



# TRAINING TO COMMERCIAL FARMERS

8th and 9th December, 2022

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## INTRODUCTION

Commercial farmers are those farmers involved in production of agriculture product in a larger scale for commercial purpose i.e. import and export of crops. Nepal is taking steps towards agricultural diversification and commercialization which has shown hopes for improvement of country's economy, decreased unemployment and importation of agricultural products and increased women's participation in contribution to national economy. But the commercialization has brought a serious threat along with it which is of major concern. The use of chemical pesticides in the commercialization pocket areas in overdose, unsafe and uncontrolled manner has not only invited the dangerous pest whose control is getting difficult but also has resulted to the serious health hazards in growers and consumers.

Application of pesticides i.e. herbicides, fungicides, insecticides or nematicides to control their biological targets (pest, weed, crop or other plants) at peak periods play a vital role in ensuring better yields from a crop. Ineffective and improper method of application may lead to tremendous loss of pesticides as well as led to damage of non-targeted plants reducing their effectiveness and possessing extensive health hazards to human health through pesticide poisoning.

Majority of pesticides is being used on vegetable crops i.e. 1605g a.i. / ha in Nepal which shows increased risk regarding environment, soil fertility and human health. Thus, with the aim of enhancing the understanding of commercial vegetable farmers, two days professional training was organized and successfully accomplished at Bharatpur, Hotel Gangotri selecting five participants from each Municipality of Chitwan District.

## OBJECTIVES

### Broad Objective

- To increase the Knowledge, skill and practices of Commercial vegetable farmers towards safe use of chemical pesticides, adverse effect of pesticide in human health and reducing the risk of pesticide exposure during pesticide spray.

## Specific objective

- To enhance the capacity of commercial farmers for selection of right and safe pesticides and its minimal use.
- To encourage commercial farmers towards IPM practices.
- To enhance their skill and capacity on right way of pesticide selection, better pesticide storage techniques, pesticide formulation, mixing, disposal, pesticide calibration etc.
- To reduce the pesticide exposure and encouraging to use of PPE while pesticide formulation and mixing.

## METHODOLOGY USED

- Pre and Post-test Questionnaire
- Flip chart
- Special class
- Video demonstration

## TOPICS COVERED

- Project introduction and Situation assessment by project in pesticide use of Chitwan district.
- Introduction to pesticides, its brief history, features and labels
- Modes of entry of pesticides into human body and environment and its effects
- Safe and responsible handling of pesticides
- Pesticide poisoning and its first aid measured
- Integrated Pest Management.
- Insect pest of major vegetable crops and their management.
- Waiting period of pesticides.

# Proceedings

## Day 1

### Opening of the program

Opening and chairing session of the program was facilitated by Srijana Bhattarai, Agriculture Officer of NPHF/FHEN. The program was chaired by Samana Sharma, Project Manager, FHEN. After that, she briefly introduced participants about organization and FHEN project, as well as training objectives. The program was inaugurated with the gracious presence of Chief of District Coordination Committee by delivering valuable remarks.



### Remarks from Chief Guest



- He wished for the success of training and gave the valuable remarks on the issue of safe use of pesticide spray and minimization of the possible risk of chemical pesticide.
- He shared that he himself was farmer before and had experienced various immediate health problems like skin irritation, eye irritation, head-ache and had stopped farming now.
- He focused on need of maintaining soil fertility with efficient use of pesticides and protect our health.
- He also provided information regarding budget for underutilized crops by Agriculture Knowledge Center of Chitwan district.

Following Opening, chairing and inauguration of training program, participants introduced among themselves where they shared their name and address. After that, Pre testing was done with an aim to analyze the participants existing knowledge of the subject matter.

## Technical Sessions

Project introduction and Situation assessment of pesticide use in Chitwan district.



Samana Sharma, Project Manager of FHEN was the facilitator of this session. She provided an overview of Farming, Health and Environment project as well as its objectives.

Key content of the session were:

- Phases of NPHF/FHEN.
- Pesticide cycle.
- Trendline showing increased rate of pesticide use.
- Improper method of pesticide use: mixing with bare hands, selling pesticides in grocery shop.

Introduction on pesticides, its features, types and label

Ms. Srijana Bhattarai, Agriculture officer facilitated this session. Mini lecture, presentations, participatory discussion were used as methods of this session. She addressed the session sharing general information on pesticides, its origin in the world and Nepal, features and label of pesticides.

## Major points discussed in the session were

- Classification of pesticides; on the basis of environmental degradation and on the basis of the targeted pest.
- Average use of pesticide in Nepal is 396g a.i./ha.
- 24 pesticides were banned till now in Nepal belonging to organo-chlorine group.
- There are four labels of pesticides i.e. red, yellow, blue, green of which green is the safest one.
- Safety measures to protect ourselves from pesticides harm.
  - **Primary Principles**
    - Reduce unnecessary use of pesticides.
    - Be aware of possible dangers.
    - Always study label and other pamphlets.
    - Keep pesticide away from children.
  - **Before using Pesticides**
    - Always keep pesticide in locked box.
    - All of the pesticide sprayers should be checked whether they are in condition before and after use.
    - Sprayer/ Duster must be in good condition.
    - Safe pesticides with LD 50>550mg/body weight must be used.
  - **During pesticide mixing**
    - Always use PPE set.
    - Don't drink or smoke during spraying.
    - Wind direction must be considered while spraying.
    - Don't blow nozzle with mouth.
  - **After using pesticides.**
    - Store pesticide in safe place locked.
    - Wash sprayer three times and store in safe place.
    - Wash of the PPE sets properly and must be sun dried.

- WHO classification of pesticides: LD 50 is the amount of pesticide to kill the 50 % of targeted organisms. Lower the LD50 value higher the risk of pesticides.
- Non-biodegradable types of pesticide remains accumulated in the fat of the human and bio-accumulate leading to long term health effects.

### Modes of entry of pesticides and its effects on human health and environment



Ms. Seema B.K, the Project Officer facilitated this session. The major objective of the session was to familiarize participants about different modes of entry of pesticides into the human body and environment. Also, health and environment effects were also discussed. She sensitized them about modes of entry of pesticides through exercise.

### Key contents of this session were:

- Pesticide can enter into our body through various medium like skin, eye, inhalation, ingestion and to baby from exposed mother.
- Fastest route of entry is through inhalation and the most common route of entry is skin.
- Short term effect of pesticides are nausea, vomiting, irritation of skin, loss of appetite, numbness of body whereas long term effects are cancer, infertility, paralysis, high blood pressure, defected child birth etc.
- Decreases soil fertility and environmental pollution with haphazard use of pesticides.



## Pesticide poisoning and its first aid measures.



This session was also facilitated by Ms. Seema B.K., Project officer. The major objective of this session was to familiarize the participants with the pesticide poisoning and first aid measures to prevent poisoning.

Some of the First Aid measures are:

- Patient should be kept with his/her half body and head bent down.
- If possible induce vomiting.
- Provide proper air circulation.
- Visit hospital as soon as possible
- Inject Atropine sulphate 2mg intravenous.

## Day 2



The second day of training was based on special class and whole day session was facilitated by Mr. Prabin Lama, Agriculture chief of Ratnanagar Municipality, Ratnanagar, Chitwan. Session was divided under the following headings.

## IPM and IPM tools

Key points discussed were:

- Need of IPM
- IPM was introduced in Nepal to control Brown plant hopper in rice from Chitwan district.
- IPM practices includes: Mechanical control, Physical control, Biological control, cultural method, use of bio pesticides and hormonal control.
- Use of IPM tools.
- Bio pesticides preparation.

## Insect pest of major vegetable crops and their management.

Major highlight of this session were:

- Diseases
- Major elements to cause diseases.
- Conditions to cause disease.
- Types of diseases
- Different diseases of vegetable crops and their management i.e. Late blight of tomato and potato, Bacterial wilt, leaf curl virus, powdery mildew, downey mildew etc.

## Waiting period of pesticides

Major highlight of this session were:

- Pesticide residue
- Waiting period of different pesticides.

7 days waiting period

- Cypermethrin
- Deltamethrin
- Alfamethrin
- Diflubenzuron
- Fenvolate

- Chlorantranilipore

14 days waiting period

- Malathion
- Abomectin
- Lufenuron
- Alfacypermethrin

Emamectin benzoate – 10 days

Imidacloprid – 40 days

Nuvaluron and fenthioate- 5 days

Chloropyrifus -28-35 days

### **Fungicides:**

Zineb: 10 days

Captan: 30 days

Thiram: 14-30 days

Mancozeb: 14-28 days

Carbendazim: 14 days

Sulfur: 14 days

Metalaxyl: 40 days

## **Group work done by Commercial Farmers**



Participants were divided into two groups and asked to write how they will be involved in pesticide minimization movement and team leader presented their group work.

Major highlight of their group work

- They will consult agro-vet and agriculture technician for suitable pesticides for their crop.
- They will start to use IPM tools.

- They will use dirty trap to control gundhi bug.
- They will use PPE set while spraying pesticides.
- They will prioritize towards use of organic fertilizers and pesticides.
- They will spray pesticides in morning after dew and in evening hours.

## Post-test examination and analysis

Post testing was done to evaluate the knowledge change in commercial farmers through two days training. Comparative evaluation of pre and post test results demonstrated that knowledge, attitude and practices were significantly changed at the end of the training.

## Certificate distribution and Closing.

Certificates along with flipcharts were distributed to each participant. Best performers in the pre



and post-test and resource person for special class i.e. Mr. Prabin Lama were appreciated with small gifts. It has been realized that such kind of training should be regularly organized to sensitize commercial farmers regarding information's related to safe use, selection, handling, management of

pesticides, identification of major diseases of vegetable crops and their management. Participants shared their comments as they are really motivated and got benefitted from the training.

## APPENDICES

### Appendix 1 Pre-test and Post-test result of commercial farmers.

S.N	Names	Pre-test	Post-test
1	Punam waiba	14	18
2	Ruma Mahato	15	17
3	Hathani Mathao	15	16
4	Yam Kumari Thanet	16	17
5	Ram Jan Chaudhary	10	16
6	Uttam Karmcharya	10	12
7	Mandira Chepang	14	15
8	Narayan Prasad Shrestha	15	16
9	Geeta Waiba	17	17
10	Sanjeeb Mahato	5	12
11	Ranamaya Chepang	13	14
12	Gyani Chepang	13	11
13	Budharmiya Mahato	13	17
14	Ramchandra Timilsina	12	14
15	Sita Mahato	18	17
16	Rachana Regmi	12	15
17	Goma Bogati	4	7
18	Sukaram Mahato	5	10
19	Fulmati Praja	13	16
20	Abina Chepang	15	15
21	Sharada Adhikari	7	9
22	Durga Kharel	15	14
23	Jitman Shrestha	10	12

## Appendix 2 Program Schedule



नेपाल जनस्वास्थ्य प्रतिष्ठान

## Nepal Public Health Foundation

*Ensuring Health as Right and Responsibility of Nepali People*

व्यवसायिक किसानहरुका लागि बिषादि न्यूनिकरण सहित स्वस्थ उत्पादन सम्बन्धी  
तालिम कार्यक्रम

### Program schedule

#### Day 1

Time	Activity	Responsible person
10:00 – 10:30	Registration	
10:30 – 10:45	Opening Introduction of NPHF, FHEN Sharing of training objective	Samana Sharma (project manager)
10:45 – 11:00	Remarks by chief guest	Mr. Narayan Prasad Adhikari ( DCC chief)
11:00 – 11:30	Pre test	
11:30 – 11:45	Tea break	

11:45 – 12:15	Situation assessment of pesticide use and its health effects in Nepal and Chitwan.	Samana Sharma
12:15 – 12:45	Introduction to pesticides, its brief history, features, types, labels and alternatives to chemical pesticides	Srijana Bhattarai (Agriculture officer)
12:45 – 01:15	Mode of entry of pesticides into human body and environment and its effects.	Seema B.K. (Project officer)
01:15 – 02:15	lunch break	
02:15 -3:00	Pesticide poisoning and first aid	Seema B.K. (Project officer)
03:00 – 04:00	Pre- test results, closing	

## Day 2

Time	Activity	Responsible person
10:00 – 10:15	Registration	
10:15 – 11:15	Introduction to IPM and IPM tools	Prabin Lama
11:15 – 11:30	Tea break	
11:30 – 12:00	Waiting period of pesticides	Prabin Lama
12:00 – 01:00	Identification of major insect pests and disease of vegetable crops and their management.	Prabin Lama
01:00 – 02:00	Lunch	

02:00 – 02:45	Group wok: how they will be involved in pesticide minimization movement altogether with sustained and commercial production.	Participants
03:00 – 04:00	Post-test results, certificate distribution, closing	