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Study of weed plants and their control

ALPESH B. THAKOR
Department of Biology, B.K.M. Science College, VALSAD (GUJARAT) INDIA

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A weed is the more aggressive, useless plant growing out of place which interferes with the crops especially the utilization of land and water resources and thus adversely affect human welfare. The weeds have the most widespread direct and detrimental influences on the growth of desired crop plants by way of competition for space, moisture and nutrients and thus greatly affect the yield of the crop. The weeds grow in and around agricultural fields cause enormous losses to the crop plants. 203 weeds growing in the main crops like rice, sugarcane, jowar, wheat, vegetables, mango, chikoo and banana orchards of 38 villages of Valsad district. The traditional methos of their management has been discussed.

According to Beal (1910) "A weed is a plant out of place", Farmers Bulletin (1915), Development of agriculture, USA defines weed as a wild plant that has habit of intruding. According to Brenchely (1920) weed is a plant that grows so luxuriantly that it chocks out of all other plants that possess more valuable nutritive properties. Oxford English Dictionary (1933) defines weed as a herbaceous plant not valued for use or beauty, growing wild and regarded as cumbering the ground or hindering the growth of superior vegetation. Bailey and Bailey (1941) pointed out that a weed is an unwanted plant and therefore it is to be destroyed. Salisbury (1942), Webster (1948), Muenscher (1949) have given similar definition - "A weed is a plant out of place."

Valsad district is a southern part of the Gujarat state about 194 km. The area consists of hills and plain lands. The present investigation is an attempt to record the available weed plant of Valsad district. The floristic study was conducted in Valsad district during May 2007 to September 2008. Thirty eight villages have been explored for the present study. A total of about 203 weed taxa growing in the different crops of the area. Customary methods were employed for field and laboratory work. The nomenclature has been brought up to date in accordance with current researches and rules of International Codes of Botanical nomenclature (1972). Some of the important literatures were also consulted for proper and correct indentification of weed plant species (Brenchley, 1920; Cooke, 1908; More, 1954, 1972; Raghavan *et al.*, 1981 and Christie, 1992).

The paper embodies the results of research work carried out for a period of one and half year (May 2007 to September 2008). During the survey, a total of 203 weed angiosperm plant species were reported.

The chief objective of weed control is to encourage the growth of useful plants to mankind at the right place and time, limiting the growth of unwanted or undesirable species.

The common methods of weed control are used by tribes of Valsad district as under:

Physical:

Physical control of weeds is as old as agriculture itself. The methods involve in physical control are most practical, effective oldest and are used even today. The physical control of weeds are safe to crop, environment and to the user. The implements used for the physical control of weeds vary from simple hand tools to specially designed tractor drawn mutinied weeding machines. The physical methods of weed control are distinguished as (I) Manual and (II) Mechanical methods. The manual method of weed control includes hand pulling and hand weeding. It is a labour intensive, tiresome and slow process. It can be succeeded when it is practiced in time, particularly when weeds are still young. Simple type of hand tools like fork, sharp blades, sickles, pickaxes and spades etc. are used. The farmer does not require having special skills in using these tools. The implements used in mechanical weeding are animal drawn horse hoe, harrow etc. and tractor drown cultivators, harrows, rotary hoes, weeding blades, finger weeders etc. This method is useful in tilling the land and destroying the weeds.

Ecological:

This includes plantation of proper crops at proper time, applying suitable method, application of adequate fertilizers, improvement of soil, seed bed management that help the crop seeds germination prior to weeds, crop rotations etc.

Table 1 : Botanical names of local weeds

Sr. No.	Name of the weed plants
1.	*Abutilon indicum* (L.) Sweet
2.	*Acalypha ciliata* Forsk.
3.	*Acalypha indica* L.
4.	*Achyranthes aspera* L
5.	*Aerva lanata* (L.) Juss.
6.	*Aerva sanguinolenta* (L.) Bl.
7.	*Aeschynomene indica* L
8.	*Ageratum conyzoides* L
9.	*Alternanthera pungens* H. B. & K.
10.	*Alysicarpus bupleuifolius* (L.) DC
11.	*Alysicarpus longifolius* (Rottl. ex Spreng) W. and A.
12.	*Alysicarpus tetragonolobus* Edgew.
13.	*Amaranthus blitum* L.
14.	*Amaranthus spinosus* L
15.	*Amaranthus tenuiflorus* Willd.
16.	*Amaranthus viridis* L
17.	*Ammannia baccifera* L
18.	*Ammannia multiflora* Roxb.
19.	*Anagalis arvensis* L.
20.	*Anotis foetida Hk.f.*
21.	*Argemone mexicana* L
22.	*Asphodelus tenuifolius* Cav.
23.	*Bacopa monnieri* (L.) Pennell
24.	*Bergia ammannioides* Roxb.
25.	*Bidens biternata* (Lour.) Merr. and Stapf
26.	*Biophytum sensitivum* (L.) DC.
27.	*Blepharis repens* (Vahl.) Roth.
28.	*Blumea belangeriana* DC.
29.	*Blumea eriantha* DC.
30.	*Blumea lacera* (Burm. f.) DC.
31.	*Blumea membranacea* DC.
32.	*Blumea oblique* (L.) Druce.
33.	*Boerhavia diffusa* L.
34.	*Borreria articularis* (L. f.) F. N. Will.
35.	*Borreria stricta* (L. f.) Schum.
36.	*Brachiaria ramose* (L.) Stapf.
37.	*Buchnera hispida* Buch.-Ham.
38.	*Caesulia axillaries* Roxb.
39.	*Canscora diffusa* (Vahl.) R. Br.
40.	*Cardiospermum halicacabum* L.
41.	*Cassia absus* L.
42.	*Cassia tora* L
43.	*Celosia argentea* L.
44.	*Cenchrus biflorus* Roxb.
45.	*Centranthera indica* (L.) Gamble.
46.	*Chenopodium album* L.
47.	*Chenopodium murale* L.
48.	*Chloris barbata* SW.
49.	*Chloris quinquesetica* Bhide.

Table 1 contd.……..…

Contd…..… Table 1

50.	*Chrozophora prostrate* Dalz.
51.	*Chrozophora rottleri* (Gels) Juss.
52.	*Cleome viscosa* L.
53.	*Cocculus hirsutus* (L.) Diels.
54.	*Coix lachryma-jobi* L.
55.	*Coldenia procumbens* L.
56.	*Commelina benghalensis* L.
57.	*Commelina diffusa* Burm.
58.	*Corchorus aestuans* L.
59.	*Corchorus capsularis* L.
60.	*Corchorus fascicularis* Lam.
61.	*Corchorus olitorius* L.
62.	*Crotolaria albida* Heyne.
63.	*Crotolaria calycina* Schrank.
64.	*Crotolaria filipes* Bth. var. filipes
65.	*Crotolaria linifolia* L.
66.	*Crotolaria triquetra* Dalz.
67.	*Cuscuta chinensis* Lam.
68.	*Cuscuta reflexa* Roxb.
69.	*Cyathocline purpurea* (D. Don.) O. Ktze.
70.	*Cynodon dactylon* (L.) Pess.
71.	*Cyperus brevifolius* (Rottb.) Hassk.
72.	*Cyperus compressus* L.
73.	*Cyperus difformis* L.
74.	*Cyperus haspan* L.
75.	*Cyperus iria* L.
76.	*Cyperus rotundus* L.
77.	*Desmodium dichotomum* (klein ex Willd.) DC.
78.	*Desmodium gangeticum* (L.) DC. var. gangeticum.
79.	*Desmostachya bipinnata*
80.	*Digera muricata* (L.) Mart.
81.	*Dinebra retroflexa* (Vahl.) Panz.
82.	*Dopatrium junceum* (Roxb.) Buch.-Ham.
83.	*Echinochloa colonum* (L.) Link.
84.	*Eclipta protrata* (L.) L. Mant.
85.	*Enicostema hyssopifolium* (Willd.) Verd.
86.	*Eragrostis diarrhena* (Schult.) Steud.
87.	*Eragrostis tenella* (L.) P. Beauv. ex Roem. and Schult.
88.	*Eriocaulon eleanorae* Fyson.
89.	*Eriocaulon quinquangularis* L.
90.	*Euphorbia geniculata* Orteg.
91.	*Euphorbia hirta* L.
92.	*Euphorbia parviflora* L.
93.	*Euphorbia rothiana* Spreng.
94.	*Euphorbia thymifolia* L.
95.	*Exacum pedunculatum* L.
96.	*Fimbristylis microcarpa* F. N. Muller.
97.	*Fimbristylis miliacea* (L.) Vahl.
98.	*Gantelbua urens* (Heyne ex Roth) Bremek.
99.	*Glinus lotoides* L.

Table 1 contd.…..

Contd.…..… Table 1

100.	*Glinus oppositifolius* (L.) A. DC.
101.	*Glossocardia bosvallea* (L. f.) DC.
102.	*Gnaphalium indicum* L.
103.	*Goniocaulon indicum* (Klein ex Willd.) Cl.
104.	*Goniogyna hirta* (Willd.) Ali.
105.	*Grangea maderaspatana* (L.) Poir.
106.	*Haplanthus tentaculatus* Nees var. *tentaculatus*
107.	*Heliotropium indicum* L.
108.	*Heliotropium supinum* L.
109.	*Heteropogon contortus* (L.) P. Beauv.
110.	*Hibiscus panduraeformis* Burm.
111.	*Hibiscus sabdariffa* L.
112.	*Hoppea dichotoma* Willd.
113.	*Hydrolea zeylanica* (L.) Vahl.
114.	*Hygrophila auriculata* (Schum.) Heine.
115.	*Indigofera astragalina* DC.
116.	*Indigofera cordifolia* Heyne.
117.	*Indigofera oblongifolia* Forsk.
118.	*Indigofera tinctoria* L.
119.	*Indigofera trita* L.
120.	*Ipomoea fistulosa* Mart.
121.	*Ipomoea sindica* Stapf.
122.	*Ischaemum indicum* (Houtt.) Merill.
123.	*Launaea procumbens* (Roxb.) Ramayya and Rajgopal.
124.	*Leea edgeworthii* Santapau.
125.	*Leea indica* (Burm. f.) Merrill.
126.	*Leea macrophylla* Roxb.
127.	*Lepidium sativum* L.
128.	*Leucas aspera* (Willd.) Spr.
129.	*Leucas biflora* R. Br.
130.	*Leucas martinicensis (Jacq.) R.Br.*
131.	*Lindernia antipoda* (L.) Alst.
132.	*Lindernia ciliata* (Colsm.) Pennell.
133.	*Lindernia crustacean* (L.) F. Muell.
134.	*Lindernia multiflora* (Roxb.) Mukerjee.
135.	*Lindernia oppositifolia* (Retz.) Mukerjee.
136.	*Lindernia parviflora* (Roxb.) Haines.
137.	*Ludwigia perennis* L.
138.	*Malachra capitata* L.
139.	*Martynia annua* L.
140.	*Medicago sativa* L.
141.	*Melilotus alba* Lam.
142.	*Melilotus indica* Ali.
143.	*Melochia corchorifolia* L.
144.	*Merremia gangetica* (L.) Cufod.
145.	*Merremia tridentate* (L.) Hall. f
146.	*Merremia vitifolia* (Burm. f.) Hall.
147.	*Mollugo pentaphylla* L.
148.	*Moschosma polystachyum* (L.) Bth.
149.	*Murdannia nudiflora* (L.) Brenan.

Table 1 Contd.…..…

Contd.…..… Table 1

150.	*Neptunia triquetra* Bth.
151.	*Nothosaerva brachiata* (L.) Wt.
152.	*Oryza rufipogon* Criff.
153.	*Oxalis corniculata* L.
154.	*Phyla nodiflora* (L.) Greene.
155.	*Phyllanthus maderaspatensis* L.
156.	*Physalis minima* L.
157.	*Polygala chinensis* L.
158.	*Polygala erioptera* DC.
159.	*Portulaca oleracea* L.
160.	*Portulaca quadrifida* L.
161.	*Pouzolzia zeylanica* (L.) Brenan.
162.	*Psoralea corylifolia* L.
163.	*Ramphicarpa longiflora* (Arn.) Benth.
164.	*Rorripa indica* (L.) Hiern.
165.	*Rungia pectinata* (L.) Nees.
166.	*Rungia repens* (L.) Nees.
167.	*Salvia plebeia* R. Br.
168.	*Scirpus lateriflorus Gmel.*
169.	*Sclerocarpus africanus* Jacq.
170.	*Setaria glauca* (L.) Beauv.
171.	*Setaria tomentosa* (Roxb.) Kunth.
172.	*Sida acuta* Burm.
173.	*Sida alba* L.
174.	*Smithia conferta* Sm.
175.	*Smithia sensitiva* Ait.
176.	*Solanum nigrum* L.
177.	*Solanum surattense* Burm. f.
178.	*Sopubia delphinifolia* (L.) G. Don.
179.	*Sphaeranthus indicus* L.
180.	*Stemodia serrata* Benth.
181.	*Stemodia viscosa* Roxb.
182.	*Striga angustifolia* (Don) Sald.
183.	*Striga asiatica* (L.) Kuntze.
184.	*Sutera dissecta* (Del.) Walp.
185.	*Tacca leontopetaloides* (L.) O. Ktze.
186.	*Tephrosia pumila* (Lam.) Pers.
187.	*Tephrosia purpurea* (L.) Pers.
188.	*Tephrosia strigosa* (Dalz.) Santa. and Mahesh.
189.	*Themeda quadrivalvis* (L.) O. Kuntze.
190.	*Trianthema portulacastrum* L.
191.	*Tribulus terrestris* L.
192.	*Trichodesma amplexicaule* Roth.
193.	*Trichodesma zeylanicum* (Burm. f.) R. Br.
194.	*Tridax procumbens* L.
195.	*Triumfetta rhomboidea* Jacq.
196.	*Triumfetta rotundifolia* Lam.
197.	*Typha angustata* Bory and Chaub.
198.	*Urena lobata* L.
199.	*Vaccaria pyramidata* Medic.
200.	*Vahlia digyna* (Retz.) O. Ktze.
201.	*Vernonia cinerea* (L.) Less.
202.	*Vicoa indica* (L.) DC.
203.	*Zornia gibbosa* Span.

Herbicidal:

Herbicides are chemicals capable of killing or inhibiting the growth of plants. They kill the weeds *in situ* without permitting their dissemination. Herbicides must be used with care in the monsoon season, particularly when there is a heavy rain, the physical weeding becomes difficult, the herbicides are helpful in destroying weeds. Usually 2-4-D and Glycel are more effective in weed control and are used largely by the farmers.

Mulching:

Mulching kills the weeds by cutting light to them. The waste material of the farm like straw, hay, dry sugarcane leaves etc. are used as mulch material. This method is not effective in weed control.

Burning:

In some places burning method for destroying the weed are also applied.

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