Commercial Farmer's Training

Location: CMT RESORT

Bharatpur-12, Chitwan

Date: 2023/04/06-2023/04/07

Time: 10:00 AM to 4:00PM

Contents

INTRODUCTION

Pesticides are chemicals that are used to control or eliminate pests, including insects, weeds, fungi, and rodents, among others. While pesticides can be effective in managing pests and increasing crop yields, they also have harmful impacts on the environment and human health. Here are some ways in which pesticides can be harmful:

1. Environmental contamination: Pesticides can contaminate soil, water, and air, leading to the death of non-target organisms such as bees, birds, and fish. They can also accumulate in the food chain, leading to long-term environmental damage.

2. Health hazards: Exposure to pesticides can cause acute and chronic health problems, including skin irritation, nausea, headaches, respiratory problems, and even cancer. Pesticides can also affect the nervous system and lead to neurological disorders.

3. Resistance: Overuse of pesticides can lead to the development of pesticide-resistant pests, which require even stronger pesticides to control. This creates a cycle of increased pesticide use and resistance, leading to further environmental and health hazards.

4. Risk to farmers: Farmers who use pesticides are at risk of exposure to these chemicals, which can lead to acute and chronic health problems. Farmers in developing countries, where regulations and safety standards are often lax, are at even greater risk.

5. Food safety concerns: Pesticides can leave residue on crops, which can be harmful if consumed by humans. This is particularly concerning for children and pregnant women, who are more vulnerable to the harmful effects of pesticides.

Overall, the use of pesticides can have severe and long-lasting impacts on the environment and human health. It is important to adopt sustainable and environmentally friendly pest management practices, such as integrated pest management, to minimize the use of pesticides and reduce their harmful effects.

The two-day commercial farmers training program aimed to equip participants with the necessary knowledge and skills for pesticide minimization and healthy production practices. This program was designed to cater to the needs of farmers who operate in a commercial setting and are looking to improve their production practices. The training sessions were conducted with the help of experts in the field and focused on providing participants with practical knowledge that they could apply to their farms immediately.

The program covered various aspects of farming, including soil and water management, sustainable agricultural practices, pest and disease management, and safe use of pesticides.

The training program was conducted over two days and involved a combination of lectures, and group discussions. The participants were actively engaged in the learning process, and the program was designed to encourage interactive participation and knowledge sharing.

First, it's important to understand that commercial farming involves large-scale production of crops and/or livestock for sale. This means that it requires a business-oriented approach, as well as knowledge and skills in agriculture. Commercial farmers must understand how to maximize yields while minimizing environmental impact. This involves using sustainable farming practices and ensuring that soil and water resources are protected. Throughout the training, the following were covered in more detail.

OBJECTIVES

Broad Objective

- To help farmers reduce their dependence on harmful pesticides and promote sustainable farming practices.

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
- Soil Sampling and its Importance
- Quality Seed and its Importance
- Identification of major insect pests and diseases of vegetable crops and their Management

PROCEEDINGS

DAY 1

The program was moderated by Project Officer, Sunira Marahatta. At the start of the program, all attendees were given the opportunity to introduce themselves to the group. The project manager, Samna Sharma provided a brief introduction of the Nepal Public Health Foundation (NPHF) and its Farming, Health, and Environment Nepal (FHEN) project, and shared the objectives of the training program.

A pre-test was conducted among the commercial farmers prior to the start of the program.

TECHNICAL SESSIONS

Project Introduction and Situation Assessment of Pesticide Use in Nepal and Chitwan

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.

The session covered several key topics, including:

- The phases of NPHF/FHEN.
- The pesticide cycle.
- A trendline presentation that showed an increasing rate of pesticide use.
- The improper methods of pesticide use, such as mixing pesticides with bare hands and selling pesticides in grocery shops.

Introduction to pesticides, its brief history, features, types, labels and alternatives to chemical pesticides

Ms. Srijana Bhattarai, Senior Agriculture Coordinator, facilitated the session using mini lectures, presentations, and participatory discussions. She began by providing general information on pesticides, including their origin in the world and in Nepal, as well as the features and labels of different types of pesticides.

The session covered several major points, including:

- The classification of pesticides based on their environmental degradation and the targeted pest.
- The average use of pesticides in Nepal, which is 396g a.i/ha.
- The banning of 24 pesticides in Nepal belonging to the organo-chlorine group.
- The four labels of pesticides - red, yellow, blue, and green - of which green is considered the safest.
- Safety measures to protect oneself from the harmful effects of pesticides, including the primary principles of reducing unnecessary use of pesticides, being aware of possible dangers, always studying the label and other pamphlets, and keeping pesticides away from children.

Additional key points discussed during the session included:

- Guidelines for using pesticides safely, such as checking all pesticide sprayers for condition before and after use, using PPE sets during pesticide mixing, and considering wind direction when spraying.
- Proper storage and cleaning of pesticide equipment and PPE sets after use to prevent harm to oneself or others.
- The WHO classification of pesticides based on their LD50 value, which is the amount of pesticide required to kill 50% of targeted organisms. Lower LD50 values indicate a higher risk of harm from exposure to the pesticide.
- The long-term health effects of non-biodegradable pesticides that can accumulate in the human body, particularly in fatty tissue.

Mode of entry of pesticides into human body and environment and its effects

During this session, Project Officer, Ms. Seema B.K. discussed the different ways that pesticides can enter the human body and the environment, as well as the associated health and environmental effects. Through an exercise, she sensitized the participants to the different modes of entry of pesticides. Key points covered in this session included:

- Pesticides can enter the body through skin, eyes, inhalation, ingestion, and from a mother exposed to pesticides during pregnancy.
- The fastest route of entry is through inhalation, and the most common route is through skin contact.
- Short-term effects of pesticide exposure include nausea, vomiting, skin irritation, loss of appetite, and numbness, while long-term effects can include cancer, infertility, paralysis, high blood pressure, and birth defects.
- Haphazard use of pesticides can lead to decreased soil fertility and environmental pollution.

Pesticide poisoning and first aid

During this session, Ms. Seema B.K., the Project Officer, aimed to educate participants about pesticide poisoning and ways to prevent it through first aid measures. Some of the recommended first aid measures include keeping the patient with their half body and head bent down, inducing vomiting if possible, providing proper air circulation, seeking medical attention as soon as possible, and administering an intravenous injection of Atropine sulphate 2mg.

DAY 2

The second day of the training session featured a special class, which was led by Mrs. Purnima Chhetri, the Plant Protection Officer from Bhandara, Chitwan. The Session was divided under the following headings.

- Soil sampling and its importance
- Quality seed and its importance
- Introduction ton IPM and IPM tools
- Identification of major insect pests and disease of vegetable crops and their management

Soil sampling and its importance

Soil sampling is the process of collecting soil samples from different locations in a field or area for analysis in a laboratory. It is an essential practice for farmers, agronomists, and other professionals who work in agriculture, environmental management, or construction.

The importance of soil sampling lies in the fact that soil is a complex mixture of minerals, organic matter, water, air, and microorganisms that affect plant growth, water quality, and ecosystem health. By analyzing soil samples, we can determine the nutrients, pH, organic matter, and other properties of the soil, and then make informed decisions about crop management, fertilizer application, and land use. Soil sampling can also help identify potential problems in the soil, such as soil compaction, soil erosion, nutrient deficiencies or toxicities, and soil-borne diseases or pests. With this information, farmers and other professionals can develop appropriate management strategies to address these issues and optimize soil health and productivity. Furthermore, soil sampling can play a critical role in environmental management by helping to monitor soil contamination and identify sources of pollution. By sampling soil at different depths and locations, scientists can assess the extent and severity of contamination, and then develop remediation plans to mitigate the effects of pollution and protect human health and the environment.

In summary, soil sampling is a crucial step in understanding soil characteristics, identifying soil problems, and making informed decisions about land use, crop management, and environmental protection.

Quality seed and its importance

Quality seed refers to seeds that are healthy, genetically pure, and have high viability and vigor. Quality seeds are important for successful crop production because they directly affect the growth, yield, and quality of the resulting crops.

The importance of quality seed can be summarized as follows:

- Improved crop yields: Quality seeds produce healthier plants that are more resistant to pests and diseases, and are better able to withstand environmental stress. This results in higher crop yields and better quality produce.
- Consistency in crop production: Quality seeds ensure uniformity in plant growth and development, which is essential for consistent crop production. This is particularly important in commercial farming where crop yields must meet market demand and standards.
- Adaptation to changing environmental conditions: Quality seeds are often bred to be more tolerant to various environmental conditions such as drought, salinity, or extreme temperatures. This enables farmers to grow crops in areas that were previously unsuitable for agriculture and increases their resilience to climate change.
- Reduced input costs: Quality seeds have higher germination rates and require less fertilizer, water, and pesticides than lower quality seeds. This reduces input costs and

benefits both the farmer and the environment by reducing chemical use and environmental impact.
- Improved seedling establishment: Quality seeds have high vigor, which means they can germinate and establish quickly, resulting in strong, healthy seedlings that are more likely to survive and thrive.

In summary, quality seed is crucial for successful crop production, and investing in high-quality seeds can result in higher yields, better quality produce, and reduced input costs.

Introduction to IPM and IPM tools

Integrated Pest Management (IPM) is a sustainable approach to managing pests that combines a variety of methods to control pests in an effective and environmentally-friendly way. IPM aims to reduce reliance on chemical pesticides and minimize their impact on human health and the environment while maintaining pest control efficacy.

IPM involves a range of tools and strategies, including cultural, physical, biological, and chemical methods, which are integrated to achieve the best possible pest control outcomes. Some common IPM tools include:

- Cultural control: This involves the manipulation of the crop environment to create conditions that are less favorable for pests. For example, planting crops at a certain time of year or using crop rotations can help reduce pest populations.
- Physical control: This involves the use of physical barriers or traps to prevent pests from entering a crop or to trap and kill them. Examples include using netting or screens to exclude pests, or using sticky traps to capture flying insects.
- Biological control: This involves using natural enemies of pests, such as predators or parasites, to control pest populations. For example, introducing ladybugs to a crop to control aphids, or using nematodes to control soil-dwelling pests.
- Chemical control: This involves the use of chemical pesticides, but in an informed and targeted way, using the lowest effective dose and the safest and most environmentally-friendly products available.
- Monitoring and scouting: This involves regular observation and assessment of pest populations and damage to crops, to determine if and when pest control measures are needed.
- Decision support tools: These are tools that help farmers and pest management professionals make informed decisions about pest management strategies based on local conditions, weather patterns, pest populations, and other factors.

Overall, IPM is a holistic approach to pest management that seeks to balance economic, environmental, and social considerations, and promote sustainable and effective pest control practices. By using a variety of tools and methods, IPM can reduce pest populations while minimizing the use of chemical pesticides and their impact on the environment and human health.

Identification of major insect pests and disease of vegetable crops and their management

Vegetable crops are often subject to attack by a variety of insect pests and diseases that can significantly reduce yield and quality. Identifying these pests and diseases is crucial for successful management, and there are several methods that can be used for their control.

1. Identification of major insect pests of vegetable crops:

Some of the most common insect pests of vegetable crops include aphids, spider mites, whiteflies, thrips, cutworms, and caterpillars. These pests can cause significant damage to crops by feeding on leaves, flowers, and fruits, and by transmitting diseases.

2. Identification of major diseases of vegetable crops:

Vegetable crops can also be affected by various diseases, such as blight, powdery mildew, downy mildew, rust, and mosaic virus. These diseases can cause stunted growth, yellowing of leaves, wilting, and can lead to reduced yield.

3. Management of insect pests and diseases:

- Management of insect pests and diseases of vegetable crops involves a combination of preventive and curative measures. Some of the common management strategies include:
- Crop rotation: This involves planting different crops in the same area in successive years to reduce the build-up of pests and diseases.
- Use of resistant varieties: Some vegetable varieties are resistant to certain pests and diseases, and planting such varieties can reduce the risk of infestation.
- Biological control: This involves the use of natural enemies of pests, such as predators, parasites, and pathogens, to control their populations.
- Chemical control: The use of pesticides can be effective in controlling pests and diseases. However, care must be taken to ensure that they are used properly and in accordance with label instructions.
- Cultural control: Practices such as proper irrigation, fertilization, pruning, and sanitation can help reduce the risk of pest and disease infestation.

In conclusion, the identification and management of insect pests and diseases of vegetable crops is crucial for successful vegetable production. Implementing an integrated pest management strategy that combines preventive and curative measures is essential for effective management of these pests and diseases.

Group work done by commercial farmers

During the group work session, participants were divided into two groups and tasked with creating a plan to minimize the use of pesticides in their farming practices. The team leaders then presented their group's work, with a major highlight being the adoption of several best practices. These practices included consulting with agro-vets and agriculture technicians to determine the most suitable pesticides for their crops, utilizing integrated pest management (IPM) tools, implementing the use of dirty traps to control gundhi bugs, using personal protective equipment

(PPE) while spraying pesticides, prioritizing the use of organic fertilizers and pesticides, and scheduling pesticide applications for early morning or late evening hours to avoid dew.

Post- Test examination and analysis

After a two-day training program for commercial farmers, a post-test examination was conducted to evaluate changes in knowledge. Comparative analysis of pre and post-test results demonstrated significant improvements in knowledge, attitude, and practices among the participants.

Certificate distribution and closing

Certificates, along with flipcharts, were distributed to each participant during the certificate distribution and closing ceremony. The best performers in the pre and post-test, as well as the resource person for the special class, were appreciated with small gifts. The training was effective in sensitizing commercial farmers about safe use, selection, handling, and management of pesticides, as well as identification and management of major diseases of vegetable crops. Participants shared positive feedback and expressed that they were highly motivated and benefited from the training. It was recommended that such training programs be regularly organized to keep commercial farmers updated and informed about the latest developments in the field.


CMT
RESORT


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CMT RESORT

APPENDICES

APPENDEX 1: PRE AND POST TEST RESULTS

S.N	Name	Pre-Test Score	Post-Test Score	Position
1	Yuvraj Dallakoti	20	20	3rd
2	Laxmi Adhikari	17	20	
3	Kamala Tamang	19	20	
4	Ratna Raj Mahato	18	18	
5	Shiva Bhattarai	16	20	
6	Sanjeev giri	18	20	
7	Rajan Bartaula	20	12	
8	Madhav Raj Pandey	20	17	
9	Jagannath Timilsina	16	17	
10	Pradip Poudel	16	18	
11	Sita Shah	15	15	
12	Nirmala Lamsal	12	16	
13	Kamala Adhikari	8	17	
14	Babu Krishna Pandey	18	20	
15	Rajendra Pandey	14	21	2nd
16	Hari Sharan Dallakoti	19	18	
17	Arjun Sapkota	18	21	1st
18	Lekhnath Bhusal	17	19	
19	Gagan Bahadur Gurung	12	13	
20	Urmila Raut	9	19	
21	Lok Bahadur Praja	9	15	
22	Atmaram Tiwari	15	17	
23	Kumari Poudel	16	12	
24	Hari Narayan Shrestha	15	15	
25	Buddhi Ram Chaudhary	11	18	
26	Nishan Poudel	12	17	
27	Laxmi Malla	13	12	

APPENDEX 2: PROGRAM SCHEDULE

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Nepal Public Health Foundation

Ensuring Health as Right and Responsibility of Nepali People

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Day 1

Time	Activity	Responsible person
10:00 – 10:30	Registration	MC: Sunira Marahatta (Project Officer)
10:30– 11:00	Opening Introduction of NPHF, FHEN Sharing of training objective	Samana Sharma (project manager)
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 – 10: 45	Soil sampling and its importance	Purnima Chhetri
10:45 – 11: 15	Quality seed and its importance	Purnima Chhetri
11:15 – 11:30	Tea break	
11:30 – 12:00	Introduction to IPM and IPM tools	Purnima Chhetri
12:00- 12: 15	Energizer	Seema B.K.
12:15 – 01:00	Identification of major insect pests and disease of vegetable crops and their management.	Purnima Chhetri
01:00 – 02:00	Lunch	
02:00 – 02:45	Action plan: 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	