

## Practice of Toxic Pesticide and Insecticide Application in Farming Case from Nepal

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### Abstract

*Purpose of the study is the practice of toxic pesticide and insecticide application in farming case from the Nepal. The researcher used descriptive, cross-sectional, and mixed methods. The first hand data were collected through a structured tool through directly used interview method. Researchers search Google for related topics and literature reviews. The research concludes that farmers do not use pesticides judiciously in the production of vegetable and fruit crops. They not apply Integrated Pest Management (IPM) system. In 2025 Nepal's overall pesticide imports is bio pesticides 0.015%. In the South Asia region use of agricultural chemicals like fertilizers and pesticides has adverse impacts founded in the water and air pollutions, soil contamination, greenhouse gas emissions, loss of aquatic and terrestrial species, change of species compositions, and degraded ecosystems of the surrounding environment. In Nepal, pesticide use is rising rate is 10 to 20% normally, with an average of 396 grams per ha; however, in the areas of vegetables grown commercially, this rate is significantly higher, at 1600 g/ha. Pesticide imports increased fivefold from 132 tons in 2007- 08 to 635 tons in 2017-18. Malpractice of toxic effects on human health for skin, eyes, headache, diarrhoea, gastric, asthmas, heart, neuron, indigestion, cancer, kidney damage, joint pain, pressure, reduced life expectancy, weak immunity systems, fertility problems and death in the end. Nepal has announced Karnali Province declared an organic Province. It is one of the nation's province in seven provinces. The waiting period of insecticide total 54% of farmers harvested vegetable crops within 72 hours for marketing after toxicity used. Total 90-95% farmers' waste management used rubbish for disposal of bottle and pack after used insecticide and pesticide. It is dangerous for environment, flora and fauna as well as animal and human health.*

**Keywords:** *Insects and pest, Farmer, Cereals crops, Vegetables and fruits*

### Introduction

The researcher conducted this research in the Chitwan district of Nepal in the community health related issue. The study topic is practice of toxic pesticide and insecticide application in agriculture crops as grains, vegetables and fruits production in Nepal. This study directly related citizens' daily uses of grains, fresh vegetable and fruits. At the agriculture production time toxic use without safety and banded toxic also used. The study finds

out the toxic adverse effects of human health in Nepal.

Pesticide exposure is the serious threat for public health in the developing countries like Nepal. As an agricultural crops farmers are using pesticides indiscriminately to increase more yield of crops, which results shows in the continued contamination of the environment, food and shown adverse effects on human health (poudel et al., 2024).

According to Thagunna high-yielding cultivars and chemical inputs are widely used in the Nepalese agriculture, which struggles are shift from subsistence to market-oriented methods. Such changes are serious repercussions, its effects are soil degradation, biodiversity loss, and risks to environmental sustainability. It has addressed the urgent need for food. Nepalese farmers pay a variety of techniques, from hand-picking bugs to creative methods, these are wooden ash, urine, manure, and bio-pesticides like Jholmal (local made liquid fertilizer) (Thagunna & Ghimire, 2023).

The farmers most frequently used the chemical approach of pest control, which are how to use from extension agents and agro-vets. The majority of the farmers identified headaches and eye problems as the main organ of human health risks related with the use of chemicals. During the insecticide spraying time, farmers used very little safety gear, like masks and boots. Farmers were not aware of the waiting period and completely disregarded the preparation instructions, pesticide labels, and disposal instructions (Joshi et al., 2022).

Farmers typically rely on agrochemicals for illnesses and insect pests cause an estimated 35% of crop loss. To incorrect handling, storage, and disposal of pesticides, chemical pesticides present problems in the residues, insecticide resistance, resurgence, and bio magnification. The detrimental effects of using conventional pesticides become more apparent, especially in light of the recent rise in long-term health problems. Just 0.015% of Nepal's overall pesticide imports is bio pesticides. Adoption is hampered due to lack of training on appropriate application and dosage use in the Nepal, restricted availability, greater costs, and the belief that chemical pesticides are more effective (Adhikari et al., 2025).

Pesticide importance are increasing crop yields, the extensive and frequently use dangerous simulated insecticides in Nepalese agriculture postures a serious risk to health. Inadequate safety precautions and the frequent application of extremely dangerous pesticides used by Nepalese farmers which result in the direct exposure and acute health effects (such as skin irritation and vertigo). Severe health effects as a cancer, nervous and respiratory ailments, are related with chronic exposure. These risks to consumers are further increased by pesticide residues in food. There is an urgent need for intervention since unsafe pesticide practices in Nepal have detrimental effects on rural communities' health (Ghimire et al., 2025).

## Literature Review

Food security and human health are negatively impacted by industrial and agricultural xenobiotic. Pesticides and insecticides damage ecosystems as well as environment, water, air, and agriculture all contaminated by pesticides. Fish, birds, parasites, pollinators, microorganisms, and plants are among the innocuous species are unaffected. Environment and in the tissues, toxic substances can build up. Use biological and synthetic pesticides decrease insect resistance increasing the number of parasites and natural predators (Sangaraju et al., 2024).

All living things are killed or harmed by synthetic pesticides, which are hazardous to nature. There is a global desire to reduce use of pesticides in the agriculture and replace them with non-chemical techniques due to synthetic pesticides impairing human health and ecosystem health (AD & Donthi, 2024).

Pesticide usage, particularly in Nepal's horticultural crops. In Godowns, pesticide residues found in the milk, rice, wheat, and pulse grains. In the Terai region, DDT was frequently utilized, whereas PHC was more common in the hills and mountains. 83% of the 163 vegetable samples were polluted, with DDT residual levels over tolerance limits found in 76% of the samples. Additionally, 35% of the vegetables have organophosphate residues. The issue has gotten worse because direct application of pesticides before harvesting in the fresh fruits and vegetables. Numerous other non-target creatures, including natural river fish, fauna, predators, and parasites, have been linked to pesticide issues (Thapa R. K., 1997).

Pesticides provide a covert threat in the all ecosystems, including humans, animals, and insects. They protect people from viral and vector-borne diseases, control pests, and greatly increase crop yield, but dangerously harm our environment as well as plants, soil, water, air, food, and feed all contains dangerous substances. People also ingest these dangerous compounds from the air, water, and agricultural products in our surroundings. It effects mammals, birds, and soil organisms are severely suppressed by widespread use of pesticide. It damage honeybees, humans, animals, pollinators, viruses, and other soil bacteria. Increased pesticide use not only has a negative impact on human health but also lowers the population of beneficial organisms like pollinators and honey bees (M.W. et al., 2024).

Banana cultivate commercially more quantities in the Terai area of Nepal. Farmers get more benefit

between Septembers to February months in the winter season. At the mean time Indian Banana available 60-70 percent of chief rate in the winter. In the mid Terai area of Nijgadh Nepal banana production area announced by government of Nepal. Nepali Banana production farmers used pesticides 7 to 20 (seven to twenty) times in one cycle. Compared to sugarcane and others cereal crops, banana planting offers twice as many advantages. Assistive poisoning shows soil degradation due to decreased output following decomposition. It's shown long-term effects and harm to human life (Ghimire M. N. et al., 2025).

Indian farmers' used excessive pesticide for agriculture production its detrimental impacts on both human health and agriculture. Pesticides used by farmers for treat of plants, crops, and pests. A variety of substances, including insecticides, fungicides, herbicides, rodenticides, nematocides, etc., are classified as pesticides. Predators, parasitoids, pollinators, and other non-target plant animals and natural adversaries of pests are also impacted. The main environmental issue is the detrimental effects of chemical pesticides on non-target pests. Use of pesticides in the agriculture disturbs soil creatures as a nematodes, micro arthropods, and earthworms in addition to non-target pests (Sharma & Pandey, 2021).

Vegetables cultivation (6.48 ropani), there are found two types categories of farmers: small holders and large holders. Farmer's experience shows tomatoes require the most pesticides in both large and small containers. Farmers 41% apply pesticides using a cocktail or blended approach, and 56% wait three to five days in both situations (Bhandari et al., 2020).

Toxic chemicals called pesticides attract, entice, and eventually kills insects & pests. In Nepal, pesticide use is rising annually 10–20%, with an average of 396 grams per hachure; however, in areas of vegetables grown commercially, this rate is significantly higher, at 1600 gram per hachure. Pesticide imports increased fivefold from 132 tons in 2007–08 to 635 tons in 2017–18. If inhaled or consumed with food, the pesticide used on agricultural farms on a daily basis poses a serious risk to human health.

Depending on how much a person is exposed to pesticides, their effects can be either acute or delayed. The cause of acute health issues are allergies, skin irritation, dizziness, tiredness, bodily swelling, etc. Leukemia, neurological issues, skin cancer, prenatal mortality, birth deformities, and other major health issues can

result from prolonged exposure. Pregnant women are more susceptible to the negative effects of pesticides, which include a 5-9% increase in unfavourable birth outcomes, a 13-gram drop in the birth weight of a child with gestational length, preterm birth, and birth abnormalities (GC & Neupane, 2019).

Nepal has uses significantly fewer pesticides than other nations of the world, irresponsible pesticide application without waiting periods continues to generate problem. The main problem is vegetables use imported pesticides. Research discovered, pesticides are misused and overused in a variety of situations. Without safety measure used pesticide effects are headache, vomiting, dizziness, sweating, nausea, etc. Farmers' understanding of waiting times has improved, but they are still unable to wait for perishable goods (Aryal et al., 2021).

Farmers' knowledge of pesticide use is insufficient. For instance, it was shown that three out of four farmers washed their clothes after using pesticides. During pesticide spraying, only one in ten farmers wore glasses and one in four wore boots. Only one in four farmers bury unused pesticide containers in the ground, while 54% of farmers shower after using pesticides (Atreya et al., 2022)

There is no chemical pesticide production sector in the Nepal. India is the primary source of active ingredients imported by formulations Company. It has a strong system in place for registering chemical pesticides. It's interesting national average of chemical pesticides is only 396 a.i./ha; it is little too compared other nations. In the certain commercial crops and regions, farmers' top choice to employ chemical pesticides. It was discovered that the Karnali Province, one of the nation's seven provinces, had declared itself an organic state (GC Y. D., 2020).

The biggest challenges in the food production of underdeveloped countries is safeguarding crops against disease, insects, and pests. Farmers seen pesticides is the cure-all for pest and disease infestations of agriculture production. The majority of the farmers have relatively little information about many aspects of pesticides, as a handling, selection, harmfulness, and use. Farmers and consumers both have greater risk for health problems as a result of excessive pesticide use. The results shown farmers apply pesticides without considering the value of natural enemies (Thapa et al., 2021).

To increase crop productivity, Integrated Pest Management (IPM) was developed in 1997 with a focus on social inclusion and gender mainstreaming reducing overuse and careless use of chemical pesticides. Additionally, the plant clinic program, offers advice services for plant health extension, is becoming more popular in the Nepal. Nepal has banned sixteen distinct kinds of chemical pesticides, including persistent organic pollutants (POPs), as a signatory to the Rotterdam and Stockholm Conventions. In Nepal, agriculture also uses botanicals and bio pesticides to control crop diseases and pests (Pokharel et al., 2018).

Fruits and vegetables still contain organochlorine insecticides, which were outlawed forty years ago. Fruits and vegetables, frequently eaten raw. Humans consume fruits and vegetables polluted with pesticides they suffer negative health consequences as an Asthma, sore throats, skin and eye irritation, and diarrhoea as a short-term negative effects on people health; lasting side effects include cancer, neurological conditions, reproductive issues, diabetes, etc. (Bansal, 2025).

Pesticide contamination of plant foods poses a major threat to human health. Food should be strictly regulated production, processing, storage, distribution, and consumption. Precautionary steps based on the use of sound agricultural practices performed to reduce the health risk associated with exposure to pesticide residues in eating vegetables. For food safety "from farm to table," particularly community health, regularly evaluate health risks associated with pesticide exposure (Chmielewski et al., 2025).

Vegetables and fruits are essential for human growth diet. Different types of poisons like insecticides, fungicides, and herbicides are used normally in the fruits and vegetables production. Worldwide unavoidable component of plant protection from insects, pests and disease. The widespread use of extremely persistent and dangerous synthetic pesticides is causing a number of ecological problems, including insect resistance, disturbance of fauna, environmental contamination, and risks of human health. The more poisonous treated fruits and vegetables absorb and pesticides residues, enter through food chains and cause bioaccumulation. Numerous chronic illnesses shows eye irritation, skin itching, asthma, renal failure, cancer, birth defects, infertility, lung cancer, dementia, Alzheimer's, and numerous other neuro-muscular and endocrine disorders (Majeed et al., 2025).

In the South Asia region use of agricultural chemicals like fertilizers and pesticides has resulted in number of adverse impacts in the water and air pollutions, soil contamination, greenhouse gas emissions, loss of aquatic and terrestrial species, change of species compositions, and degraded ecosystems of the surrounding environment. Moreover, use of these agrochemicals caused serious human health hazards like headache, body aches, skin rashes, poor concentration, nausea, dizziness, impaired vision, and chronic disease affecting nervous, reproductive, renal, cardiovascular, and respiratory systems (Gyeltshen, 2021).

Short-terms or long-terms negative impacts on human health possible from pesticides. Different types of pesticides, offering a detailed look types work, how common they are, and how to widely use. The carcinogenic consequences of agricultural crops used pesticide effect on human health have been the subject of a critical evaluation report summarized on published research article. The extensive use of parathion and malathion for pest control suggests that a person's exposure to these chemicals is greatly influenced by their career choices. Beyond their carcinogenicity (breast cancer, lymphomas, multiple myeloma, bladder cancer, and leukemia), pesticides can also induce neurological abnormalities, reproductive issues, respiratory irritations, ecological disruption, and the emergence of pest resistance (oirdia et al., 2024).

The long-term human health impacts of pesticides are neurotoxicity, carcinogenicity, and reproductive problems, are a serious concern. Acute pesticide poisoning is still a major problem worldwide, particularly in areas where pesticide use is high. Children are more susceptible to cognitive development problems associated with pesticide exposure due to their sensitivity (Leng, 2023).

To attain high crop yields and guarantee food security, pesticides have long been essential to contemporary agriculture and food systems. Pesticide extensive use raises questions regarding the health impacts of pesticide residues in food, particularly for vulnerable populations like pregnant women and children. Pesticides' possible health dangers and their role in increasing agricultural output. Long-term exposure of pesticide residues with health concerns like cancer, reproductive disorders, neurotoxicity, and genetic harm while discussing the advantages of pesticide use, such as higher crop yields and improvements in public health (Adjei, 2025).

Parents and children in the Chepang community should be aware of their health condition in relation to other communities. One of Nepal's remote tribal communities, the Chepang are the indigenous ethnic groups residence is in the Makawanpur and Chitwan district of Nepal. Compared to other communities, Chepang are more likely to seek medical attention. 100% of mothers replied their first child birth before the age of 20 years. However, some Chepang children's health was better than other community's children (Ghimire M. , 2014).

The characteristics of foreign employment as returnee workers have leadership abilities, employ predictions, accountability and responsibility, and teamwork in entrepreneurship development, they have an impact on the degree of entrepreneurship among the returnee participants (Mishra et al., 2023).

High rate of precipitation in summer time Nepal is vulnerable from floods, landslides, drought, forest fires, and hot and cold waves each year. Due to the intense of monsoonal rain during June to September, landslides are more common in Nepal's hills area. Landslides is more common in the up-stream area and dipping mainly problem is in the down-stem area. In the Terai area homes, crops, and human life are all are negatively effected through sedimentation. Unimaginable floods in the Karnali River end human life. Nearly all dwellings are evacuated for one to four weeks during the flood and remain as rubbish in community structures (community housing, schools, and Godam buildings). This situation happens one to three times a year, according to the Karnali River floods. It costs a lot of money to maintain their house, toilet, and hand pump after each flood before they can resume their regular lives (Ghimire et al., 2023).

The chicken farming employment and income raised problem is in mid-Terai area of Nepal. In the mid-Terai region, raising chickens is a very lucrative business. In remote locations, broiler farming in particular has been found to be a profitable short-term farming practice. According to the study, raising 100 broiler chickens can bring in between NRs. 800,000 and NRs. 900,000 a year, with a net profit is NRs. 320,000 annually from poultry farming (Timilsina et al., 2024).

With frequently of earthquakes, floods, landslides, droughts, hot and cold waves, and vector-borne illnesses is in Nepal. Nepal is an extremely disaster-prone country. Every year, the most vulnerable populations founded in the

lowlands and hills area impacted by monsoonal floods and landslides. In Nepal, floods more effected are women, children, and senior citizens. The monsoonal flood effected months are June to September. The flood damage every year houses, food, crops, cattle, poultry, and clothing. The Terai region of Nepal is more affected by flooding. Summer floods impacted more to children in Bangladesh, Bhutan, India, and Nepal (Ghimire M. et al., 2023).

The neighbourhood schoolchildren currently snack, as well as the long-term, economical, and significant effects of snacks on eating patterns and health. Children's attachment to school, enrolment, and consistent attendance are all aided by the School Day Snacks. A lot of parents send their kids to school without snacks during the day time. It views hunger as a chance for worthy kids to get an education. Adolescent students in both public and private schools consume extremely large amounts of junk food used for teffin. The Day Snacks Management Guidelines 2020 state that each child should have 150–200 grams of fruits, green vegetables, cereals, and gedagudi (peas, grains, pulses, etc.). 50–60 grams of foods high in animal protein also required. In Nepal, it is believed that "Harek bar Khana char" (every four distinct meal categories, such as rice, vegetables, animal-related dishes, and pulses must) must (Ghimire M. et al., 2024).

The dietary habits and health status of community school students' snack eating behaviours in the Mangal Secondary School, Kirtipur, Kathmandu, had severe wasting seen total only one (1) 4.5%, moderate wasting one (1) 4.5%, and normal (20) 90.9%, while Mahendra Adarsha Secondary School Imdole, Lalitpur had moderate wasting (3) 11.1% and normal (24) 88.9% founded. Based on (height-for-age) Z-score, the frequency of stunting by age at Mangal Secondary School, Kirtipur, Kathmandu, was 9.1% of the children aged 42-53 months, 13.6% and 77.3% have founded normal height. In a similar vein, the overall prevalence at Mahendra Adarsha Secondary School, Mahalaxmi, Imadol, Lalitpur, revealed normal height 66.7% and mild stunting children aged 42–53 months founded 33.3%. Mid Upper Arm Circumference (MUAC) tools is used for screening children's nutritional status (Ghimire M. et al., 2024).

The health status of both mother and rural children, health examinations are essential during the pregnancy and after birth both Chepang and non-chepang groups in Makawanpur and Chitwan

district, Nepal, It is known as ANC and PNC examinations (Mayanath Ghimire, 2014).

Career development, organizational development, and training and development are among the independent variables. This framework provides an organized perspective for analyzing and understanding the intricate relationship between HRD practices and employee engagement in Nepal's unique organizational environment (Thakur et al., 2023).

### Statement of Problem

The main problem is vegetables use imported pesticides. Research discovered, pesticides are misused and overused in a variety of situations, without safety measure used.

Agricultural crops producing time, community members used higher doses and more number of frequency used insecticide for production raise and safe from insects and pests. After use of insecticide waiting should be necessary for vegetables and fruits harvest as well as marketing. Farmers use insecticide in the morning and harvest their vegetables on the evening for more earning. Customers purchase and cook, ate immediately. They eat vegetable with toxic. Such toxic vegetables do harm human health; such selfishness farmers saw make money only. Pesticide effects are shown immediate, short-term and long-term on human health. The disposal of cover or packing, bottles materials is the next issue. Commercial producers dispose of it in trash bags and send it to the municipality waste tractor within a month. The entire waste disposal site is carried and disposed of by the municipality. It was seeing environmental damage to insects and natural biodiversity. When utilizing poison, the commercial producer does not take precautions. They prepared the poison and applied it to the crops without taking any safety

precautions. Upon application, it immediately affects human skin, the nose, the eyes, and the lungs. The primary objective of this study is to examine the practices regarding the use of toxic pesticides and biocides in Nepal's agriculture. Methodology

The Article is explanatory, cross sectional and apply mixed (qualitative and quantitative) convergent parallel methods study was adopted. The researcher looked up comparable topics related article search on Google. Researcher used structured tools and face to face deep interview from responded and created reports. The study was addressed by integrating the results of the scientific review process. The data was collected from Ratnanagar Municipality Ward No. 12 in Chitwan, Nepal. The participants were 210 number total participants; it is 11% of the entire population participated in the survey. The respondents were chosen through random sampling technique. The researcher employed a structured questionnaire and conducted in-person closed ended interviews, structured observations during the primary data collection period. The SPSS method was used to analyse the data. The validation and reliability testing of the questionnaire instruments were conducted following consultations with experts and other researchers. The developed instruments were evaluated through a pilot test carried out in the vicinity of the target community. The reliability of the questionnaire is 0.78, which is an acceptable level. While obtaining ethical approval prior to data collection, the researcher explained the purpose of the data collection and ensured the protection of the respondents' privacy and ethical interests. Data collection was conducted only after assuring the respondents that their personal names and statements would not be made public

## Result and Discussion

**Table 7: Farmers perception regarding cultivation**

| Cross tabulation |        |   | Being a farmer and involved in cultivation | Total  |
|------------------|--------|---|--------------------------------------------|--------|
|                  |        |   | yes                                        |        |
| Gender           | Male   | N | 124                                        | 124    |
|                  |        | % | 59.0%                                      | 59.0%  |
|                  | Female | N | 86                                         | 86     |
|                  |        | % | 41.0%                                      | 41.0%  |
| Total            |        | N | 210                                        | 210    |
|                  |        | % | 100.0%                                     | 100.0% |

The table show that you are farmers and do cultivators. The respondents were total 210 among them 124 (59%) were men and 86 (41%) were women. Every respondent ware farmers and engaged in farming.

**Table 8****Farmers practices about use of chemical fertilizer & poison in cultivated crops**

| Farmers practices about use of chemical fertilizer & poison in cultivated crops |        |   |                                            |        |
|---------------------------------------------------------------------------------|--------|---|--------------------------------------------|--------|
| Cross tabulation                                                                |        |   | Chemical fertilizer & poison used in crops | Total  |
|                                                                                 |        |   | yes                                        |        |
| Gender                                                                          | Male   | N | 124                                        | 124    |
|                                                                                 |        | % | 59.0%                                      | 59.0%  |
|                                                                                 | Female | N | 86                                         | 86     |
|                                                                                 |        | % | 41.0%                                      | 41.0%  |
| Total                                                                           |        | N | 210                                        | 210    |
|                                                                                 |        | % | 100.0%                                     | 100.0% |

The table demonstrates that every grower applied pesticide & insecticide, as well as used chemical fertilizers in their cereals, vegetables and fruits crops. There were total 210 responders in all, including 124 (59%) men and 86 (41%) women. They replied, it is must, if not use toxicity, could not produce cereals, vegetables and fruits due to destroy by pests and insects and pests our field crops.

**Table 9:****Poison used in cereals time cross tabulation**

| Cross tabulation |        |        | Poisons used in cereals crops time |           |               | Total |
|------------------|--------|--------|------------------------------------|-----------|---------------|-------|
|                  |        |        | 1-3 times                          | 4-5 times | above 5 times |       |
| Gender           | Male   | N      | 92                                 | 30        | 2             | 124   |
|                  |        | %      | 59.0%                              | 57.7%     | 100.0%        | 59.0% |
|                  | Female | N      | 64                                 | 22        | 0             | 86    |
|                  |        | %      | 41.0%                              | 42.3%     | 0.0%          | 41.0% |
| Total            | N      | 156    | 52                                 | 2         | 210           |       |
|                  | %      | 100.0% | 100.0%                             | 100.0%    | 100.0%        |       |

The table shows that insecticide used times in cereals crops. Total respondents were 210 among them 124 (59%) were male and 86 (41%) farmers were women. Total 64 (41%) used toxicity 1-3 times and 22 (42.3%) used it 4-5 times respectively. Some farmers used frequently used toxicity more than 5 times in their cereal crops for save from insects and pest.

**Table 10:****Poison used in fruits crops time**

| Cross Tabulation |        |   | Fruits crops poison use times |           |               | Total  |
|------------------|--------|---|-------------------------------|-----------|---------------|--------|
|                  |        |   | 1-3 times                     | 4-5 times | above 5 times |        |
| Gender           | Male   | N | 48                            | 62        | 14            | 124    |
|                  |        | % | 61.5%                         | 60.8%     | 46.7%         | 59.0%  |
|                  | Female | N | 30                            | 40        | 16            | 86     |
|                  |        | % | 38.5%                         | 39.2%     | 53.3%         | 41.0%  |
| Total            |        | N | 78                            | 102       | 30            | 210    |
|                  |        | % | 100.0%                        | 100.0%    | 100.0%        | 100.0% |

The above table shows that usage of toxicity in the fruit crops, total 210 participants, among them 124 (59%) were men. They spray toxicity in fruit crops 1-3 times, 62 (62.8%) used 4-5 times, and 14 (46.47%) used more than five times. There were 86 (41%) female participants, among them 30 (38.5%) used toxicity in the fruits 1-3 times, 40 (39.2%) used 4-5 times, and 16 (53.3%) used more than five times.

The table below shows the 'waiting period' for pesticides used on vegetable crops; a total of 210 individuals participated, of whom 124 (59%) were male. They wait 1-3 days 78 (55.7%), 4 -7 days wait 30 (65.2%), above one weeks 10 (8.5%), no wait 4 (3.2%) and don't know 2 (1.6%) were. Similarly, female respondents were 86 ((41%), among them 1-3 days wait 62 (44.3%), 4-7 days 16 (34.8%), above one week 6 (37.5%) and don't know 2 (1.6%) were.

**Table 11:**  
**After poison used in vegetable crops waiting for harvesting time**

| Cross Tabulation |        | Toxicity used in vegetables waiting for harvesting time |          |                |         |            | Total  |       |
|------------------|--------|---------------------------------------------------------|----------|----------------|---------|------------|--------|-------|
|                  |        | 1-3 days                                                | 4-7 days | Above one week | No wait | Don't know |        |       |
| Gender           | Male   | N                                                       | 78       | 30             | 10      | 4          | 2      | 124   |
|                  |        | %                                                       | 55.7%    | 65.2%          | 8.5%    | 100.0%     | 50.0%  | 59.0% |
|                  | Female | N                                                       | 62       | 16             | 6       | 0          | 2      | 86    |
|                  |        | %                                                       | 44.3%    | 34.8%          | 37.5%   | 0.0%       | 50.0%  | 41.0% |
| Total            | N      | 140                                                     | 46       | 16             | 4       | 4          | 210    |       |
|                  | %      | 100.0%                                                  | 100.0%   | 100.0%         | 100.0%  | 100.0%     | 100.0% |       |

The data shows farmers used insecticide and pesticide at vegetable production time but they not wait according to recommended time. Total 54% of farmers harvested vegetable crops within 72 hours for marketing after toxicity used.

**Table 12:**  
**Used safety measure during the insecticide 7 pesticide spray in the crops**

| Used safety measure during the insecticide / pesticide spray in the crops |        |   |                                                                 |        |        |
|---------------------------------------------------------------------------|--------|---|-----------------------------------------------------------------|--------|--------|
| Cross tabulation                                                          |        |   | Used safety measure during the toxicity spray time in the crops |        | Total  |
|                                                                           |        |   | Yes                                                             | No     |        |
| Gender                                                                    | Male   | N | 104                                                             | 20     | 124    |
|                                                                           |        | % | 61.9%                                                           | 47.6%  | 59.0%  |
|                                                                           | Female | N | 64                                                              | 22     | 86     |
|                                                                           |        | % | 38.1%                                                           | 52.4%  | 41.0%  |
| Total                                                                     |        | N | 168                                                             | 42     | 210    |
|                                                                           |        | % | 100.0%                                                          | 100.0% | 100.0% |

The table shows that total respondents were 210, among them 124 (59%) were men. 104 (61.9%) respond "yes" to use the safety measure toxic spray time, and total 20 (47.6%) respond "no." Similarly, 86 (41%) of female participants were. Total 64 (38.1%) say "yes," and 22 (52.4%) replied "no." safety measure during the toxicity used.

**Table 13:**  
**Safety used during the toxicity using times**

| Cross tabulation      |   | Male  | Female | Total |
|-----------------------|---|-------|--------|-------|
| No safety use         |   | 24    | 16     | 40    |
|                       | % | 60.00 | 40.00  | 100   |
| Partially Safety used |   | 28    | 14     | 42    |
|                       | % | 66.67 | 33.33  | 100   |
| Fully safety used     |   | 72    | 56     | 128   |
|                       | % | 56.25 | 43.75  | 100   |
| Total N               |   | 124   | 86     | 210   |
|                       |   | 59.05 | 40.95  | 100   |

The table shows that safety used during the toxicity used time, total respondents 210 among them 124 (59.05%) were male, among them 24 (60%) no use safety use, 28 (66.67%) used partially safety used and fully safety used 72 (56.25%) were. Similarly, total female 86 (40.95%), among them did not safety measure used 6 (40%), partially safety measure used 14 (33.33%) used partially, and 56 (43.75%) used during the insecticide and pesticide use. The data shows till toxicity used time did not use safety measure used farmers 19% were.

The table below presents details regarding the disposal of packs and bottles: out of a total of 210 respondents, 124 (100%) were male; 2 (1.6%) disposed of them on the land; 2 (1.6%) were involved in organic production; and 120 (95.2%) used the municipality's western dumping site for waste management. Similarly, 86 (100%) female respondents replied no reuse 2 (2.3%), rubbish used and Municipality manage in the west dump site were 84(90.7%) were.



**Table 14:**  
**After toxicity used disposal of bottle & pack waste**

| Cross tabulation                                    |                                                        | Gender        |              | Total         |
|-----------------------------------------------------|--------------------------------------------------------|---------------|--------------|---------------|
|                                                     |                                                        | Male          | Female       |               |
| After toxicity used disposal of bottle & pack waste | Leave in land                                          | 2<br>1.6%     | 0<br>0.0%    | 2<br>1.0%     |
|                                                     | No reuse                                               | 0<br>0.0%     | 2<br>2.3%    | 2<br>1.0%     |
|                                                     | Organic production                                     | 2<br>1.6%     | 0<br>0.0%    | 2<br>1.0%     |
|                                                     | Rubbish used and Municipality manage in west dump site | 120<br>95.2%  | 84<br>90.7%  | 196<br>97.1%  |
|                                                     | Total                                                  | 124<br>100.0% | 86<br>100.0% | 210<br>100.0% |

The data shows still 90-95% farmers used rubbish waste to disposal of bottle and pack after used insecticide and pesticide. It is dangerous environment, flora and fauna as well as animal and human beings.

### Findings

#### Adverse impact of the insecticide and pesticide uses:

The following adverse impact of toxicity used in the crops (fruits, vegetables, and cereals) are:

- **In the short term effects:** Nausea, allergies, itchy or problematic skin, red eyes, cough, headache, diarrhoea, stomach pain, vertigo, and an increase a number of sick people in the community problems faced.
- **Long-term effects:** Asthmas, heart and neuron problem, indigestion, cancer, kidney damage, join pain, pressure, reduction expectancy life, Immunity system weak and diminished, fertility problem, finger swelling diseases attacked and die in the end. Pregnant women are more susceptible to the negative effects of pesticides.
- **Environmental issue:** Loss of biodiversity as flora, fauna, Insects, environment degradation, adverse effect on unfavourable water biodiversity also. Pesticide damage honeybees, humans, animals, pollinators, viruses, and other soil bacteria. Increased pesticide use not only has a negative impact on human health but also lowers the population of beneficial organisms like pollinators and honey bees.

#### Others:

- A variety of substances, including insecticides, fungicides, herbicides, rodenticides, nematicides, etc., are classified

as pesticides normally founded in the market.

- Farmers frequently used chemical for disease & pest control consultation with extension agents and agro-vets. Sometime farmers' use band toxic as DDT & BHC in the Terai region for soil insect control.
- During the pesticide spray time, farmers used very little safety gear, like masks and boots. Farmers were not aware of the waiting period and completely disregarded the preparation instructions, pesticide labels, and disposal instructions.
- In the farmer's experience tomato crops require the most pesticides. Farmers 41% apply pesticides using a cocktail or blended approach, and 56% wait three to five days.
- During the pesticide spraying, only one in ten farmers wear glasses and one in four wear boots. Only one in four farmers bury unused pesticide containers in the ground, while 54% of farmers' shower after using pesticides.

#### Adopted following safety measures:

- Time to time aware to farmers' safety measure use and toxic adverse effect on human health. Advice fully used safety measure during insecticide and pesticide using time in the cereals, vegetables, and fruits.
- Integrated Pest Management (IPM) was developed in 1997 with a focus on social inclusion and gender mainstreaming reducing overuse and careless use of chemical pesticides. Use judicious pesticide consultation with agriculture technician.
- Prioritize and implemented organic production and receive assistance from the

federal, provincial, and local levels governments.

### Suggestions

- Hold a farmer-level awareness campaign, promote organic production, market driven production and link with market linkup.
- Develop monitoring system and lab test of vegetables and fruits, then send in market with lab report develop system before market supply. Send vegetables and fruits with toxic contain lab report.
- Create an organic block production policy and support organic produce for quality seed, technical support, and market information for demand & supply.
- Apply judicious toxic in accordance with agricultural professional recommendations, stop ban insecticide and pesticide use in agriculture crops, if use such toxic used founded by farmers provide strong punishment.
- Customers dip in the salt water solution minimum 15 minutes before cook every day purchased vegetables.
- Create a government policy free treatment for long-term non-communicable disease as a cancer, heart disease, and kidney failure

- Be aware cereals, vegetable and fruits producers' and make sure they are using safety precautions, waiting time duration before harvesting for marketing. Do not use ban poison in the agriculture crops as a grains, vegetable and fruits.

### Conclusion

Consult with an agricultural technician, for safety use during the toxic applied in the agriculture crops production. Toxic use without safety measure adverse effects shown immediate, short term and long term in human health. These are headache, nausea, allergies, swollen fingers etc., chronic digestion, cancer, heart problem, kidney failure etc., in the last human will die. Fruit and vegetables tested in the the lab before send for market. Nepal's farmers used insecticide and pesticide in vegetable production time and could not founded waiting period according to recommended. Total 54% of farmers harvested vegetable crops within 72 hours for marketing after toxicity used. Still in Nepal 90-95% farmers used rubbish waste to disposal of bottle and pack after used insecticide and pesticide. It is dangerous environment, flora and fauna as well as animal and human beings

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