THAILAND

Case Study

The Exportation of Orchids to European Union

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Case study process and activities

Activity timeline

This case study was implemented in approximately 2 years
July 2011-July 2013
Department of Agriculture (DOA)
National Bureau of Agricultural Commodity and Food Standards (ACFS)

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The activities in developing the case study

1) general project meeting containing two parts:
•general meeting among project staff held twice a week
•Skype meetings developing the model and case study with ICL and QUT
•Visit by QUT

2) three times stakeholder meeting
Thai Orchid Exporters Association & Thai Orchid Garden Enterprise Association
6-10 February 2010, 29 May 2012 and 19 July 2013

Case Study Objective

To employ the Bayesian Network (BN) to identify key control points and alternative measures generating the effective model to meet EU's phytosanitary requirements

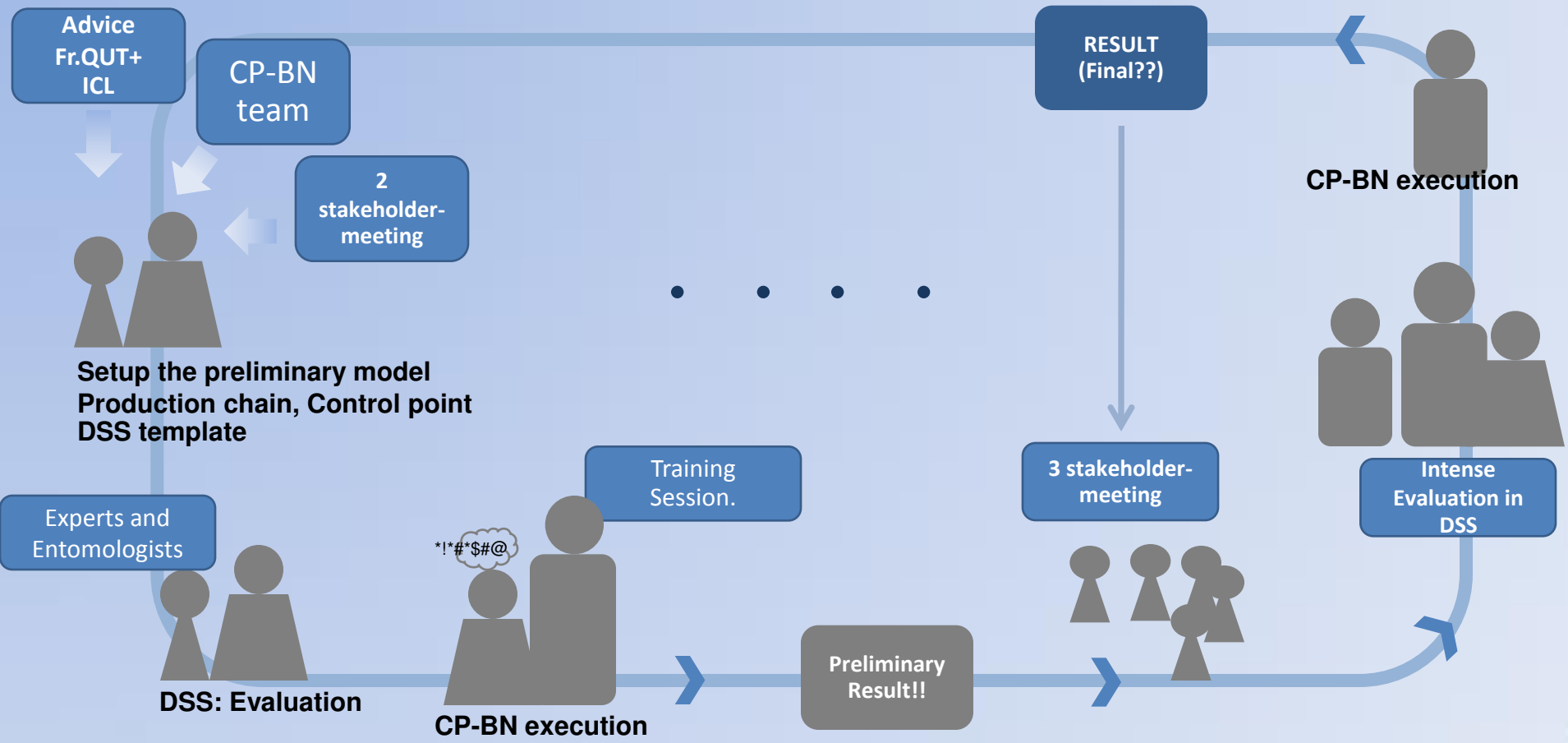
Better understand alternative phytosanitary measures equivalent to methyl bromide fumigation

The results can ultimately maintain an important export market, currently threatened by high pest interceptions

Case study process and activities

Case Study Developing

Implemented in approximately 2 years



6 -10 Feb. 2012 activities


Suvarnabhumi Airport


Thai Orchids Co.Ltd


Orchids farm


Packing house

29 May 2012 activities

-Stakeholder meeting-

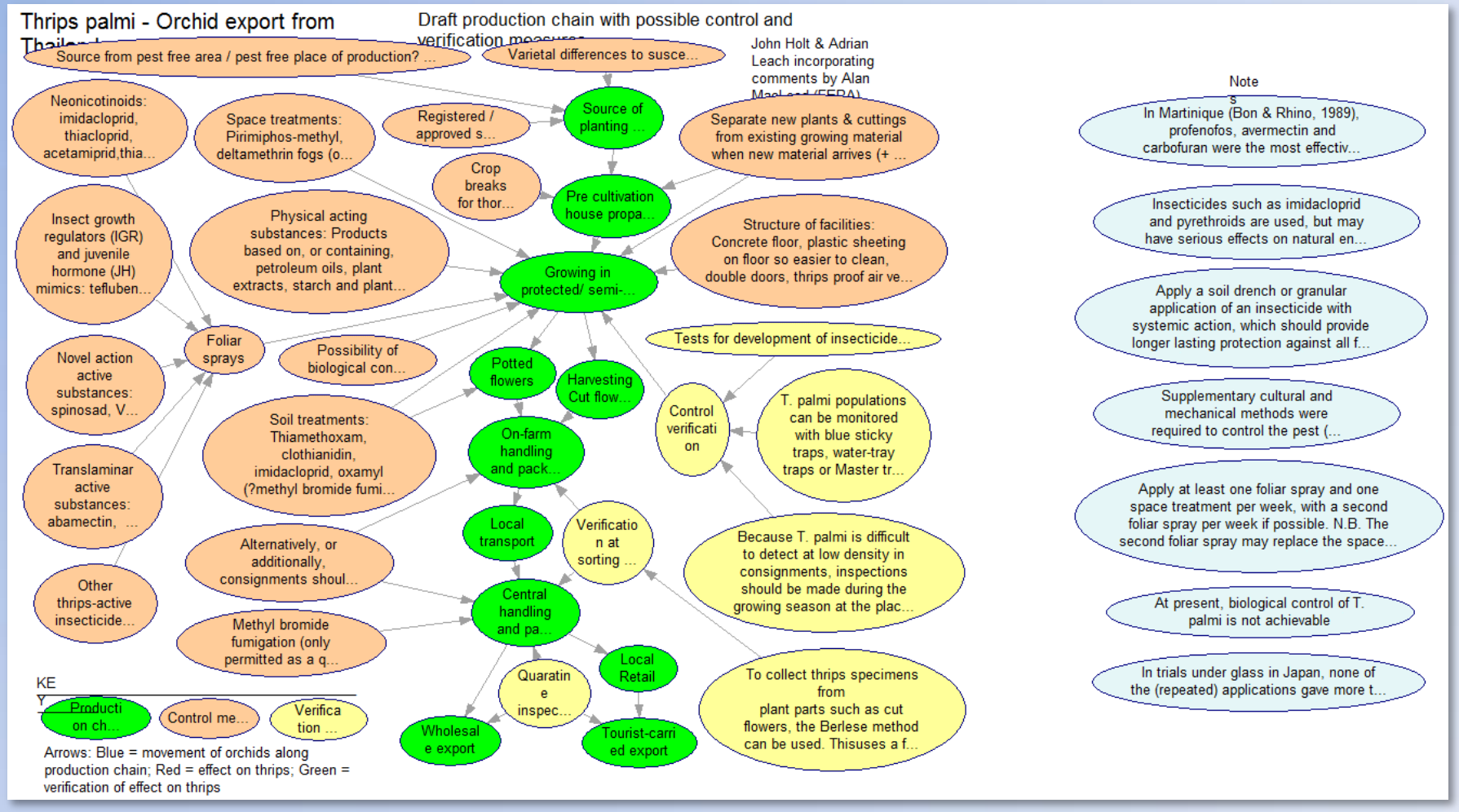
At ACFS Office

Production chain

This was prepared by the Thailand NPPO in consultation with orchid industry stakeholders before a midterm meeting in July 2012. It was reviewed by the Beyond Compliance technical team and FERA-UK

The production chain indicates a series of potential control measures and verification measures.

These measures can be applied to manage the risk of infestation, and monitoring can be applied to determine the effects of the measures

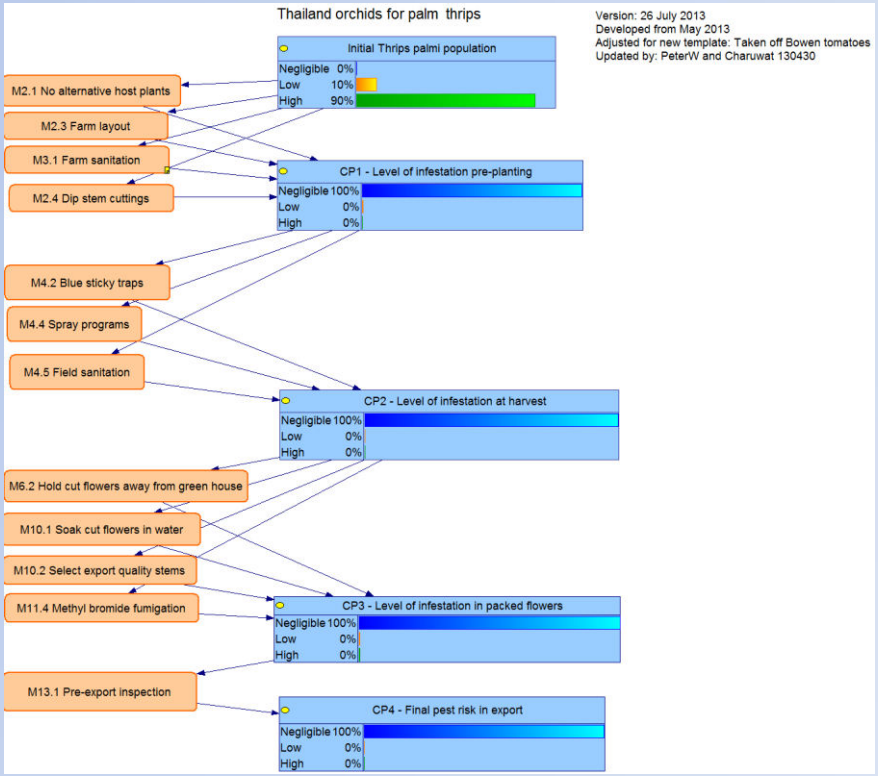

Thrips palmi - Orchid export from
Draft production chain with possible control and
John Holt & Adrian Leach incorporating comments by Alan
Source from pest free area / pest free place of production? ...
Varietal differences to susce...
Source of planting ...
Registered / approved s...
Space treatments: Pirimiphos-methyl, deltamethrin fogs (o...
Neonicotinoids: imidacloprid, thiacloprid, acetamiprid,thia...
Separate new plants & cuttings from existing growing material when new material arrives (+ ...
Crop breaks for thor...
Pre cultivation house propa...
Insect growth regulators (IGR) and juvenile hormone (JH) mimics: tefluben...
Physical acting substances: Products based on, or containing, petroleum oils, plant extracts, starch and plant...
Structure of facilities: Concrete floor, plastic sheeting on floor so easier to clean, double doors, thrips proof air ve...
Growing in protected/ semi-...
Foliar sprays
Possibility of biological con...
Tests for development of insecticide...
Novel action active substances: spinosad, V...
Potted flowers
Harvesting Cut flow...
Control verificati on
T. palmi populations can be monitored with blue sticky traps, water-tray traps or Master tr...
Soil treatments: Thiamethoxam, clothianidin, imidacloprid, oxamyl (?methyl bromide fumi...
On-farm handling and pack...
Translaminar active substances: abamectin, ...
Local transport
Verificatio n at sorting ...
Because T. palmi is difficult to detect at low density in consignments, inspections should be made during the growing season at the plac...
Alternatively, or additionally, consignments shoul...
Other thrips-active insecticide...
Central handling and pa...
Methyl bromide fumigation (only permitted as a q...
Local Retail
Quaratin e inspec...
To collect thrips specimens from plant parts such as cut flowers, the Berlese method can be used. Thisuses a f...
Wholesal e export
Tourist-carri ed export
KE
Y
Producti on ch...
Control me...
Verifica tion ...
Arrows: Blue = movement of orchids along production chain; Red = effect on thrips; Green = verification of effect on thrips
Note
s
In Martinique (Bon & Rhino, 1989), profenofos, avermectin and carbofuran were the most effectiv...
Insecticides such as imidacloprid and pyrethroids are used, but may have serious effects on natural en...
Apply a soil drench or granular application of an insecticide with systemic action, which should provide longer lasting protection against all f...
Supplementary cultural and mechanical methods were required to control the pest (...
Apply at least one foliar spray and one space treatment per week, with a second foliar spray per week if possible. N.B. The second foliar spray may replace the space...
At present, biological control of T. palmi is not achievable
In trials under glass in Japan, none of the (repeated) applications gave more t...

Evaluation: Decision support spreadsheet (DSS)

TABLE C1. Description of candidate measures (these may be used alone or with other measures)

	Risk management measures available (automatically read in from Table B2)	Efficacy 1.1 a) What is its potential contribution to risk reduction?	Efficacy 1.1 b) Uncertainty	Efficacy Graphic	Verification 1.2 a) The measure can be verified?	Verification 1.2 b) Uncertainty	Verification Graphic
i	2.1 Avoid cultivating host plants of Thrips palmi around planting area	Medium	Low		With some difficulty	Medium	
ii	2.3 Farm layout and building	Low	Low		Difficult	Low	
iii	2.4 Dipping of stem cutting against Thrips palmi	High	Low		Very easy	Very low	
iv	3.1 Sanitation both inside and surrounding of farm or green house	High	Low		Very easy	Very low	
v	3.2 Provide area to dispose for damage orchids due to pest destruction and planting materials which may be the host of Thrips palmia and insecticides should be applied on them	High	Very low		Very easy	Very low	
vi	4.1 Pest monitoring on flowering stage either by eyes or using berlese funnel	Very high	Very low		Easy	Low	
vii	4.2 Blue sticky traps are applied	Low	Medium		Easy	Low	
viii	4.4 Foliar and flower sprays programs: - program A (low population of Thrips) using carbosulfen /imidacloprid /acephate - program B (medium population of Thrips) : fipronil /carbosulfen	Very high	Low		Very easy	Low	
ix	4.5 Field sanitation	High	Medium		Easy	Low	
x	6.2 Holding and collecting areas of cut flowers shall be cleaned and far from green house	Low	High		With some difficulty	Medium	
xi	10.1 Soaking cut flower stems into water container to remove Thrips palmi and store in the separated area	Medium	Low		Easy	Low	
xii	10.2 Select export quality stems by selecting defected cut flower of orchids with pests or sign of pests and dispose in the assigned area.	Very high	Very low		Easy	Low	
xiii	11.3 Packaging box or container for export shall be new, clean and strong.	High	Very low		With some difficulty	Medium	
xiv	11.4 Methyl Bromide fumigation treatment	Very high	Medium		Very easy	Medium	
xv	13.1 Quarantine inspection / interception (Phytosanitary certificate)	Very high	Very low		Easy	Very low	

DSS from Preliminary result



Intial system approach CP-BN with 4 control points, initiating the *Thrips* population at 90%

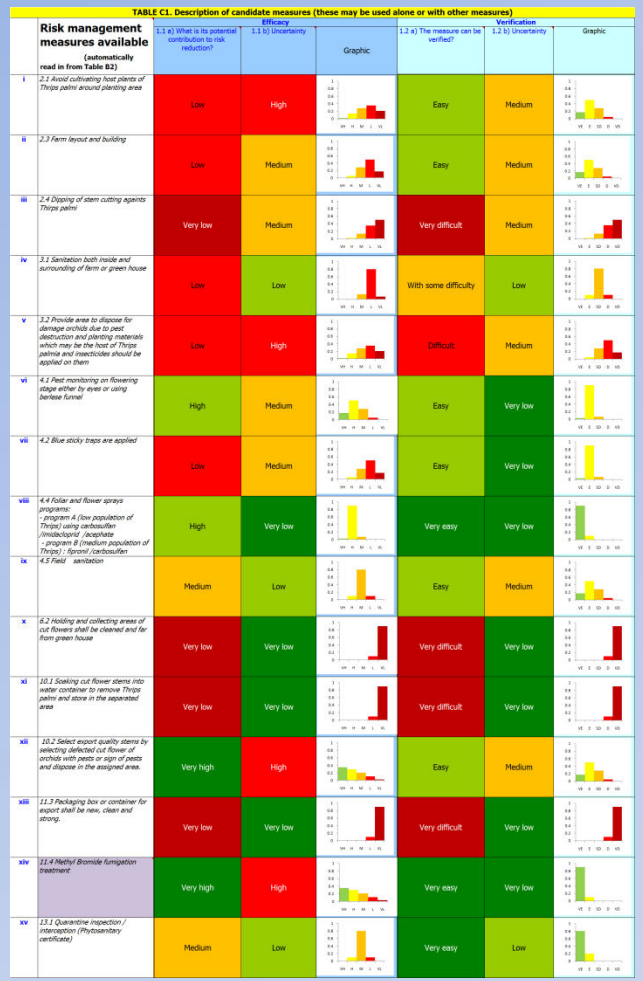
Hypothesis:

a) **The measure efficacy estimates are over optimistic and should be rather lower**

b) **In this first version there is no facility to add pest challenge along the production chain, only at the beginning**

The hypothesis is supported by the results from 3rd stakeholders interview .

Evaluation: Decision support spreadsheet (DSS)



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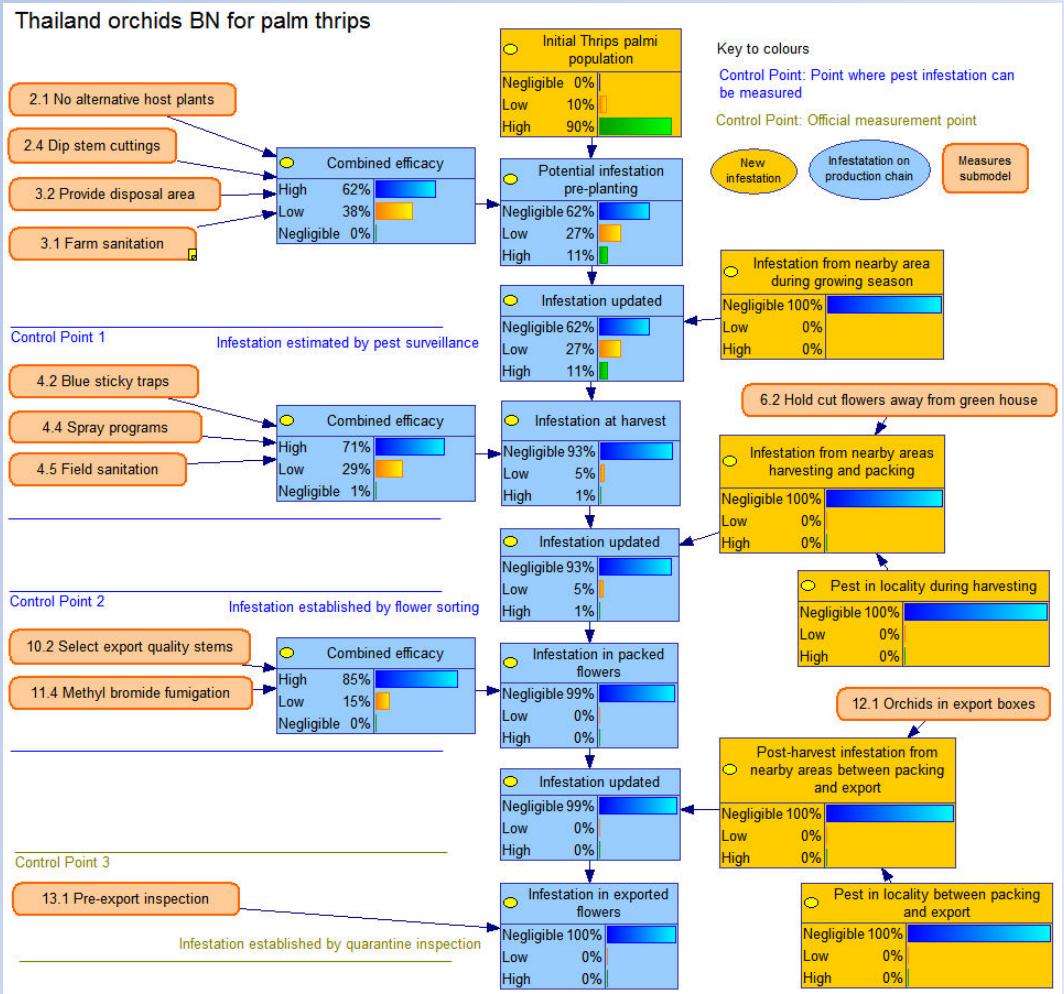
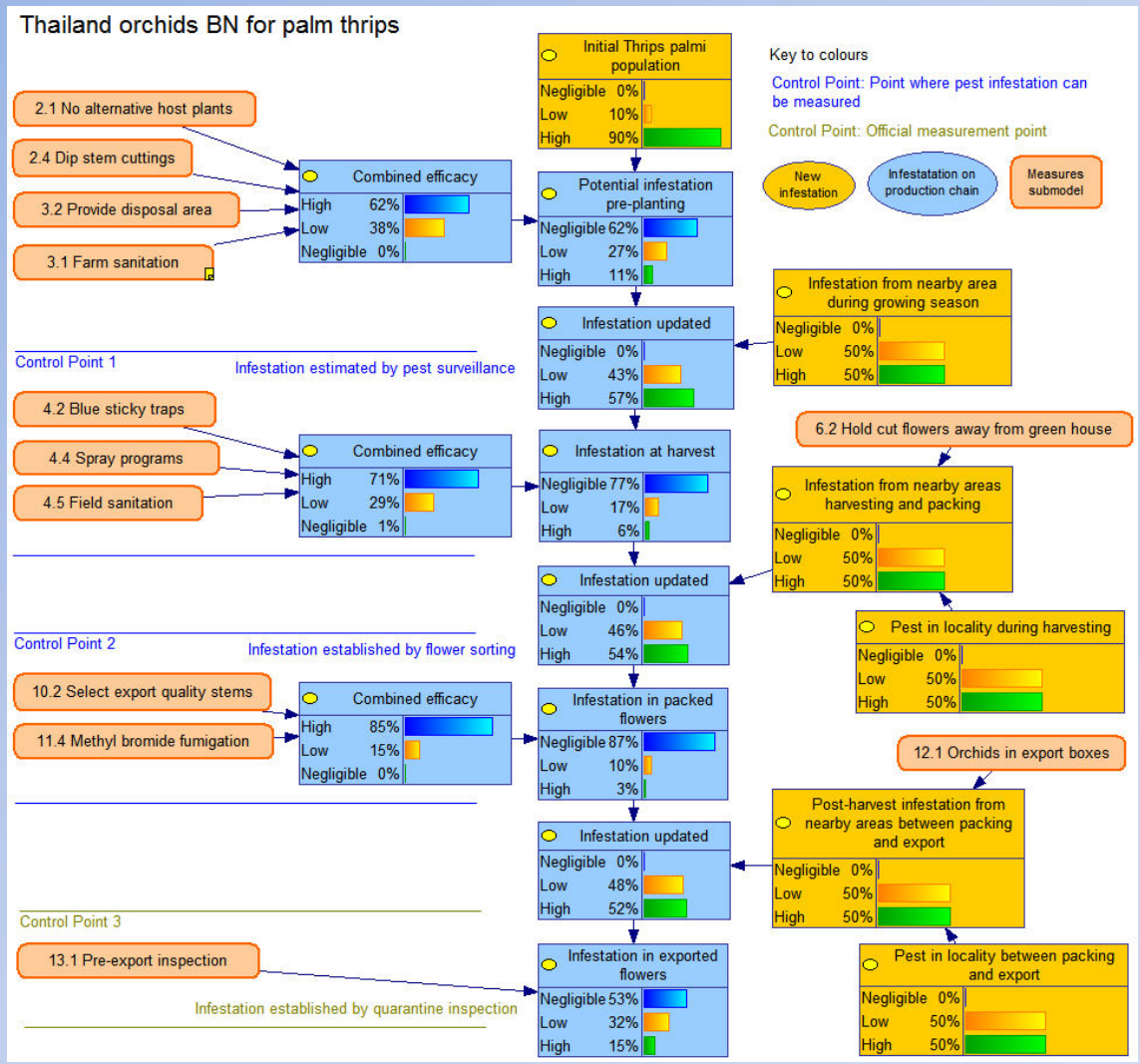


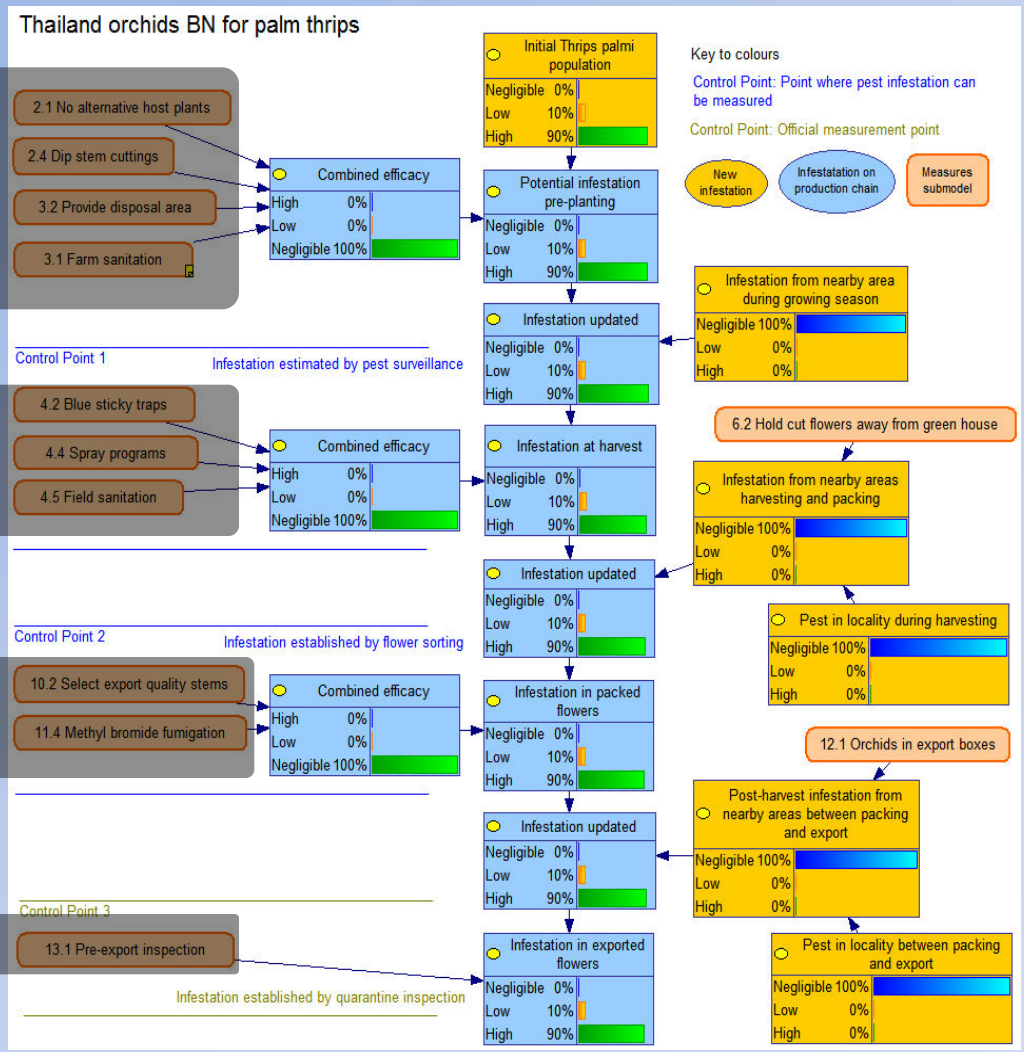
DSS result

System approach CP-BN with 4 control points, initiating the *Thrips* population at 90%. Pest pressure along the production chain added but here set to negligible.



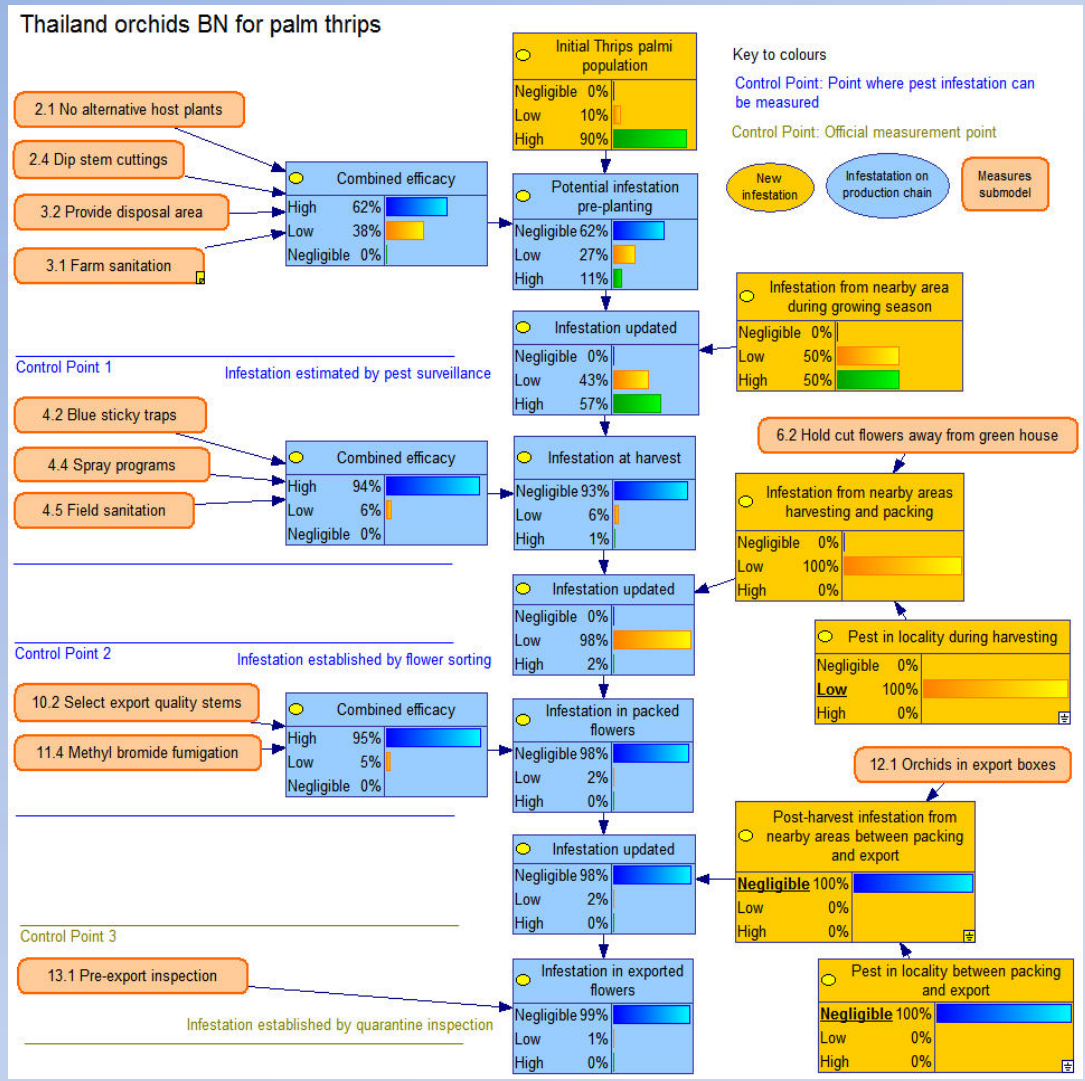
CP-BN output under the following infestation scenario:

a) Initial pest challenge is 90% chance of being high
b) Various measures applied
c) Additional Thrips challenge along the production chain has 50% chance of being high
d) 15% probability of High infestation at point of export



CP-BN output under the following infestation scenario:

a) Initial pest challenge is 90% chance of being high
b) All measures are turned off
c) No additional Thrips challenge along the production chain
d) 90% of high infestation at point of export



Current Possibility

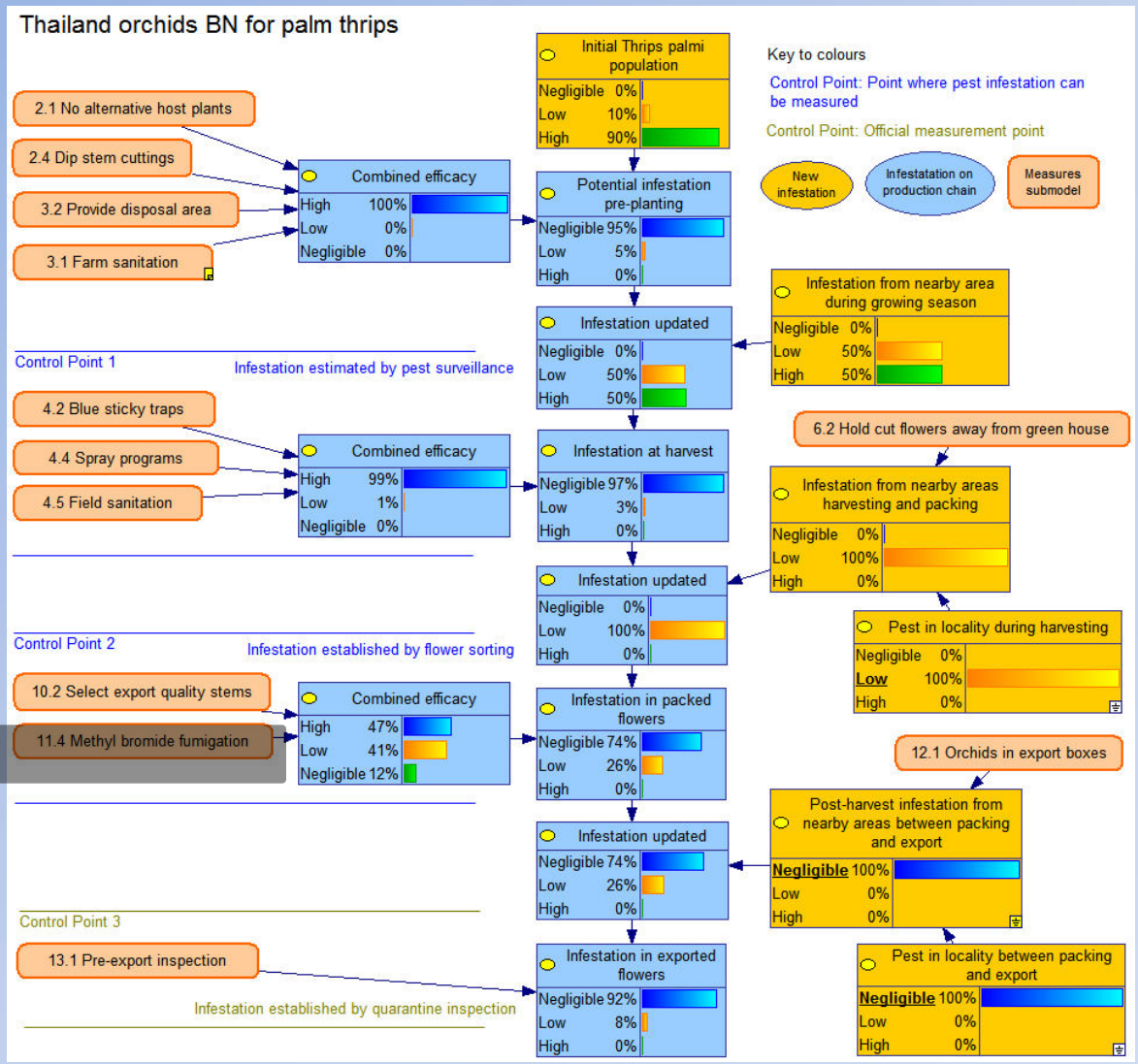
CP-BN output under the following infestation scenario:

a) Initial pest challenge is 90% chance of being high

b) Methyl bromide fumigation measure switched on at 100% efficacy and implementation

c) Additional Thrips challenge along the production chain

d) 1% of low infestation at point of export; 99% probability of Negligible



Possible Alternative

CP-BN output under the following infestation scenario:

a) Initial pest challenge is 90% chance of being high

b) Methyl bromide fumigation turned off

c) Activate Highly effective spray and hygiene programmes

d) Additional Thrips challenge along the production chain (as previous slide)

e) 8% of low infestation at point of export; 92% probability of Negligible

Conclusions about systems approach (Thailand Case Study)

Selected measures: spray program and field sanitation appear to be equivalent to the use of methyl bromide fumigation to control *T. palmi* infestation in export orchids.

More evaluation may be needed to obtain the better results. (evaluation & sensitivity test → promising results)

Collaborating with the stakeholders help better understand the difference between evaluated theory and practical implementation.

Conclusions about Beyond Compliance project

Obtain Critical Thinking:
the system approach → think more analytically and systematically
(IPM → System approach)

Get better understanding in the orchid cultivation
(e.g. most application techniques based on investment cost)

Learn the fact that the theory may not be implemented in the field

Connection!!
Share the experience among counterparts, brain storms → promising result

Learn to utilize the new innovation method (CP-BN) for pest risk management and challenge for other projects.