



THAI AGRICULTURAL STANDARD

TAS 2502-2005

**GOOD AGRICULTURAL PRACTICES FOR
PEPPERS**

National Bureau of Agricultural Commodity and Food Standards

Ministry of Agriculture and Cooperatives

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Peppers or chilies are agricultural commodities that Thailand is a potential producer, and exporter of the produce and their various processed products.

In order to have Thai peppers better accepted by both national and international levels, there should be the right production system management for farmers. In order to obtain peppers which are safe to consumers and for export promotion, the Ministry of Agriculture and Cooperatives deems it proper to establish a Good Agricultural Practices Standard for Peppers.

The provisions of this standard are based upon the information of the following documents:

The Dept. of Agriculture. B.E. 2545 . Good Agricultural Practices for Peppers and Tomatoes. Agricultural Cooperatives Assembly Printing House of Thailand , Bangkok.29 PP.

The National Bureau of Agricultural Commodity and Food Standards. B.E. 2546. Thai Agricultural Standard, TAS 9001-2546. Good Agricultural Practices for Food Crops. Announced in Government Gazette, Ratchakitchanubecksa : General Notice, Volume 120, Section 145D. December 19, BE. 2546.

FAO/WHO. 2003. Code of Hygienic Practice for Fresh Fruits and Vegetables (ALINORM 03/13, Appendix II) adopted by 26th Session of the Codex Alimentarius Commission (CAC). Report of the 26th Session of the CAC, Rome, 30 June – 7 July 2003.

EUREPGAP. 2004. EUREPGAP Control Points & Compliance Criteria. Fruit and Vegetables. Version 2.0- Jan 04. EUREPGAP c/o FoodPLUS GmbH, Cologne, Germany.

Remark:

The standard title has been revised from “Thai Agricultural Commodity and Food Standard (TACFS)” to “Thai Agricultural Standard (TAS)” in accordance with the enforcement of the Agricultural Standards Act B.E. 2551 (2008).



**NOTIFICATION OF THE NATIONAL COMMITTEE ON
AGRICULTURAL COMMODITY AND FOOD STANDARDS
SUBJECT: GOOD AGRICULTURAL PRACTICES FOR PEPPERS
B.E. 2548 (2005)**

The resolution of the 1/2548 session of the National Committee on Agricultural Commodity and Food Standards on 30 May B.E.2548 (2005) agreed to elaborate a Thai Agricultural Commodity and Food Standard on Good Agricultural Practices for Peppers. This standard would be advantage for quality improvement, trade facilitation and consumer protection.

Therefore, the National Committee on Agricultural Commodity and Food Standards, mandated by the resolution of the Cabinet on 19 November B.E.2545 (2002), notifies the establishment of Thai Agricultural Commodity and Food Standard on Good Agricultural Practices for Peppers to be used as a voluntary standard as attached herewith.

Notified on 29 July B.E.2548 (2005)

Khunying Sudarat Keyurapan

Minister of Agriculture and Cooperatives

Chairperson of the National Committee on Agricultural Commodity and Food Standards

THAI AGRICULTURAL STANDARD

GOOD AGRICULTURAL PRACTICES FOR PEPPERS

1. SCOPE

1.1 This Thai Agricultural Standard (TAS) covers the production system and its evaluation of peppers with scientific name, *Capsicum* spp. of Solanaceae family. It includes all steps from production in the field to collecting house in order to obtain safe and fresh peppers with quality suitable for consumption.

1.2 This GAP for peppers is implemented jointly with the Thai Agricultural Standard for Peppers.

2. DEFINITION

Terms used in this TAS are explained as follows:

2.1 Planting plot means the boundary of the area in which crop is planted to is not connected to other areas. In case the boundary is connected to others, but the production process system which includes input management, care planning set up, and personnel management in the planting plot is clearly different.

2.2 Organic fertilizers mean fertilizers derived from organic materials are manufactured with processes of humidification, chopping, grinding, fermentation, sifting, or other processes, but they are not chemical fertilizers nor biofertilizers.

2.2.1 Compost means a completely decomposed organic fertilizer. When it is applied to plants, it releases necessary nutrients to plants.

2.2.2 Manure means an organic fertilizer from animals' excretion is completely decomposed by micro-organisms.

2.3 Biofertilizer means a fertilizer containing live microorganisms is used to improve soil in terms of biological, physical and biochemical properties, and it also refers to micro-organism culture starter.

2.4 Hazardous substances mean the following substances:

- explosive
- flammable substances
- oxidizing agents and peroxide
- toxic substances
- substances causing diseases
- radio active substances
- mutagenic substances

- corrosive
- irritant substances
- other substances, either chemicals or anything which may cause harmful to humans, animals, plants, properties or environments.

2.5 Pesticides mean hazardous substances regulated by the Department of Agriculture in accordance with the Notification of the Ministry of Industry regarding the list of hazardous substances issued stipulated under Hazardous Substances Act B.E. 2535.

2.6 Hygiene means the right characteristics in accordance with good practices such as various conditions and criteria necessary in the production process in order to obtain safe produce and suitable for consumption.

2.7 Pests mean species or strains of plants, animals or living organisms that cause diseases which are harmful to plants or their produce.

3. PROVISION CONCERNING CONTROL POINT, REQUIREMENT AND INSPECTION

The control point, requirement and inspection for good agricultural practice for peppers are defined in Table 1.

Table 1. The control point, requirement and inspection
(see details of recommendation in Appendix C)

Control Point	Requirement	Inspection
1. Water sources	- Water source must be in the contaminant free environment.	- Visual inspection of the environment. If there is any risk, have the water quality analysed.
2. Plantation area	- The area is safe from hazardous substances which could cause contamination on the produce.	- Visual inspection of the environment. If there is any risk, have the soil quality analysed.
3. Application of pesticides	- If application is required, use it according to the recommendations of the Department of Agriculture, or follow the recommendations in the officially registered labels authorized by the Department of Agriculture, Ministry of Agriculture and Cooperatives. - In case the produce is for export, do not apply agricultural hazardous substances that have been banned by the trading country partner.	- Inspect the storage of pesticides. - Examine the records on the pest survey and application of pesticides application data. - If evidence or situation are in doubt whether misapplication of pesticides, the produce shall be analysed.

Control Point	Requirement	Inspection
<p>4. Preharvest processes</p> <p>4.1 Pest control measures.</p> <p>4.2 Application of organic fertilizers such as compost and manure</p>	<p>- Pest survey in the field is a must. If infestation is at damaging level, pest elimination must be carried out. If agricultural hazardous substances are applied, follow the provision 3.</p> <p>- Organic fertilizers must be completely fermented and decomposed. Application feature and method must be taken care of to prevent contamination of hazardous substances or pathogenic microorganisms at the harmful level to consumer.</p> <p>- Application of human excretion is prohibited.</p>	<p>- Inspect the record of the pest survey, prevention and elimination.</p> <p>- Inspect the record of the fertilizer nature and application. If there is any risk, have the fertilizers analysed.</p>
<p>5. Harvest and postharvest handlings.</p> <p>5.1 Equipment and containers used in the harvest</p> <p>5.2 Harvesting Method</p> <p>5.3 Postharvest handling method</p>	<p>-Equipment and containers used in the harvest must be clean. They shall not cause damages to produce quality, and shall not cause contaminations that affect consumers' safety.</p> <p>-Hygiene of harvest and postharvest handlings, do not allow any contaminations that affect the safety of consumption.</p> <p>-Pepper is sorted for defects or inferior quality, quality classification and size prior to distribution. This is to refer to provisions in Thai Agricultural Standard for Peppers (TAS 1502-2547) or in accordance with the provisions of trade partners.</p>	<p>-Inspect equipment and containers.</p> <p>-Inspection of the peppers that have been harvested and handled.</p> <p>-Inspection of the sorting steps and/or the sorted produce.</p>
<p>6. Produce holding, moving in plantation area, storage and collection.</p> <p>6.1 Moving, storage and collection of produce.</p>	<p>- Equipment, containers and vehicles in the moving of produce must be clean, not be contaminated that affect the safety in</p>	<p>- Inspect the site, equipment, containers, vehicles, operation steps, moving method, storage and collection of produce.</p>

Control Point	Requirement	Inspection
	consumption. - Storage site must be clean and hygienic, not be exposed to direct sunlight with good ventilation, free of heat accumulation, and able to prevent contaminations of foreign matter, hazardous substances, pathogenic carrier animals including pets.	
6.2 Traceability	- During the produce is in storage and moving, it must be identified that it is able to be traced back of its origin.	- Check the affixing code, mark or record the information indicating produce origin.
7. Personnel hygiene	- Taken good care of personnel hygiene is a must in order to prevent peppers from pathogenic microorganism contamination from human direct contact with peppers particularly at the harvest and postharvest handling steps.	- Inspect the operation at harvest and postharvest handling steps and/or interview the workers.
8. Data recording	Data must be recorded on - the survey and control measures of pests. - fertilizer nature and its application in accordance to record-form samples in Appendices A and B.	- Inspect data record.

4. RECOMMENDATION ON GOOD AGRICULTURAL PRACTICES FOR PEPPERS

This recommendation is provided for farmers who produce peppers. The details are explained in Appendix C.

APPENDIX C

GUIDELINES OF GOOD AGRICULTURAL PRACTICES FOR PEPPERS

1. WATER SOURCE

1.1 Water for growing process should be obtained from the source that is not in the environment risky to contamination, and the water quality is suitable for agricultural propose. It is not the industrial waste water or contaminated water from health hazardous materials such as agricultural hazardous substances, heavy metals, pathogenic microorganisms. If it is necessary to use such water, clear evidence or proof that the water has been treated and can be for agricultural use must be presented.

1.2 At the beginning of working on agricultural system, at least one water sample should be collected for analysis for hazardous material contamination depending on the risk of water source, and have the detail recorded in the record-form 1 sample (water and soil analysis report). The analysis is carried out by government laboratories or those which are accredited. Water analysis report must be kept for evidence.

1.3 Water sources for agriculture should be permanent, and the water source and environment are to be conserved.

2. PLANTING AREA

2.1 Set up the assigned plot data indicating : owner's name of the planting area and address, name of plot keeper (if any) and address, plot location and its map, planting plot layout, kinds of crops and varieties, history of land utilization at least the past 3 years and other details as shown in the example record form 2 (general data of the owner's planting area).

2.2 In case the growing area is near or in industrial location or risky area. At the beginning of working on agricultural system, at least one soil sample should be analysed by official laboratory or officially accredited laboratory for soil property and contamination of hazardous materials depending on the risk of the area and have the data recorded in the record-form 1 sample (water and soil analysis result). Have the analysis result report kept for evidence.

3. MANAGEMENT OF PESTICIDES

3.1 If there is an application of pesticides, it is applied in accordance to the recommendation or referring to the Department of Agriculture recommendation or recommendation in the label which is correctly registered with the Department of Agriculture, The Ministry of Agriculture and Cooperatives. The pesticides application must be in line with pests found in the survey. Stop applying pesticides prior to harvest in accordance with the time period indicated in the label accompanying each kind of pesticides or following the recommendation of the Department of Agriculture and record the data in the record-form in Appendix A (example of data record form for plant pest survey and the application of pesticides).

3.2 The use of agricultural hazardous substances is to apply them legally under the hazardous substance registration number and recommendation on the label provided for the crop. Do not use pesticides which are banned from production, import, export or possession according to Hazardous Substance Act B.E. 2535 (1992). In case of the production for export do not use pesticides which are banned by trading country partners.

3.3 Read recommendation on the label thoroughly to understand the property and how to use to the pesticide prior application.

3.4 Participants and laborers who work in the field of pest control measures should know : pests, selection of agricultural hazardous substances and their application rate, selection of chemical sprayer and spray nozzle equipment including the right chemical spraying method. The chemical sprayer is maintained in ready prepared condition which can be used at any time. To protect toxic substance contamination on garments and the body, the operator should wear well covered clothes with toxic substance protection gears such as mask or nose cover cloth, gloves, cap and shoes.

3.5 Prepare agricultural hazardous substance with the right concentration. Before application the volume is adjusted and well agitated. Spraying such substance when the wind is calm either in the morning or evening period. Avoid application during strong sunlight or wind, and during operation the operator should be over the wind direction at all time.

3.6 Agricultural hazardous substances are prepared just enough for one single use. There should be no left over of such substances in the tank.

3.7 When the agricultural hazardous substance is used up, its container is rinsed a few times with water. The rinsed water is collected in the spraying tank for next application.

3.8 The empty agricultural hazardous substance container must be damaged in order to prevent its reuse. It is then discarded at the site particularly provided for such container or it is destroyed by burying in the ground with sufficient depth that no animal can dig it up and away from water sources, and burning the container is prohibited.

3.9 After every spraying of agricultural hazardous substance, the operator must immediately take shower, shampoo and change clothes which must be well laundered each time.

3.10 The container containing agricultural hazardous substance which cannot be used up in one time is tightly closed when not in use, and it is stored in the location provided for the substance.

3.11 All kinds of agricultural hazardous substances used in the production process are stored in the well closed location, safe, rain and sunlight proof, and with good ventilation.

3.12 The storage location for agricultural hazardous substances must be isolated in order to prevent of contamination these substances with the produce, foods and environment.

3.13 Agricultural hazardous substances must be kept in well closed containers with clearly identified label and are separately stored in groups without mixing with fertilizers, plant growth regulators and various plant supplementary nutrients. After opening the agricultural hazardous substance container it is prohibited to transfer the content out of the original container.

3.14 accidental prevention materials , tools and first aid such as eye lotion, clean water, sand and fire extinguisher equipment. must be provided in the agricultural hazardous substance storage or application location

3.15 Hazardous substances which are banned from production, import, export, or possession according to Hazardous Substance Act B.E. 2535 (1992) are not stored in the chemical storage site or within the growing plot.

3.16 Agricultural hazardous substance users should receive training on how to use the substances correctly.

4. PREHARVEST PROCESS

4.1 Pest Control Measures

4.1.1 Farmers should know the species and life cycle of important pests including their good control measures by taking under consideration of environment and ecological system. Descriptions of important peppers pests are detailed in Appendix D.

4.1.2 Trace the various stages of pest epidemic. If the found amount is at the economic damaging level, control measures of such pest is properly carried out along the government recommendation, and record data in accordance to data record-form sample in Appendix A (example of data record form for plant pest survey and the application of pesticides).

4.1.3 Pest control measures should be carried out with any method or combination of the following :

4.1.3.1 General method such as the use of sticky glue trap, up root the sick plant and have it destroyed, weed control by labor while they are young or before the flowering stage and mulching at the planting row.

4.1.3.2 Natural enemy method such as biological sources, predators and parasites.

4.1.3.3 Extracts of natural material method such as neem extract.

4.1.3.4 Chemical method such as efficient agricultural hazardous substances with official recommendation.

4.2 Production Inputs

4.2.1 Provide a list of production inputs, their origin, and specific details of important production inputs such as seeds, fertilizer and agricultural hazardous substances which are used in the production process. It also indicates details, amount, date of purchase and data record.

4.2.2 Seeds

4.2.2.1 Select seeds of market required variety.

4.2.2.2 Select standard quality seeds which tolerate pests. The seeds were from reliable seed producer or they were collected from the field/plant of good quality.

4.2.2.3 If the seed was collected by farmers, it must be harvested from the disease free plant and/or if the seed was purchased, it should be mixed with pesticides.

4.2.2.4 The seed is soaked in warm water (50-55 °C for 15-20 min) before planting or mix the seed with pesticides.

4.2.3 Organic fertilizer application

There should be good management to prevent produce from microorganism, chemical and physical contaminations at the unsafe level to consumption with the following practice guideline:

4.2.3.1 The organic fertilizer should have gone through fermentation process or been completely decomposed or other processes sufficient to reduce amount of pathogenic microorganisms. Do not use human excretion for fertilizer.

4.2.3.2 Waste water sediment should not be used to produce organic fertilizer. If it is used, there should be data indicating that the organic fertilizer does not contain contaminants of heavy metals at the hazardous level.

4.2.3.3 If organic fertilizer is bought from distributor, there should be information of type or process that the fertilizer manufacturer use to reduce the population of pathogenic microorganisms. It would be better to have certified document from the producer indicating its characteristics such as the fertilizer analysis, details of its chemical and microorganism characteristics.

4.2.3.4 Method of organic fertilizer application. Do not allow the fertilizer to become direct contact with peppers which will be harvested, and should not apply organic fertilizer during or near the harvesting period.

4.2.3.5 Fermentation, decomposing, or storage area for organic fertilizer must be far from peppers field which will not be contaminated from rain water leaching or flood.

4.2.3.6 Record details of obtaining and application of the fertilizer such as date, kind, amount and method of organic fertilizer application including during peppers growing period that the fertilizer is applied. These is carried out in the record form sample in Appendix B (Example of data record form for fertilizer nature and its application) and have it kept for inspection.

4.2.4 Chemical fertilizer application select specific chemical fertilizers which are legally registered with the Department of Agriculture, the Ministry of Agriculture and Cooperatives. Select suitable fertilizer for the growing plant, at the recommended rate on the label. This should be jointly applied with organic fertilizer.

4.3 Agricultural Equipment and Tools

4.3.1 Provide a list of and the storage for agricultural equipment and tools.

4.3.2 Provide of suitable and sufficient agricultural equipment for the operation.

4.3.3 Provide storage facility in good partition for agricultural equipment and tools. It is safe and easy to use them.

4.3.4 Set up agricultural equipment and tool maintenance and repair program, and there are activities according to the set up plan with data recording of every maintenance.

4.3.5 Check the agricultural equipment and tool condition before use such as the chemical sprayer and harvesting equipment. Agricultural equipment and tools which have to be accurate in operation such as the spraying nozzle for agricultural hazardous substances should

be constantly calibrated. If there is discrepancy, it is adjusted, repaired or get a new one with working efficiency in accordance with the standard.

4.3.6 Agricultural equipment and tools including containers for packaging and transport of produce shall be cleaned every time before and after use and before storage.

4.4 By product and Waste Management.

4.4.1 Garbage is clearly separated such as paper carton, plastic, glasses, oil, chemicals and plant waste. There should be enough garbage cans and clearly identify garbage type and dumping station.

4.4.2 Burn the diseased-plant twigs outside the growing plot.

4.4.3 Plant waste or non-diseased branches trimmed from the tree can be used for compost or green manure.

5. HARVEST AND POSTHARVEST HANDLINGS

5.1 Equipment used in the harvest pepper of such as knife must be sharp and clean. After use it is cleaned before storage.

5.2 Containers for produce during harvest must be clean, and they are cleaned every time before use.

5.2.1 Equipment and containers used in the harvest (if any) such as knives and pruning shears shall be clean and proper for the operation. They are not contaminated with hazardous matter which affects the consumption safety and peppers quality, the equipment and containers should be hygienically kept clean both before and after use.

5.3 Method of Harvesting Peppers should be carried out as the following:

5.3.1 Carefully harvest peppers with pedicels intact; do not damage the produce, and bring them under the shade with good ventilation. Do not stack piling them which causes decay.

5.4 Postharvesting Handlings should be carried out as follows:

5.4.1 Harvest and postharvest handling hygiene, do not allow any contaminations from hazardous substances which affect consumption safety.

5.4. Peppers with defects and inferior quality is sorted out, and sorted for quality and size classification in accordance with provisions of Thai Agricultural Standard for Peppers (TAS 1502-2004) or according to the agreement established with the buyer, and have the operating information recorded.

6. PRODUCE HOLDING, MOVING WITHIN THE PLANTING FIELD, STORAGE AND COLLECTION

6.1 The container for peppers must be clean, hygienic with good ventilation property and durable for the transportation. It is free from foreign matter and smell.

6.2 Containers for produce are separated from those for moving or transport of agricultural hazardous substances or fertilizer in order to prevent contamination which causes damage to the produce and harmful to consumption. In case the container use cannot be separated, careful cleaning of the container is a must to prevent contamination.

6.3 Equipment and Vehicles in the moving activities must be clean.

6.4 Temporary holding or storage facilities must be clean and hygienic such as far away from dirty source, good air circulation, no heat accumulation, protection of hazard from pathogenic carrier animals including other pets and must protect peppers from sunlight.

6.5 Should not move the produce together with hazardous substances; if necessary, protection of contamination is a must.

6.6 If peppers are not shipped to buyers, they should be stored in cool and shady area. Do not stack piling them.

6.7 During storage and moving of the produce, code or mark should be affixed indicating the planting plot, and the farmer source, and the harvest date on the container in order to facilitate traceability and improve efficient flow of the produce.

7. PERSONNEL HYGIENE

7.1 Especially after harvest persons who will have direct contact with peppers should take care of personnel hygiene in order to prevent the produce from contamination.

7.2 Provide sufficient personnel hygienic facilities which are also near the production site, and be able to get rid of various wastes ; and avoid contamination to the growing site, the produce and the production inputs.

7.3 Sick person which may spread disease through the produce such as contagious diseases of digestive tract system, diarrhea and dysentery is prohibited to enter the operation area. Sick participants or laborers are required to report to the production manager.

8 DATA RECORDING

8.1 Set up the document in steps of operation, a list of various important documents and record the data for certified inspection of the peppers production system.

8.2 Record-form and document should be updated for that season production. In case there is more than one production plot. Signature of the worker or recorder should be signed every time when there is a recording.

8.3 Data record shall be kept for at least 3 consecutive years of production or depending on the trade partners' requirement. Record-form and the list of documents that can be checked should be prepared as follows :-

8.3.1 Data record-form for pest survey and control measures in Appendix A.

8.3.2 Data record-form of fertilizer nature and its application in Appendix B with details of date, amount, fertilizer distribution company / store particularly organic fertilizer including biofertilizer. In case the fertilizer cannot be checked of its source or it is unreliable. It should be sent to organization or reliable laboratory for analysis of contaminants such as hazardous substances, heavy metals or pathogenic microorganisms. Have the analytical report kept for evidence.

8.3.3 Document indicating list of the equipment and production input storage with the detail of storage site and method. In case there is no recording of document, there should be storage site management such as label which clearly indicates the list, and separate the production inputs and equipment in good partition or grouping, they are also clean, safe and easy to use them.

8.3.4 Documents or reports indicating analytical result of soil, water and various production inputs.

APPENDIX D
IMPORTANT PESTS OF PEPPERS

Pest List	Symptom and the Destruction	Survey Method and Criteria
Stem blight <i>Phomopsis</i> sp.	The fungus invades stem base, stem and branches. The lesion is similar to a slender rugby football or elongate lesion of creamy white color with brown edge. The lesions which are parallel to the stem have small black spots. If the symptom is severe, the stem breaks at the lesion causing death of the whole plant. This disease becomes epidemic easily and rapidly during rainy season on more than one year old plant. The disease infects peppers from seedling to harvesting stage.	- Survey the disease infestation of stem blight at every peppers stem base of one hill. If the symptom appears about 5% of each stem, control measures must be carried out.
Cercospora blight or Branchlet spot <i>Cercospora asparagi</i> Sacc.	Mostly this fungal disease infects on branches, branchlets and fully developed pseudo leaves or leaves tips. The symptom starting with very small dark spots, the lesion is rather round of brownish purple or reddish-purple in color, dull white to grey color at the center. The lesion edge is uneven with yellow to reddish-brown in color. Its size is between 1-5 mm. If the symptom is severe, the disease which causes the branch dry up and kills the plant becomes epidemic easily in high humidity condition. The disease infects peppers from seedling to harvesting stage.	- Survey the disease infestation of Cercospora blight by inspecting peppers branch and branchlet of every stem in a hill. If the symptom appears about 5% of each stem, control measures must be carried out.
Wet rot <i>Choanephora</i> sp.	The fungus attacks young peppers plant which starts to branch or sends young shoot. It attacks shoot tip which develops watery dark green color, then it becomes yellow and wilt. Grey mycelia of short straight pieces that the ends swell into black buds are present around the lesion. The rot becomes epidemic very rapidly while heavy raining and spreads easily during high humidity under raining alternating with sunshine and repeated with raining.	- Survey the disease infestation of wet rot. If the symptom of young tip or shoot start to appear, control measures must be carried out.
Anthracnose <i>Collectotrichum</i> sp.	Mostly the disease causes brown color lesion on the moderately mature stem. The lesion which appears in black or dark oval rings overlapping each others is	- Survey the disease infestation of anthracnose by inspecting every peppers stem base of one hill. If the

Pest List	Symptom and the Destruction	Survey Method and Criteria
	sunken along the stem length. Orange spore colony is present at the lesion with external bruised edge of dark green color. If the symptom is severe, the lesion is expanded causing the stem thinner, dry up and death. The disease is epidemic easily and quickly during rainy season or high humidity period.	symptom appears about 5% of each stem, control measures must be carried out.
Beet armyworm <i>Spodoptera exigua</i>	The adult is a moth which lays hairy covering and white color eggs in cluster on young parts of plant such as leaves and petioles. When the larvae are mature from the stage 3 up, they cause severe damages by eating all plants parts. It is found attacking peppers in general growing sites. Fully grown larvae become pupae in the soil. Infestation is in during hot season.	- Survey the destruction caused by beet armyworm. If more than one egg cluster per 5 hills or more than one larva per hill is found, control measures must be carried out.
Cut-worm <i>Spodoptera litura</i>	The adult is a moth which lays about 100 brown rice-straw-like color eggs in cluster on leaf which stay together in group, and live on epidermis of leaves, branchlets and shoots. Next stage they move to feed on all plant parts causing severe damages due to numerous large larvae. Fully grown larvae become pupae in the soil. Infestation is all year round.	- Survey the destruction the caused by cut-worm. If more than one egg cluster per 5 hills or more than one larva per hill is found, control measures must be carried out.
Thrips <i>Thrips tabaci</i>	The nymph and adult destroy peppers by sucking sap from tissue at the shoot tip, scale leaves and leaves causing the shoot stunted and shoot tip becomes pale yellow. More infestation is in during dry weather and drought.	- Survey the destruction caused by thrips. If more than one thrip per 5 shoots or more than 20 thrips per hill is found, control measures must be carried out.
Cotton Ballworm <i>Heliothis armigera</i>	The adult lays single egg on young plant parts such as leaves and petioles. The new young larvae from the hatch feed on inside scale leaves at the shoot nodes. When larvae grow up, they scatter to destroy various peppers parts. Infestation is in during summer season.	Survey the destruction the caused by Cotton Ballworm. If more than one worm per hills is found, control measures must be carried out.
Annual Weeds	Weeds that life cycle is completed in one season are mostly propagated with seeds. They are classified into monocotyledon weeds, namely <i>Digitaria ciliaris</i> , <i>Echinochloa colona</i> , <i>Eleusine indica</i> , <i>Cyperus kyllingia</i> , <i>Brachiaria reptans</i>	Survey the weeds. Control measures are carried out if found.

Pest List	Symptom and the Destruction	Survey Method and Criteria
	and <i>Dactyloctenium aegyptium</i> ; and dicotyledon weeds, namely <i>Trianthema portulacastrum</i> , <i>Portulaca oleracea</i> , <i>Amaranthus retroflexus</i> , <i>Ageratum conyzoides</i> , <i>Euphobia heterophylla</i> and <i>Zea tenuifolia</i> .	
Perennial weeds	Mostly these weeds are propagated with stem, root, rhizome, tuber and runner which are better than propagated with seed. The major perennial weeds found are namely <i>Cyperus rotundus</i> , <i>Panicum repens</i> , <i>Cynodon dactylon</i> and <i>Ipomoea obscura</i> .	Survey the weeds. If found, control measures are carried out.

Example
Record Form 2 (Page 1/4)
General Data of Planting Area Owner
Data of Year

Plantation Owner's Name (Mr./Mrs./Miss) Family Name

Register No. of Planting Area Owner

Divided into Planting plot(s)

Address, Village Name Moo No.

Street Alley

Sub-district District Province

Post Code Tel Fax

E-mail Website

Contact person or Representative
(Mr./Mrs./Miss) Family Name

Address, Village Name Moo No

Street Alley

Sub-district District Province

Post Code Tel Fax

E-mail Website

Signature of Entrepreneur
(.....)

Signature of contact person or Representative
(.....)

Example
Record Form 2 (Page 2/4)
General Data of Planting Area Owner

Name Planting Area Owner (Mr./Mrs./Miss)..... Family Name.....

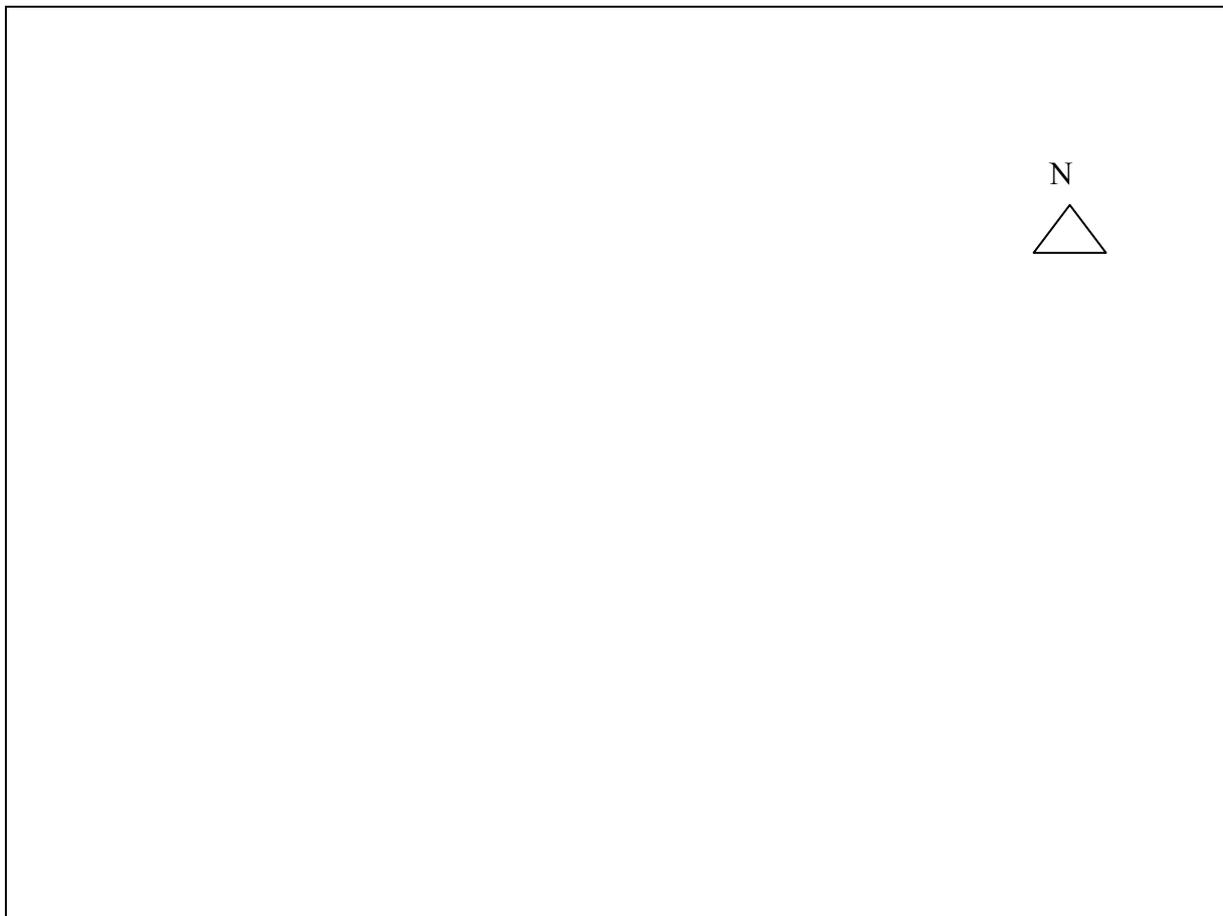
Register No. of Planting Area Owner □□□□□□□□□□□□□□

Planting Plot Location, No. ___ Moo ___ Sub-district District.....

Province..... Postal Code.....

Total No..... Planting Plot(s) Area Rai

Map of planting plot location, communication route and significant places in the vicinity for travel convenience to the planting plot.



Example
Record Form 2 (Page 3/4)
General Data of Planting Area Owner

Planting Plot NO. Operating Year

Planting Plot Location, Moo Sub-district District

Province Area Rai

1.1 Planting Variety

Variety Spacing Planting Amount Planting Date (Plant Age)

Variety Spacing Planting Amount Planting Date (Plant Age)

Variety Spacing Planting Amount Planting Date (Plant Age)

Variety Spacing Planting Amount Planting Date (Plant Age)

1.2 Irrigation System **Rate of Water Supply** litre/Hour.

1.3 Soil Type

1.4 History of Production Area Utilization Prior to Present Crop Planting of the Past 3 Years.

Area has never been cultivated.

Area has been cultivated. Crop Cultivated

year 1

year 2

year 3

1.5 History of Plant Pest Infestation and Control Measures

Name of Plant Pest Infestation year Infestation Area Percentage Control measures

Name of Plant Pest Infestation year Infestation Area Percentage Control measures

Name of Plant Pest Infestation year Infestation Area Percentage Control measures

Name of Plant Pest Infestation year Infestation Area Percentage Control measures

1.6 Other data

.....

.....

.....

Example
Record Form 2 (Page 4/4)
General Data of Planting Area Owner

Planting Plot NO. Operating Year

Layout of planting plot (indicating water source buildings that exist in the planting plot).

The form consists of a large, empty rectangular box with a thin black border, intended for a hand-drawn layout of the planting plot. In the upper right corner of this box, there is a north arrow symbol, which consists of a small triangle with the letter 'N' positioned directly above it.