

PROBLEMS FACED BY SMALL URBAN FARMERS IN GROWING CUCURBITS

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Summary:

The survey was conducted in order to know problems on disease and insects in cucurbits growing farmers in Kaski and Morang district where problems on pests i.e., fruit fly and leaf miner were found dominantly prevalent. Perception of farmers on applying various control measures for the pest attack was known i.e. Pheromone trap whose effectiveness in controlling the pest is reported as 70% and severity of damage by the pests on the basis of different crop stages were also identified. This survey was done in order to broaden farmers' knowledge on digital applications where the majority of them were still unknown with this design. Finally a few recommendations on pesticides application and using digital media as an alternative to solve ongoing problems on fields were carried out and the findings were concluded.

Introduction:

Agriculture production contributes 32.60 percent of GDP in which vegetable contribution is 9.7 percent in Nepalese economy. In Nepal, Cucurbits are cultivated in the summer season. A Lot of farmers, kitchen gardeners also cultivated cucurbits in their field. Cucurbits encompass a diverse group of annual and perennial species, several of which are of commercial importance worldwide. Cucumber (*Cucumis sativus* L.), melon (*Cucumis melo* L.), pumpkin, squash and gourd (*Cucurbita* spp.), and watermelon [(*Citrullus lanatus* (Thunb.) Matsum. & Nakai)] comprise the major cucurbits. Among cucurbits, Cucumber, one of the most important members of cucurbits in Nepal, is very popular among Nepalese consumers as it is used in various forms, such as salad, pickle and cooked vegetable. At present, it has subsistence as well as commercial importance, but it is a potential crop for processing in the future. It is basically a summer season crop grown both in the hills and Terai region of Nepal. However during this time of the year, the yields of the commercial varieties are extremely low because of environmental stresses, such as high temperature, high rainfall and long day photoperiod.

There are various disease and insect pests seen in cucurbits such as Downy mildew, powdery mildew, gummy stem blight and Fruit fly, Red pumpkin beetle, Yellow woolly borer etc. respectively in the local community. Para-pheromone trap has become a common tool in commercial cucurbit cultivation in Nepal, however, timely unavailable, poor in quality and high cost involvement are the major constraints. Many types of insect pest like red pumpkin beetle, fruit fly, spotted beetle etc. attack the cucurbits plants at different stages of different parts such as stem, leaves, inflorescence and fruits. It is reported that the various insect pests such as aphid, spotted beetle, fruit fly, red pumpkin beetle, green stink bug, whitefly etc have been seen in the open field. Determining what extent of the pest is present in the field and their severity as well as finding the effective control method of the pest is the interest of all agriculturists and farmers. So, the recommendation is required to establish to manage the pest and it helps growers to minimize the losses from these pests by adopting appropriate effective management methods.

Objectives:

Primary Objective:

- To determine the problems encountered by small urban farmers in growing cucurbits.

Secondary Objective:

- To analyse the socio-demographic status of respondents in the study area.
- To determine the cultivation practices adopted by the farmers for the management of insect pests.
- To assist farmers to be familiar with Geo Krishi App.

Methodology:

Survey was conducted in urban areas of Kaski and Morang District about the problem faced by farmers. This Terai area of Nepal have hot and humid summer, cold and dry winter consisting pH of 5 and fluvial non calcareous soil according to soil mapping (NSSRC). We had surveys taken of local respondents where some are farmers and kitchen gardeners based on questionnaires prepared. We discussed their problems and what cultivation practices they followed while growing cucurbits. Survey of urban farmers of ages 30-50 in June 2021 which consists of 10 households in Morang district and 10 households in Kaski district through interview. The following procedures are followed:

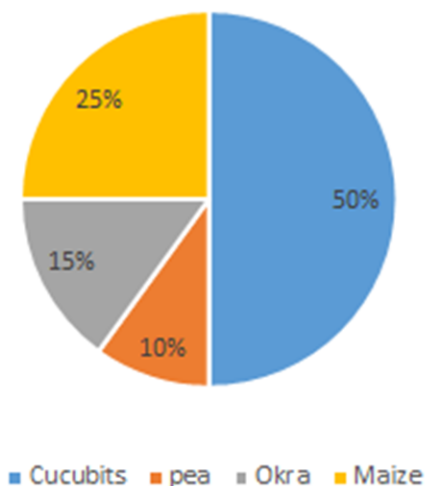
1. Firstly, the field observation, the problem of farmers visiting the field and analysing were done.
2. Preparation of questionnaires on the basis of visit were the activity carried after analyses.

3. Pre-testing was done with some of the respondents and necessary amendments were made.
4. Finally, the collected data was analysed and a report was made based on a questionnaire.

Result and Discussion:

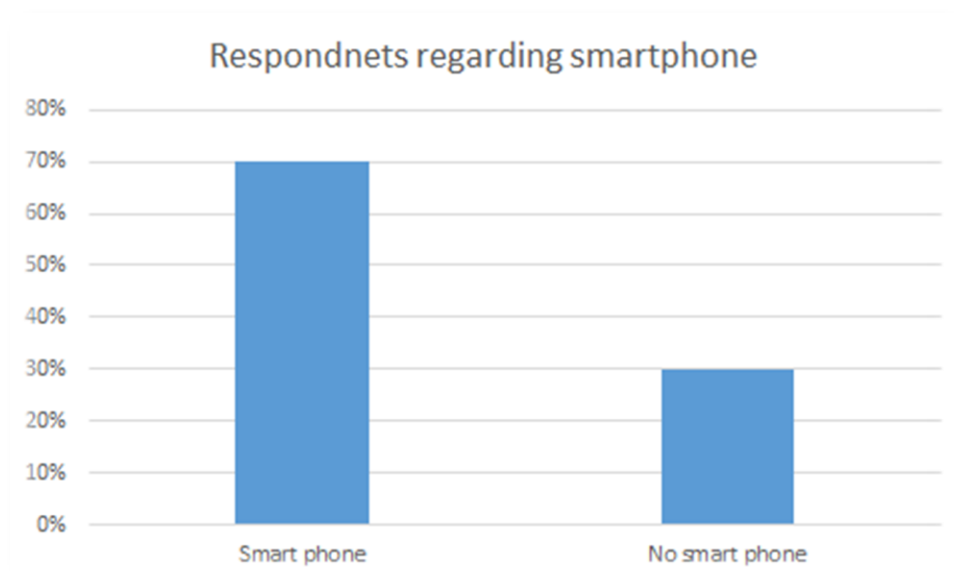
- In Morang district, it was found that people who grow cucurbits in their field have serious insect infestation rather than disease. Though, diseases such as Powdery mildew, Mosaic are major diseases prevalent in Morang district faced by urban farmers and they used to spray insecticides as recommended by agro vet.
- Most serious issues they had been talking about cucurbits is fruit fly infestation in cucumbers, summer squash, and Bitter gourd. They used a pheromone trap in their field in which 75% fruit fly infestation has been controlled.
- Majority of people don't have enough storage to download the app. So it has been a great challenge for us to install and guide the application process.
- Almost all people recommend agro vet for proper care of plants and they trust the agro vet fully about all the practices they face.
- In urban areas of Biratnagar-1, people haven't got support from cooperatives as only one / two cooperatives were found nearby. They said that they didn't get involved in any training conducted by provinces or cooperatives.
- The major plant grown by farmers in Morang district:
Cucurbits, Pea, Okra, Maize

% occupied by crops in Morang district



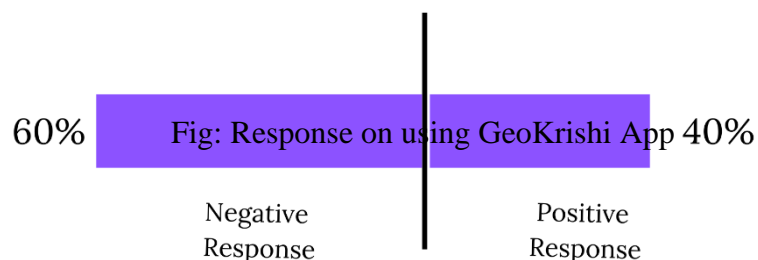
The above pie chart shows that 50% land was occupied by cucurbits family with major growing bitter gourds in this area. Many people suffer from blood pressure problems. According to a survey done, at least one member of each household suffers from the High B.P problem resulting in higher preference given to bitter gourd than other cucurbits. Preference of cucurbits in maximum households:

- Bitter Gourd > cucumber > summer squash > sponge gourd > bottle gourd
- 70% urban farmers are giving positive responses on smart phones while the rest 30% don't use smartphones. This represents that most farmers are using smartphones and they are familiar with it i.e. they either use Facebook and TikTok in their phone mostly.



Respondents regarding smartphone

- Out of 70% respondents, 30% give a positive response towards the app and the remaining say that there is not enough storage in mobile and they will not be comfortable using the app and they need time to be familiar with it.



- In Kaski district, most of the respondents (70%) said to be in their 30s and 40s and most of them mentioned service (50%) to be the primary occupation followed by business (30%). All of them were financially stable and almost all of them (90%) do not practice commercial farming.
- Most of them (60%) had a small land area of less than 1 ropani while 40% of them performed rooftop farming.
- The respondents reported that they perform mix farming of seasonal vegetables. Only 40% each reported cultivating maize and 20% millet.
- Wide range of vegetables were found to be cultivated. Currently, based on the cultivated area cucurbits were common followed by beans, tomato, garlic, okra and spinach.
- Based on land coverage, the most popular cucurbits were sponge gourd, pumpkin, bitter gourd, cucumber, bottle gourd, and snake gourd.
- They weren't hiring any expertise in the cultivation and use to grow based on traditional knowledge. They reported using improved seedling bought from local agro vets. Agro vets were found the sole source of knowledge and information to farmers. 30% of them were members of cooperatives but none of them are getting any aid from cooperatives. None of them have had any farmers training.
- Fruit fly was found to be the most serious pest problem to the respondent with almost all of them (90%) reporting incidence of fruit fly, and (70%) reporting incidence of leaf miner.
- Plant diseases were also found to be a problem with 50% of respondents reporting incidence of diseases like downy mildew, powdery mildew, damping off.
- Yellow sticky traps and pheromone traps were found to be the most common control measures with 90% using them. Only 20% reported to be using chemical control, this being associated with the desire of people to eat organic vegetables.
- Only 10% of them use other cultural measures for pest control.
- Almost all of them (90%) found using smartphones but none of them were familiar with any agriculture related mobile apps.

Problems faced by the farmers

- The major problems faced by the farmers of the both areas was found to be insect infestation. Leaf miner and fruit fly incidence were high both in Morang and in Kaski
- Gummy stem blight was more prevalent in Morang which resulted in vine wilting, whereas different forms of mildew were reported highly in Pokhara.

- Almost all of the people consider farming as a secondary occupation or merely a hobby so they prefer organic farming rather than use of chemicals.
- There certainly is a lack of space and manure for the farmers. In the places where terrace farming is practiced, there has not been much investment involved.
- Regarding using apps, they feel it is difficult to use it and don't have enough space in smartphones.

Suggestions:

- People were highly dependent on agro vets. Capacity development programs can be launched.
- Training and guidance should be conducted by local level or any cooperatives nearby.
- Encouragement of Organic practices not in individual but also throughout community level.
- Use of the internet and e- media to provide technical resources and guidance.
- The e-commerce market can foster in these places.

Conclusion:

The survey focuses on problems of urban farmers regarding disease and pests. Through this survey, we better know about the problem faced in agricultural practices by farmers. Among diseases and pests, infestation of fruit flies is a major problem and they used a pheromone trap to eliminate it. Overall, farmers at least know about the agricultural app through this survey and some farmers get a keen interest regarding the app while some farmers didn't respond firstly. Farmers applauded the decision support system, market price provide system and disease identification system of the application. If the application addressed the problems of these type of farmers, we believe that the interest of the respondents will increase slowly.