



PHYTOSANITARY TREATMENT FOR ORIENTAL FRUIT FLY (*Bactrocera dorsalis* Complex) IN VIETNAM

DUONG MINH TU
PLANT PROTECTION DEPARTMENT

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Distribution of the Oriental fruit fly in Vietnam

- Native to Asia, the Oriental fruit fly, *B. dorsalis* is now found in approximately 30 countries, including parts of America and Oceania. The revision by Drew and Hancock (1994) has shown that the true *B. dorsalis* is restricted to mainland Asia (except the peninsula of southern Thailand and West Malaysia), plus Taiwan and its adventives population in Hawaii

- Oriental fruit fly - *Bactrocera dorsalis* (OFF) is native for Vietnam (CABI, CPC 2014).

- *Bactrocera dorsalis* was firstly recorded in the North of Vietnam in 1967-1968 with scientific name is *Chaetodacus ferrugineus* (Fabricius)





List of fruit fly species in Vietnam

- The national surveillance of fruit fly in Vietnam was carried out by Dick Drew, Le Duc Khanh and Ha Minh Trung (project code ICP/VIE/8823/1999-2000) confirmed of the presence of 30 fruit fly species in Vietnam)
- Oriental fruit fly is one of the most serious pests of fruit crops in Vietnam.
- Le Duc Khanh et al. (2010) confirmed of the presence of 36 fruit fly species in Vietnam.



List of fruit fly species in Vietnam

Nº.	Scientific name	Geographical distribution				
		North mountain region	Red river delta region	North central coast region	Mekong river delta region	South-East region
1	<i>Bactrocera apicalis</i> de Meijer				+	+
2	<i>Bactrocera calophyllii</i> P.&M.					+
3	<i>Bactrocera carambolae</i> D.&H.		+		+	+
4	<i>Bactrocera caryeae</i> Capoor	+	+	+	+	+
5	<i>Bactrocera cibodasae</i> D.&H.	+	+			
6	<i>Bactrocera cilifera</i> Hendel	+	+	+	+	+
7	<i>Bactrocera correcta</i> Bezzi	+	+	+	+	+
8	<i>Bactrocera cucurbitae</i> Coquillett	+	+	+	+	+
9	<i>Bactrocera curvifera</i> Walker	+				
10	<i>Bactrocera dorsalis</i> Hendel	+	+	+	+	+
11	<i>Bactrocera gombokensis</i> D.&H.	+	+	+		
12	<i>Bactrocera hochii</i> Zia				+	+
13	<i>Bactrocera incisa</i> Walker	+				
14	<i>Bactrocera infesta</i> Enderlein	+				
15	<i>Bactrocera isolate</i> Hardy				+	
16	<i>Bactrocera latifrons</i> Hendel	+	+			+
17	<i>Bactrocera limbifera</i> Bezzi	+				
18	<i>Bactrocera malaysiensis</i> D.&H.	+	+	+	+	+
19	<i>Bactrocera melastomatos</i> D.&H.				+	
20	<i>Bactrocera osbeckiae</i> D.&H.	+			+	



List of fruit fly species in Vietnam (cont.)

21	<i>Bactrocera pyrifoliae</i> D.&H.	+				
22	<i>Bactrocera rubigina</i> W.&Z.	+	+	+	+	+
23	<i>Bactrocera scutellaris</i> D.&H.	+	+	+	+	+
24	<i>Bactrocera scutellata</i> Hendel	+	+	+	+	+
25	<i>Bactrocera tau</i> Walker	+	+	+	+	+
26	<i>Bactrocera thailandica</i> D.&H.	+	+	+	+	+
27	<i>Bactrocera triangularis</i> Drew	+				
28	<i>Bactrocera umbrosa</i> Fabricius	+				
29	<i>Bactrocera unistriata</i> Drew	+				
30	<i>Bactrocera verbascifoliae</i> D.&H.	+	+	+	+	+
31	<i>Bactrocera Vishnu</i> D.&H.	+			+	+
32	<i>Bactrocera zonata</i> Saunders				+	
33	<i>Carpomya vesuviana</i> Costa					+
34	<i>Dacus longicornis</i> Wiedemann	+	+	+	+	+
35	<i>Dacus siamensis</i> D.&H.	+	+			
36	<i>Dacus tenebrosus</i> D.&H.				+	
	Total	27	18	14	22	20



Host range of the Oriental fruit fly in Vietnam

Nº.	Vietnamese name	English name	Scientific name
1	Buoi	Pomelo	<i>Citrus grandis</i>
2	Cam	Orange	<i>Citrus sinensis</i>
3	Quyit	Mandarin	<i>Citrus reticulata</i>
4	Oi	Guava	<i>Psidium guajava</i>
5	Dao	Peach	<i>Prunus persica</i>
6	Man	Plum	<i>Prunus domestica</i>
7	Le	Pear	<i>Pyrus communis</i>
8	Mo	Apricot	<i>Prunus armeniaca</i>
9	Doi	Bellfruit	<i>Syzygium jambos</i>
10	Nhan	Longan	<i>Dimocarpus longan</i>
11	Vai	Litchi	<i>Nephelium litchi</i>
12	Khe	Star-fruit	<i>Averrhoa carambola</i>
13	Hong xiem	Sapota	<i>Achras sapota</i>
14	Quat thong bi	Wampee	<i>Clausena lansium</i>
15	Na	Custard-apple	<i>Annona squamosa</i>
16	Hong	Persimmon	<i>Diospiros kaki</i>
17	Tao ta	Jujube	<i>Ziziphus jujuba</i>
18	Du du	Papaya	<i>Carica papaya</i>
19	Xoai	Mango	<i>Mangifera indica</i>
20	Thanh long	Dragon fruit	<i>Hylocereus undulatus</i>
21	Vu sua	Star-apple	<i>Chrysophyllum camito</i>
22	So ri	Acerola	<i>Malpighia glabra</i>
23	Chuoii	Banana	<i>Musa paradisiaca</i>

Damage and crop loss by fruit fly





Field control and management of the oriental fruit fly in Vietnam

- Use methyl eugenol in combination with DDVP has been widely used to attract and kill oriental fruit fly (OFF) in the field in Viet Nam since 1980s. This attractant was also used for monitoring purpose.



- More recently, protein baits are being used to monitor and suppress OFF. Two beer waste protein plants were set up (one in the South and the other in the North) to produce protein bait for management of fruit fly in general and OFF in particular.



Field control and management of oriental fruit fly in Vietnam (cont'.)

Fruit bagging





Quarantine treatment of the oriental fruit fly

- In 1980s, Vietnam used to export big quantities of fresh orange fruits into the USSR but OFF was a quarantine pest in the USSR. To overcome this problem, fumigation with methyl bromide (without 2% of chloropicrin) was used.

- The first study on application of vapor heat treatment for oriental fruit fly on dragon fruit was carried out in Vietnam from 1998 to 2001. The second study on application of vapor heat treatment for oriental fruit fly and other fruit fly species on dragon and mango fruits was carried from 2005 to 2008. Those studies produced data that was accepted by the importing countries as phytosanitary treatment for dragon and mango fruit.

In parallel, a study on application of irradiation against oriental fruit fly on dragon fruit was carried out in Vietnam from 2001 to 2003 (Nguyen Duy Lam, Tran Bang Diep and Duong Minh Tu, 2004). The effective dose to quarantine OFF on dragon fruits, accepted by the importing country (USA), is 250 Gy



Study and develop a model of integrated systems approach for fruit fly on exportation dragon fruit from Vietnam into Korea

In collaboration with Imperial College London (ICL) and Queensland University of Technology (QUT) under the STDF project: “Beyond Compliance: Integrated systems approach for pest risk management in Southeast Asia” from 2010-2013.

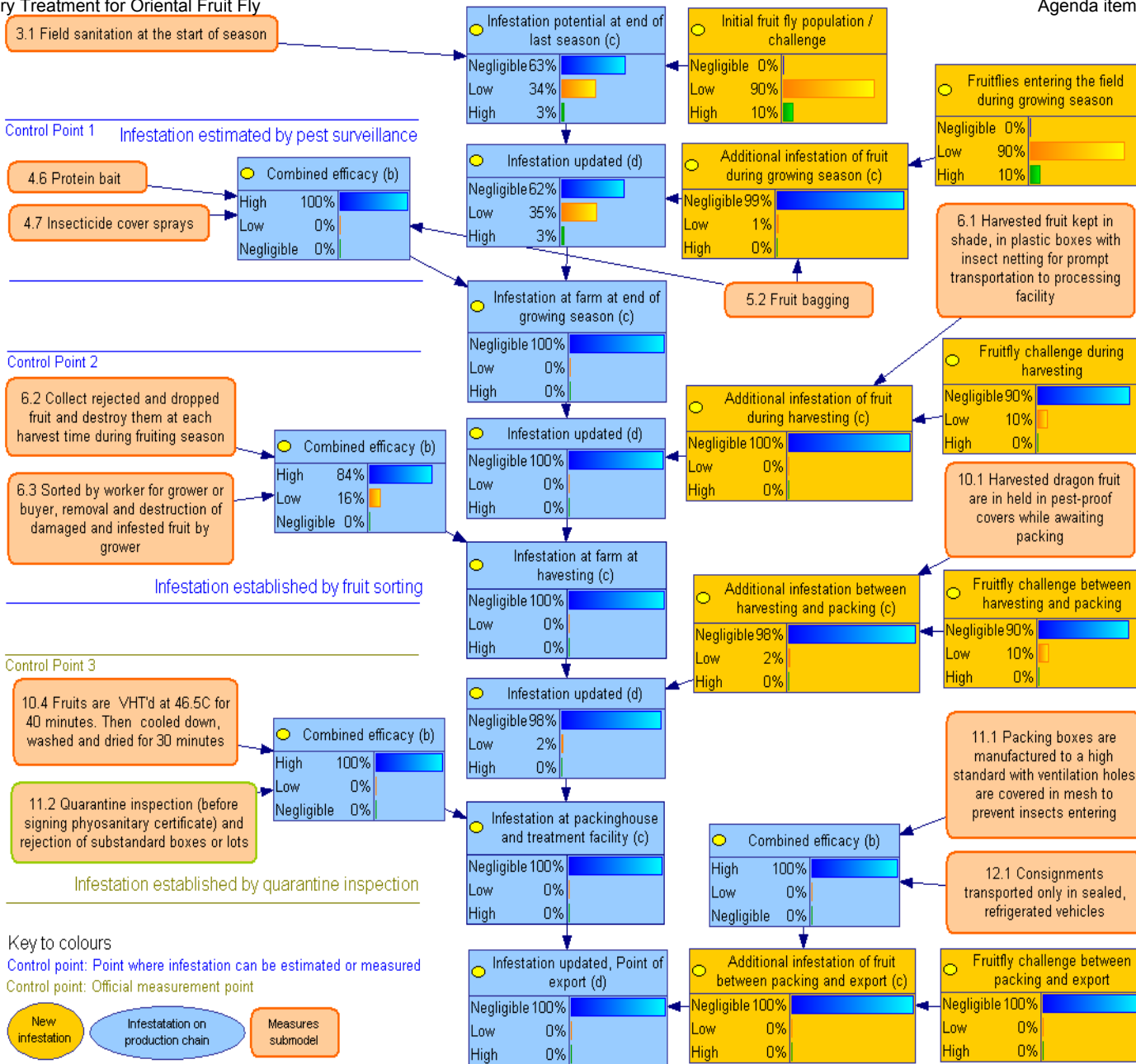
- Develop a production chain and identify control points;
- Develop Decision support spreadsheet (DSS);
- Develop Control Point Bayesian-Network;
- Develop CP-BN analysis



International Plant Protection Convention Secretariat
 Phytosanitary Treatment for Oriental Fruit Fly

28_ECBD_2014_Dec
 Agenda item 5.5

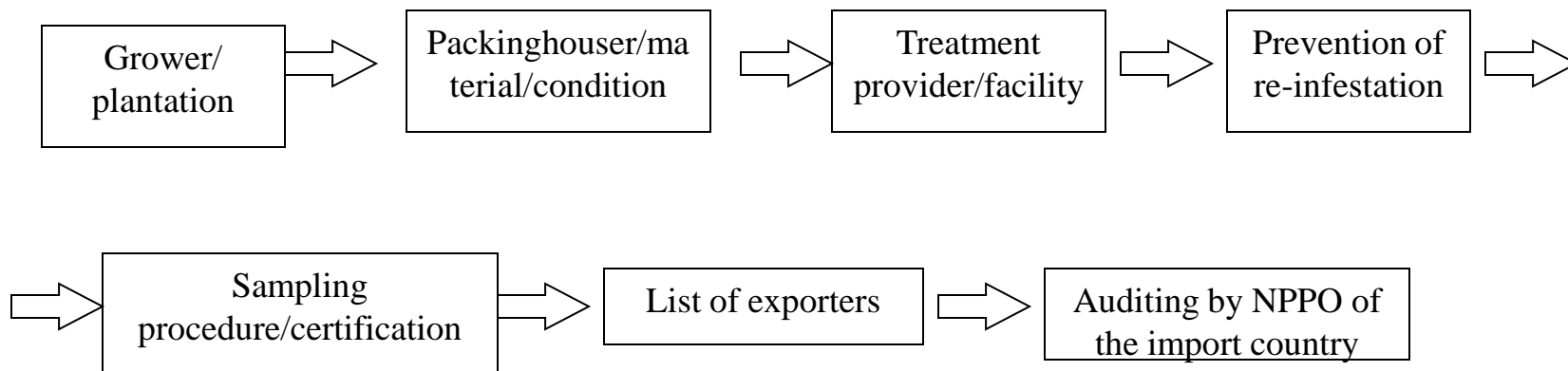






Phytosanitary Certification System for export fresh fruits from Vietnam

Check, approved and provide a separate code by the NPPO of Vietnam





List of approved quarantine treatment provider/facility

FACILITY	TREATMENT TYPE	ADDRESS
Goodlife Company Ltd TFC: Number 01 Capacity: 5 tons/treatment	Vapour Heat Treatment	Lot 1G, Ho Chi Minh City agricultural Hi-Tech Park, Hamlet 1, Pham Van Coi Commune, Cu Chi District, Ho Chi Minh City, Vietnam.
Yasaka Fruit Processing Ltd Company TFC: Number 02 Capacity: 5 tons/treatment	Vapour Heat Treatment	BinhGiao Hamlet, ThuanGiao Commune, ThuanAn District, Binh Duong Province, Vietnam.
An Phu Irradiation Joint-Stock Company TFC: Number 03 Capacity: 20 tons/treatment	Irradiation	Hamlet 1B, An Phu Commune, Thuan An District, Binh Duong Province, Vietnam.
Son Son Corporation TFC: Number 04 Capacity: 50 tons/treatment	Irradiation	E4/52, 1A Highway, Binh Tan District, Ho Chi Minh City, Vietnam.
Fine Fruit Asia TFC: Number 05 Capacity: 5 tons/treatment	Vapour Heat Treatment	C7-5/1 and C7-5/2 Hàm Kiệm 1 – Industrial Zone, Hàm Thuận Nam Dist., Bình Thuận Province, Vietnam.
Hong An TFC: Number 06 Capacity: 10 tons/treatment	Vapour Heat Treatment	-Head office: No. 48, Truong Son Street, Ward 2, Tan Binh District, Hochiminh City, Vietnam.Tel: +84-8-3 848 8 444 -Factory: Hai Ninh Hamlet, Bac Binh District, Binh Thuan Provice, Vietnam Tel: +84-623 66 11 66
Hoang Phat TFC: Number 07 Capacity: 2 tons/treatment	Vapour Heat Treatment	-Head office: Phu Thanh Hamlet, Tam Vu Town, Chau Thanh District, Long An Provice, Vietnam. Tel: 072 3 679 789. Representative Office: Vietphone Building,64 Nguyen Dinh Chieu Street, Dakao Ward, District 1, Ho Chi Minh City, Vietnam. Tel: +84 8 6291 8496













THANK YOU FOR YOURS KIND ATTENTION