

# COUNTRY REPORT - SRI LANKA\*

**C. KUDAGAMAGE**  
*Director General of Agriculture*  
*Department of Agriculture, P.O. Box 1, Peradeniya*  
*Sri Lanka*

## 1. General Information :

- ***Comments on the General Organization of Plant Protection Functions, in particular the degree of Centralization or Fragmentation as well as the Involvement of other Ministries or Specialized Agencies***

Agriculture sector in Sri Lanka provide means of livelihood for around 35% of work force and contribute around 19% of GDP. There are 3 crop sectors in agriculture, namely food crops, plantation crops (Tea, Rubber and Coconut) and export crops (Pepper, Cloves and Nutmeg etc.).

Recently, 10 year development plan for agriculture has been prepared and it spell out the government vision for agriculture development in Sri Lanka.

An agriculture sector contributing to regionally equitable economic growth, rural livelihood improvement and food security through efficient production of commodities for consumption, for agro-based industries and for exporting competitively to the world market.

- ***Role of the National Plant Protection Organization for the implementation of WTO-SPS Rules***

Productivity enhancement is considered as one of the main component in the implementation plan in order to transform subsistence agriculture to commercially oriented productive sector. The main policies proposed include promoting high tech-agriculture through investment assistance, regulatory measures for quality inputs (seeds, fertilizer and agro-chemicals) and eco-regionally focused technology generation; providing legal instruments to control unhygienic production and processing methods in primary and value added products and recognizing the need for a quality assurance mechanism that could meet international food safety standards and other quality parameters for crops with export potential.

---

\* 24<sup>th</sup> Session of Asia Pacific Plant Protection Commission

- ***Role of the National Plant Protection Organization in the Implementation of International Pesticide Conventions***

Plant protection is recognized as the responsibility of state and assigned to the Department of Agriculture even though there are other government agencies dealing with specific crop and forest resources. Until recently, plant protection research activities were carried out without much national coordination. However, with recent establishment of the National Committee on Plant Protection which has given the mandate of identifying national priorities of plant protection, inter-institutional co-operation among scientists of plant protection activities in the National Agriculture Research System have been strengthened.

## **2. Plant Quarantine**

- ***Changes in the organization, legislation and regulations since 2005***

Seaport and airport which were under the NPQS were taken directly under SCPPC in 2005

The draft regulations of the Plant Protection Act No.35 of 1999 have been reviewed completely by the legal draftsman in consultation with the Seed Certification and Plant Protection Centre (SCPPC).

- ***Adequacy of personnel and facilities for the execution of plant quarantine functions***

Infrastructure facilities of Seaport was highly inadequate for its functions, hence a new building was constructed and occupied in 2007.

Materials, resources, modern equipment for inspections of import and export verifications and relevant training of people are still needed at the entry points.

A computerized system linking NPPO, NPQS and entry points is required for the facilitation of imports and exports.

- ***Progress in the establishment of the pest free areas of production sites***

Being a very small country, it is very difficult to establish pest free areas in Sri Lanka. However with the future development of the crop zoning for regional crop specialization, establishment of PFAs should be considered.

Recent field visits to Labunoruwa area, situated about 15 miles away from Kekirawa revealed that this area is almost absolutely free of pests of agricultural importance.

A soil survey is being continued since 2005 to establish the places where the burrowing nematode *Radopholus similis* is present. The pest restricts the export of rooted plants from Sri Lanka. All plant nurseries engaged in export of foliage plants are continuously surveyed. Monthly visits are made to collect the soil samples.

A preliminary survey revealed that the fungus *Fusarium subglutinans* and false codling moth *Cryptophlebia leucotreta* are not present in the major pineapple cultivations in the country. Subsequently, a systematic survey was started in 2005 to cover the entire pineapple growing regions in the country. The results obtained so far confirms the absence of the two pests in Sri Lanka.

- **Impact of cooperation projects**

Recently, representatives of FAO, UNIDO and EU have come to Sri Lanka for phytosanitary capacity evaluation. Evaluation Reports have to be carefully studied for upgrading and updating of such capacity.

- Number of phytosanitary certificates and import inspections in relation to the export / import of agricultural commodities (**Progress in 2006 and 2007**)

Institution	NPQS		Seaport		Airport		Total	<i>Total(up to June 30)</i>
	2006	2007	2006	2007	2006	2007	2006	
No. of import inspections	804	258	1516	644	NA	71+	2320	<b>973</b>
No. of export inspections	11698	6862	1666	16644	12928	6163+	26292	<b>29669</b>
No. of Phytosanitary Certificates issued	90	01	33322	13928	12928	7851	46250	<b>21780</b>

- **Effectiveness of interception of quarantine pests**

Institution	NPQS		Seaport		Airport		Total	<i>Total</i>
	2006	2007	2006	2007	2006	2007	2006	
No. of interceptions of import consignments	485	473	25	03	-	-	510	<b>476</b>
No. of interceptions of quarantine pests	-	0	07	00	-	-	07	<b>00</b>
Overall effectiveness of interceptions of quarantine pests / percentage					-	-	1.37%	0%

- **Progress in preparation of lists of quarantine pests in accordance with ISPM 19**

The list of regulated pests has been reviewed and is under the process of finalization; 164 weed species have been included in the final draft of the regulations made under the Plant protection Act No. 35 of 1999.

- ***Progress of Pest Risk Assessments***

Pest Risk Assessments conducted, completed and finalized in 2006 and 2007 are as follows:

List of PRAs conducted in 2006:

1. Sunflower
2. Prunus
3. Strawberry
4. Carnation
5. Citrus
6. Bromus
7. Cashew
8. Potato Powdery Scab
9. Olive Seeds

List of PRAs conducted in 2007:

1. Apple
2. Stone fruits
3. Kang kung

- ***Status of Implementation of International / Regional Standard for Phytosanitary Measures (ISPMS/ RSPMS) and target date for full implementation***

The conditions in ISPM 15(wood packaging material) are under progress and it will be fully implemented by January 2008.

Other

- ***Use of International Phytosanitary Portal (IPP) for information exchange, setting up national phytosanitary information website; other forms of distribution for the information***

We have established a contact point to function as a link to the International phytosanitary portal through which information pertaining to phytosanitary matters could be exchanged with relevant agencies.

We do not have a separate website for our official contact point at present. However we are in the process of getting access to International Phytosanitary Portal website. We are hoping to publish phytosanitary information in it after getting the user word and password. Any other relevant information will be published in the Seed Certification & Plant Protection Center slot of DOA official website. We are also taking action to request training for IPP editor.

- ***Phytosanitary capacity evaluation (PCE); training on phytosanitary capacity building***

Phytosanitary capacity evaluation forms answering about 250 questions have been sent to APPC and IPPC in 2006.

From 2000 to 2007, 14 officers have been trained on various aspects of International Phytosanitary activities and three of them have received training on phytosanitary capacity building.

- ***Proposal on regional standard for Phytosanitary Measures (RSPMS) and (ISPMS) to be set or revised; possible contribution for RSPM development to the commission***

At present there are no new proposals. Sri Lanka is willing to contribute for RSPM development to the commission.

### 3. **Surveillance, Pest Outbreaks and Invasive Species Management**

- ***Changes in National Organization and Regulations since 2005***

A new facility for Plant Quarantine activities was established at the Seaport in Colombo which is the major entry point for exports and imports. An Information Centre was established at the NPPO to liaise with the relevant institutions through e-mail, internet, pre-requisite for the international phytosanitary portal. The draft Regulations made under Plant Protection Act 35 of 1999 is ready to be sent to WTO for comments.

#### ***National Weed Strategy***

An action plan for national weed management has been formulated where 15 weeds of national significance were identified. This was based on the scientific information available and the efforts made in terms of research by various institutes involved.

Weeds on National Significance (WON) in alphabetical order

<b>Scientific Name</b>	<b>Common Name</b>
<i>Andredera cordifolia</i>	<i>Madeira vine</i>
<i>Chromalaena odorata</i>	<i>Siam need</i>
<i>Cuscuta chinensis</i>	<i>Dodder</i>
<i>Cyperus rotandus</i>	<i>Purple nutsedge</i>
<i>Echinochloa crusgalli</i>	<i>spear grass</i>
<i>Eichhornia crassipes</i>	<i>water hyacinth</i>
<i>Imperata cylindrical</i>	<i>Cogon grass</i>

*Lantana camara*  
*Leptochloachinensis*  
**Scientific Name**

*Lantana*  
*Feather grass*  
**Common Name**

*Mikania micrantha*  
*Mimosa pigra*  
*Parthenium hysterophorus*  
*Panicum maximum*  
*Pennisetum polystachyon*  
*Salvinia molesta*

*Chinese creeper*  
*Giant mimosa*  
*Congress weed*  
*Guinea weed*  
*Mission grass*  
*Salvinia*

### ***Priority areas at institutional level***

#### Rice and rice based cropping systems

1. Weed Control in rice  
More emphasis on controlling perennials while land preparation  
Grassy weeds : *Echinochloa crissgalli*, *Ischaemum rugosum* and *Leptochloa chinensis* after crop establishment
2. Evaluation of new herbicides particularly for grasses
3. Developing strategies to counteract possible development of resistant weed biotypes due to continuous use of herbicides.
4. Developing weed management system for other field crops followed after rice crop

#### In OFC under upland situation

1. Screening of herbicides
2. Adoption of mulches & cultural methods
3. Weed management in leafy vegetables

#### Specific weed problems

1. Management of noxious invasive weeds in terrestrial habitats
2. Weed management in aquatic and semi-aquatic habitats

- ***Adequacy of personnel and facilities in relation to pest outbreaks and invasive species management***

There is a time lag between the outbreak occurring, reporting and then the implementation of control measures which results in substantial losses by the time of reporting.

A solution to this problem is to set up of surveillance and a forecasting system coordinated by PPS covering every district. However, with the major facilities and staff available at PPS, considerable amount of work load is being carried

out by the present staff. Therefore, it is an urgent need to increase the staff, particularly, research officers for Entomology and Pathology and also expand the facilities to cater the control of pest outbreaks and invasive species management, etc.

- ***Success or difficulties in controlling pest outbreaks and the eradication of newly invaded species.***

At present, PPS, Ministry of Environment and the DOA are engaged in several plant protection programmes for control of specific pests. However, shortages in resources like funds and trained staff have become serious constraints for the progress of those programmes. Despite the problems encountered, PPS has consistently involved in plant protection of all major crops. As a result, no major pest outbreaks have been reported since 2005.

Biological control programmes have gained a considerable momentum in management of several pests, especially some alien invasive plant species such as Salvinia and Water Hyacinth.

Plans are ahead to initiate bio-control programmes for other important Alien Invasive Species as well.

In that context, it is very important to maintain collaborative links with other institutes like National Biological Control Research Center (NBCRC), Bangkok, Thailand, as we can obtain assistance in developing a biological control programmes further for other alien invasive weed species in this country.

Regarding another Alien Invasive Species, Parthenium, attempts were made to implement several short-term control measures to prevent further spread of the weed into non-infested areas and also reduce the extents of the infested areas. Results of those activities assisted to increase the public awareness and their cooperation to control the weed into some extent.

It was revealed that over 60% - 70% of the Parthenium infestations were brought under control through those activities.

However, constant short-term control activities are needed to continue to keep the weed population at low level until an effective self-sustained biological control programme is introduced.

#### 4. Pest Management

- *Assessment of national policies, rules and regulations for sustainable and environmental friendly pest management.*

Except for laws and regulations on pesticide control and Plant Protection Act there are no concrete rules or regulations for sustainable and environmental friendly pest management in place in the country. Although this aspect is being debated and discussed at national forums, there are no nationally accepted plans or programs for countrywide implementation.

- *Adequacy of extension personnel and facilities for educating farmers in sustainable and environmental friendly pest management*

The facilities for training is available in the form of national trainers and training institutes under the DOA and attempts have been made to increase the trained cadres through regular training programs. Once the trainers are developed, the farmers could be trained as required. However, the relation between trainee and implementers should be strengthened for effective pest management.

- *Successes or difficulties in changing pest management practices of growers*

In places where IPM program had been implemented for rice the success had been tremendous. At the same time the project tested out the same approach for OFCs in few places and that too worked well. The success or failure depends on the extension approach used. Instead of passing on messages working with farmers through out a season learning problems and taking remedial measures together helps to build up confidence among farmers towards the new practices as well as the extension officer. Thereafter constant follow up for few more seasons will help farmers to manage on their own.

A concerted effort and a program accepted by DOA would certainly help reach a wider farming population with success. The Farmer Field School approach used in rice IPM may not be the best method for vegetable farmers. Suitable methodology will have to be developed to suit the different situations in training farmers.

- *Assessment of impact of IPM on production and pest management, particularly in the crop requiring most pesticide applications*

Chili is a crop that receives the highest number of pesticide applications. Over 20 or more applications per season costing over 12,000 rupees. IPM was tested for control of mainly chili leaf curl besides other problems in Mahaweli H area during a Yala season. Farmers are used to resort to only



insecticide applications to contain the problem and that also in their own way not paying any attention to DOA recommendations.

During the study period an ecological approach to crop management was followed instead of taking the problem separately and treating it. In doing so raising seedlings, soil management, laying out of plots, fertilizing, irrigation methods and frequencies, other cultural practices like crop sanitation and so on were given lot of attention to grow a healthy crop

Conservation of natural enemies of pests was also given lot of consideration. It is the experience that leaf curl complex is less during rainy season. Therefore during irrigation, rain was simulated by sprinkling water with a hose instead of flood irrigation. This helped to wash away the thrips and mites that cause leaf curl. Proper fertilization with other cultural practices helped to grow healthy and a more tolerant crop to pest and diseases. Thus no insecticides were required to control the leaf curl problem. This was compared with another crop where farmers used insecticides as usual. The difference is very significant. Farmers who followed IPM saved on pesticide costs and were able to get more picks adding to the increased yield from the crop than insecticide sprayed crop.

Therefore, it is not an impossibility to cut down on pesticides that farmers use today for any crop. What is necessary is that instead of taking the pest problem on its face value; follow an integrated approach by growing a healthy crop, conserving natural enemies and observing crop regularly for necessary action in the event of any problem.

- ***Changes in the market share of alternative pest management technology in relation to chemical pest control***

New chemicals have been introduced to the market like chemicals with different modes of action, bio-pesticides and botanicals, which are said to be safe to humans and environment. Whatever it is when they are presented as commercial products the cost of it has to be borne by the farmer. This does not help them in reducing their cultivation cost, which is going up day by day. So is the cost of these products. Therefore what is necessary is for farmers to understand the crop eco-system and manipulate it without any adverse effects to the environment thus protecting their crop without allowing the damage to go beyond an economically damaging level.

- ***Assessment of on going farmer education activities in IPM and general pest management***

Farmer education :

Through the IPM project that existed for over 20 years in this country it was established after many experiments that approach to farmer education on IPM

has to change from a teaching situation to a learning situation where farmers' field becomes the learning tool and the teacher becomes the facilitator for the farmer to learn. Because the farmer has to experience the real situation in the field, explore it and learn about various components in the crop eco-system, their inter- relationships and behaviour throughout a crop season to be able to manage that eco-system for his benefit. In order to do this farmer group approach was found to be the best because they could share, discuss, comprehend and learn about the crop ecosystem and problems they find in the field. At the same time more farmer-initiated studies are also carried out by farmers to reinforce their knowledge. In addition farmer team building is another aspect that receives emphasis during this training. This approach has been practiced widely throughout the country during the project period and found to be effective in changing the farmers' attitudes and practices connected to pest management. One study by Ruhuna University states that the IPM knowledge gained by trained FFS farmers is being best used even five years after training.

IPM Farmer Field Schools are still being conducted in several districts even after the project period with funding from their provincial councils. But in certain districts it ceased to function after the project due to lack of funds.

Extension division is getting the PPS staff to train extension personnel on IPM in Inter-provincial areas.

- ***Impact of past or on-going international cooperation projects in IPM***

FAO-IPM Project ended in year 2002. - Development of master trainers on IPM for districts, Mahaweli Authority and DOA - Plant Protection Service

Implementation of Farmer Field Schools on IPM in all districts that led to the changing of attitudes and practices among farmers on pest management in rice.

Reduction of pesticide application by 80% among IPM practicing farmers and increase of yield by 20-25%.

A change among extension personnel in the way they look at pest related problems. eg. Instead of directly recommending insecticides for pest problems, they have learnt to be more rational in looking at the problem and advising.

There is general awareness among farmers about natural enemies in rice crops. Some farmers who were indebted before IPM training have become very progressive farmers today. - Ambalantota

Formation of IPM clubs among farmers have led them to embark on other income generating and service oriented projects - Moneragala

Generally the pest outbreaks, especially BPH during the last several years have been kept at a minimum. This could be due to the non-use of insecticides during early stages of the crop for defoliators.

The project demonstrated that the IPM concept could be made realistic and practical at farmer level.

## 5. Pesticide Management

- ***Changes in National Strategy, organization, legislation, and regulations since 2005***

Focus on management of human health adverse effects with special reference to occupational exposure and residues in treated crops have been intensified during the period. The interventions included

The contract pesticides sprayers in the rural community were identified as the high risk group and trainings programme is implemented on safe and judicious use of pesticides to uplift the knowledge of pesticide spray operators to make them more professional in their handling and application activities (Figure 1). The outcome of a field survey using the draft WHO Questionnaire on Pesticide Poisoning Surveillance was used as the basis for subsequent management interventions.

A pilot project was implemented to determine the acceptability and impact on household pesticide poisoning by distributing of lockable boxes for pesticide storage with a view to extend to a wider coverage of population for the assessment of impact on overall rate of poisoning

- ***National targets and efforts with regards to pesticide reductions***

Sri Lanka has launched a national organic agriculture production and certification programme with a view to reduce dependence on pesticides and improve farmer income. Sri Lanka is also implementing IPVM programme in addition to regular IPM promotions with the banning of all WHO hazard class Ia and Ib pesticides in nineteen-nineties. Sri Lanka is targeting for replacement of major class II pesticides with less hazardous molecules with new chemistry. All class II domestic insecticides have been deregistered last year.

- ***Status of ratification and implementation of international conventions on pesticide management***

All conventions related to pesticides are ratified and implemented in Sri Lanka.

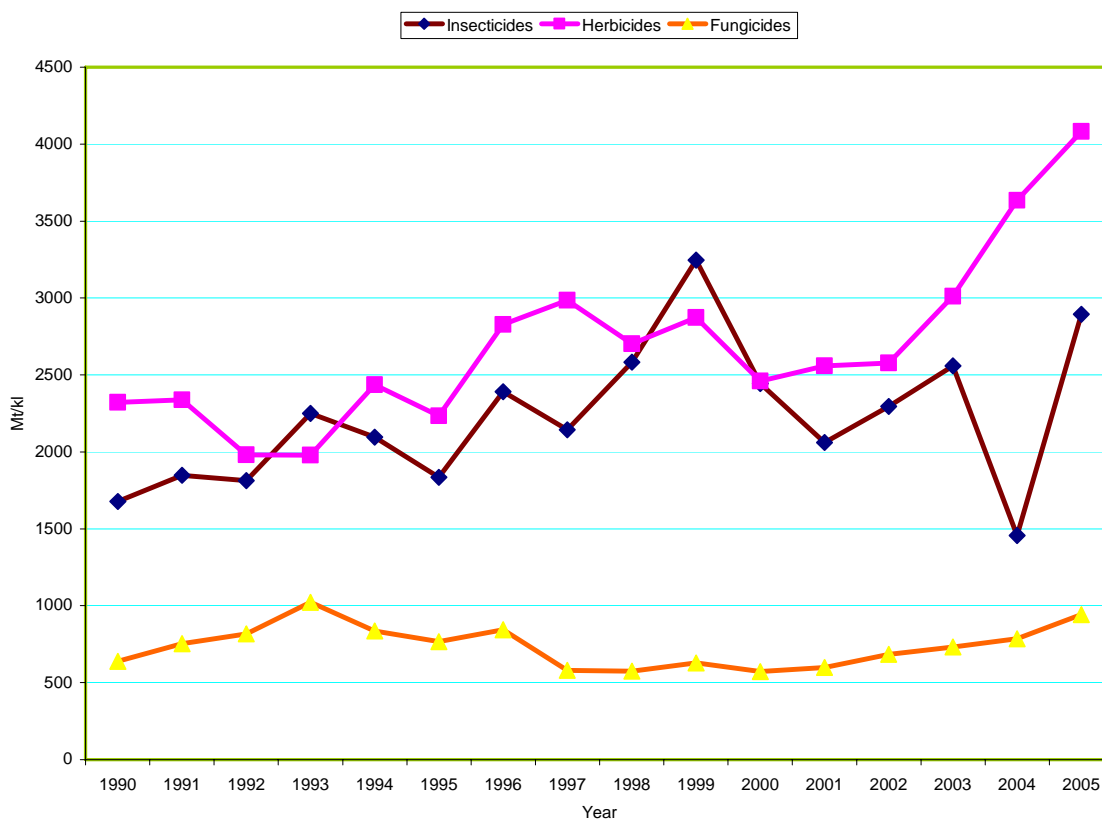
- ***Status of implementation of International Code of Conduct on the Distribution and use of Pesticides***

The Control of Pesticides Act and its regulations are fully complementary with the International code of Conduct on the Distribution and use of Pesticides. Therefore all key elements of the Code are satisfactorily under control within the Country. However lack of resources and capacity has prevented implementation of some aspects.

- ***Adequacy of personnel and facilities for the implementation and enforcement of pesticide regulations***

There is a serious deficiency in properly trained personnel in all disciplines, viz. evaluation of technical reports for registration of products, legal and analytical backup facilities in field enforcement and compliance monitoring. The organizational structure of the enforcement agency is being revised to provide more autonomy for efficient coordination with other enforcement agencies. During the period of reporting the analytical facilities of the enforcement agency have been adequately upgraded to handle both pesticide product quality assurance and residue monitoring.

- ***National Trends in amounts and composition of Pesticides use***



- ***Progress in the monitoring and management of pesticide residues in food and the environment***

New approach was initiated on monitoring of pesticide residues in treated crops jointly by the Government Analyst and food testing laboratories of the Health Ministry and municipal councils in collaboration with the Registrar of Pesticides.

- ***Development and application status of biopesticides including botanical pesticides***

With respect to Bio-and botanical pesticides, there is no significant development during the period of reports, except that the private sector investments in the field have been increased recently, but an impact on the market is yet to be seen.

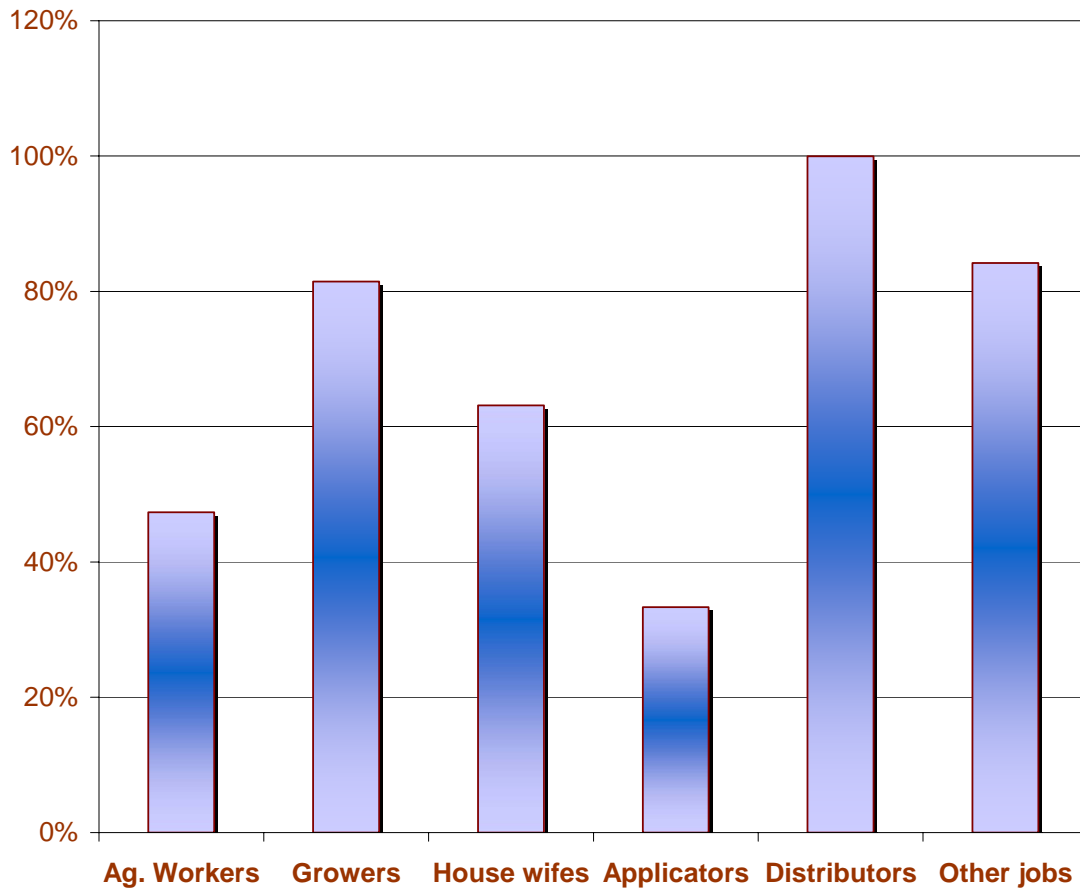
- ***Changes in the list of banned/prohibited pesticides***

There is no change.

- ***Impact of cooperation projects in pesticide management***

There are no corporation projects in pesticide management

Figure 1: Level of Training of various sectors of the farming community



## 6. Additional Information and General Comments Conclusion

- *Status of implementation of good agricultural practices*

Plant Protection Service (PPS) carries out the Integrated Pest Management Program (IPM), a component of Good Agricultural Practices (GAP) especially for rice and for certain vegetables such as cabbage and chilli.

The Office of the Registrar of Pesticides carries out the following practices as GAP in minimization of pesticide residues in crops.

- Application of recommended dosage to each crop
- Proper application of pesticides.
- Pre harvest control of pesticides.
- Correct application techniques such as using calibrated sprayers.
- Encouraging use of biopesticides.

The pesticide dealers (average 350 per year) and Agricultural Instructors of the

Department of Agriculture and Provincial Council are being trained on pre-seasonal basis on the above mentioned aspects.