statice, Seafoam (Limonium perezii)
Stock (Matthiola incana)
Sweet Alyssum (Lobularia maritima)
Sweet Pea (Lathyrus odoratus)

FLOWERING CUT FLOWER/POTTED PLANT
Dendrobium Orchid (D.densiflorum)
Orchid
Tailflower (Anthurium)
Wild Ginger (Asarum caudatum)

FLOWERING CUT/BULB PLANT
Flag (Iris)
Freesia
Lily (Lilium)
Siberian Iris (Iris sibirica)
Sweet Flag (Acorus)
Sword-leaved Iris (Iris ensata)

FLOWERING POTTED PLANT
African Violet (Saintpaulia)
Balloon Flower (Platycodon grandiflorus)
Bolivian Jasmine (Mandevilla boliviensis)
Bougainvillea
Christmas Cactus (Schlumbergera Bridgesii)
Cineraria
Coral Plant, Fountain (Russelia equisetiformis)
Coralberry, Spiceberry (Ardisia crenata)
Flame Violet, Carpet Plant (Episcia cupreata)
German Violet, Persian Violet (Exacum)
Gloxinia (Sinningia speciosa)
Persian Violet (Cyclamen)
Poinsettia (Euphorbia pulcherrima)
Shrimp Plant (Pachystachys lutea)
Thanksgiving Cactus(Schlumbergera truncata)

Toad Lily (Tricyrtis)
Violet (Viola)

FLOWERING POTTED/BULB PLANT
Crocus (Colchicum)
Lily, Easter (Lilium longiflorum)

FLOWERING BULB PLANT
Amaryllis (Hippeastrum)
Bulbous Iris (I. Xiphium)
Dwarf Iris (Iris verna)

TURF
Bahia Grass (Paspalum notatum)
Bentgrass (Agrostis)
Bermudagrass (Cynodon dactylon)
Blue Fescue (Festuca cinerea)
Blue Fescue (Festuca ovina glauca)
Blue Grama Grass (Bouteloua)
Centipede Grass (Eremochloa ophiuroides)
Feather Reed Grass (Calamagrostis acutifloria)
Feathertop (Pennisetum villosum)
Fescue (Festuca)
Grass, St.Augustine;Buffalo (Stenotaphrum secundatum)
Kentucky Bluegrass (Poa pratensis)
Korean Grass (Zoysia japonica)
Rye Grass (Lolium)

ORNAMENTAL GRASSES
Beach Grass (Ammophila)
Big Blue Stem (Andropogon gerardii)
Blue Lyme Grass (Leymus arenarius)
Blue Stem (Schizacharium)
Chinese Pennisetum (Pennisetum alopecuroides)
Clover, White (Trifolium repens)
Cordgrass, Marsh Grass (Spartina)
Eulalia Grass (Miscanthus sinensis)
Eulalia, Zebra Grass (Miscanthus sinensis)
Feather Grass, Needlegrass (Stipa)
Fountain Grass (Pennisetum setaceum)
Hakone Grass, Japanese Forest Grass (Hakonechloa)
Indian Grass, Wood Grass (Sorghastrum)
Little Blue Stem (Schizachyrium scoparium)
Maiden Grass (Miscanthus)
Mannagrass (Glyceria fluitans)
Mondo Grass, Lilyturf, Ker-Gawl (Ophiopogon)
Moor Grass (Molinia caerulea)
Northern Sea Oats, Wild Oats (Chasmanthium latifolium)
Oat Grass (Helictotrichon)
Pampas Grass (Cortaderia)
Pineland 3-Awn (Aristida stricta)
Plume Grass (Erianthus)
Plume Grass; Ravenna (Erianthus)
Reed Grass (Calamograstis arundinaecea)
Ribbon-Grass, Gardeners-Garters (Phalaris arundinacea)
Sedge (Carex)
Silver Grass (Miscanthus)
Switch-Grass (Panicum virgatum)
Wild Oats (Chasmanthium latifolium)
Wild Rye, Lyme Grass (Elymus)
Yellow Foxtail (Alopecurus)

AQUATIC PLANTS
No Entries

PALM
Bottle Ponytail (Beaucarnea)
Coontie (Zamia floridana)
Palm
Palm, Alexander (Ptychosperma elegans)

Palm, Areca (Chrysalidocarbus lutescons)
Palm, Bamboo (Chameadorea erumpens)
Palm, Betel (Areca)
Palm, Coconut (Cocos)
Palm, Date (Phoenix)
Palm, Fan (Chamaerops)
Palm, Fishtail (Caryota sp.)
Palm, Mexican Fan (Washingtonia robusta)
Palm, Palor; Neanthe Bella (Chamaedorea elegans)
Palm, Parlor (Chamaedorea elegans)
Palm, Parlor; Good Luck (Chamaedorea elegans)
Palm, Pygmy Date (Phoenix roebelenii)
Palm, Queen (Arecastrum Romanzoffianum)
Palm, Sago (Cycas revoluta)
Palm, Sentry (Howea forsterana)
Palm, Washington (Washingtonia)

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