

RECOMMENDATIONS

Based on the above discussion, the following recommendations have been made for horticultural development in Rasuwa.

Fruit Cultivation

1. The apple orchards that are located in Goljung, Gatlang, Bridim, Syaphrubesi, and Chilime village development committees should be improved.
2. Suitable areas should be selected for cultivation of delicious apple varieties like Red, Royal, and Golden Delicious in the above villages. Golden Delicious should comprise at least 25 per cent of the orchard area as a polliniser.
3. Commercial orchards should have easy access to inputs such as planting materials, fertilisers, insecticides, fungicides, tools, implements, and credit.
4. The established fruit nurseries should be registered and should operate according to the Nursery Act. These nurseries can meet the demand for apple saplings in the district. There is no Nursery Act as yet and it is necessary to formulate one.
5. The horticultural farm in Rasuwa should conduct research on apple scab, powdery mildew, papery bark, woolly aphids, and Son-J-scale diseases on a priority basis as the prevalence of these diseases and insects in the district is a major problem.
6. Regular and careful surveillance should be carried out and a plant protection campaign should be started. Management practices, pruning, and proper harvesting techniques should also be highlighted in the campaign.
7. Cellar storage for apples should be built by individual farmers or cooperatives.
8. Wild animals from the National Park cause damage to crops. This has dampened the enthusiasm and zeal of the farmers. An alternative arrangement is urgently required to avoid further damage.
9. In areas where climatic conditions are favourable, peaches, plums, pears, and citrus fruits should be cultivated in kitchen gardens. Peaches can replace finger millet for distillation purposes.
10. The food habits of the local people may need to change in order to substitute cereal consumption, as Rasuwa is a food-deficit district. Awareness should be created among the local population regarding this issue.

Soil Management in Fruit Cultivation

11. Hilly soil should be carefully handled because it is susceptible to degradation. Soil loss can be reduced by cultivating fruits as the plants have deep roots that prevent soil degradation.

12. The soils of commercial orchards should be tested periodically and nutrient requirements should be recommended accordingly. Rasuwa's farmers do not apply chemical fertilisers, although some apply a small amount of compost.
13. Composting and compost preparation programmes should be encouraged in the villages. Compost helps to improve soil texture and structure as well as to increase the water-retaining capacity. Compost application will reduce the need for importing chemical fertilisers.
14. Low-cost drip irrigation could be introduced in the area.

Vegetable and Potato Production

15. Off-season vegetables such as cauliflowers, cabbages, carrots, and green pod peas can be grown during the off-season for the Kathmandu market (April to November.) These crops can be intercropped with fruits (apples) or grown as mono crops.
16. In the case of intercropping, supplementary nutrients must be added to the soil. Farmers must be made aware of this aspect.
17. Potatoes are the main crop but they are susceptible to infection. Brown rot is one of the most common diseases. Therefore, seed potatoes should not be brought from Trishuli and other places into Rasuwa without a certificate from the National Potato Development Programme.
18. Cold storages should be constructed in the remote production pockets in order to avoid production glut and low market prices. These storages could be used for preserving potato seeds also.
19. Rasuwa should produce potato seeds and supply the excess produce to other districts. Farmers need to be trained properly in crop rotation, fertiliser application, and storage of potato seeds.
20. High-value cash crops, such as walnuts, good apple varieties, potato seeds, carrot seeds, and Snowball cauliflowers, have good prospects in Rasuwa. These seeds are available at present in Nepal and are supplied either from Jumla, Dolpa, and Mustang, or from abroad.

Extension and Training

21. The extension workers in Rasuwa have many tasks to perform although they have little knowledge of most crops. The poor performance of farmers in the management of apple orchards, potato production, and seed production is due to lack of appropriate extension services. Crop-specific extension services should, therefore, be promoted.
22. There should be regular refresher courses and follow-up training programmes for extension workers. Training to farmers on various aspects of orchard management, seed production, and off-season vegetable production should also be regular and specific.

Institution Building

23. The Agricultural Development Office is responsible for overall supervision of extension activities in the district. This office lacks trained manpower. The ADO is cereal-oriented, and thus, gives top priority to cereal crops. In Rasuwa, there is a subject matter specialist in agronomy only. Hence, it is recommended that horticultural extension should be carried out by horticulturists for promotion of specific technologies in the district.
24. The establishment of a horticultural development office is required for horticultural extension. This office should carry out the following activities:
 - visit farmers to impart training and transfer technology;
 - select suitable pocket areas for fruit, vegetable, and potato cultivation; and
 - make inputs and credit available to farmers.
25. This system should function at the service centre level. Horticultural service centres should be established in pocket areas. They should not be limited to nine districts (*ilakas*) as in the case of agricultural extension (the present ADO), but on the basis of potential horticultural production.
26. The Horticultural Development Office should hold demonstrations on orchard management, seed production of vegetables and potatoes, exhibitions, and production competitions, i.e., orchards and vegetables.
27. As can be observed from Figures 3a and 3b, coordination between farmers and institutions is very weak.

This indicates that the linkages between the Department of Horticulture and horticultural extension activities in the districts are weak. Weak linkages do not result in good coordination, thereby the programme's objectives cannot be achieved.

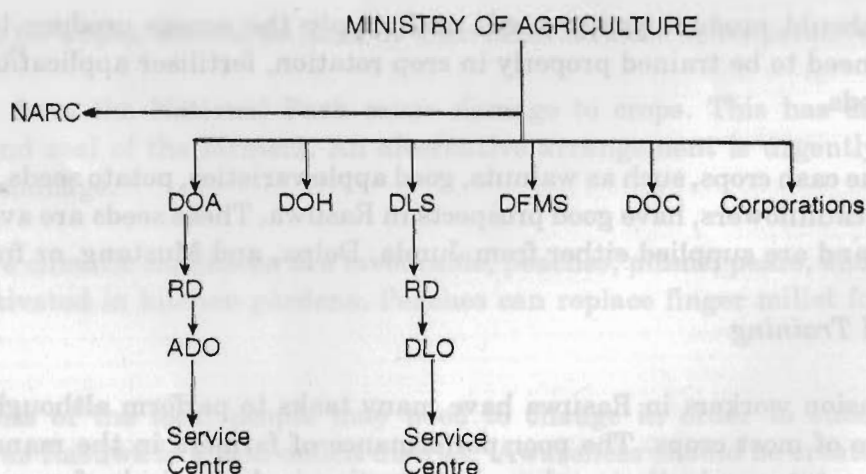


Figure 3a: Present Organisation of Ministry of Agriculture in Reference to Rasuwa

Source: MOA/HMG, 1991

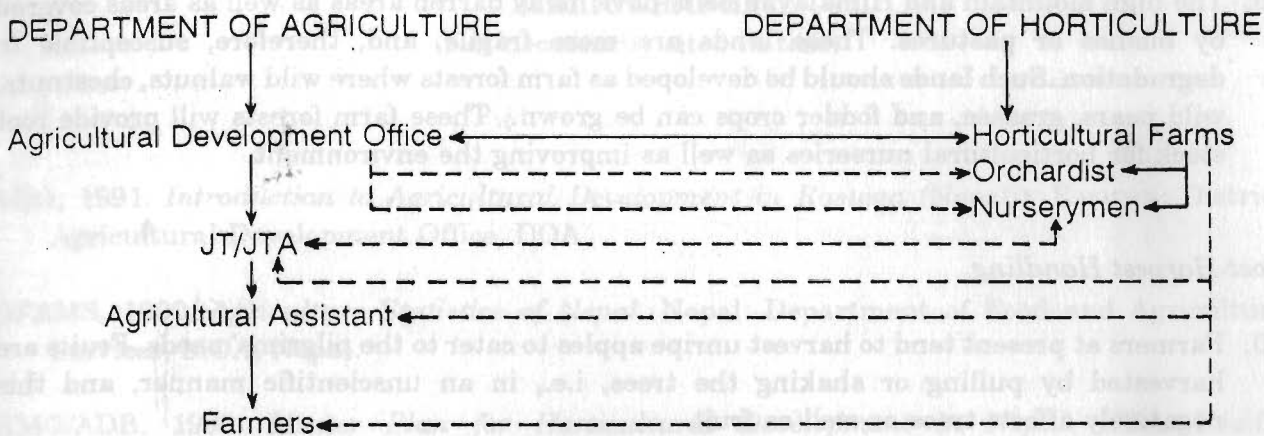


Figure 3b: Linkages among the DOA, DOH, and Farmers

Source: Adapted from MOA/HMG, 1991, and field experience

28. A single agency should be responsible for research, extension, and development. A person who is engaged in research on trees for 15-20 years will have sufficient experience to teach the farmers. Unlike cereals, there are many varieties of horticultural crops. A single extension worker cannot be familiar with all these varieties, including cereals. Therefore, a cadre of specialised extension workers is required for commercial production of fruits, vegetables, and potatoes. For this purpose, a district horticultural development office should be established as indicated in Figure 4. The limited agricultural extension needs (cereals) of Rasuwa can be taken care of by the ADO, Nuwakot.

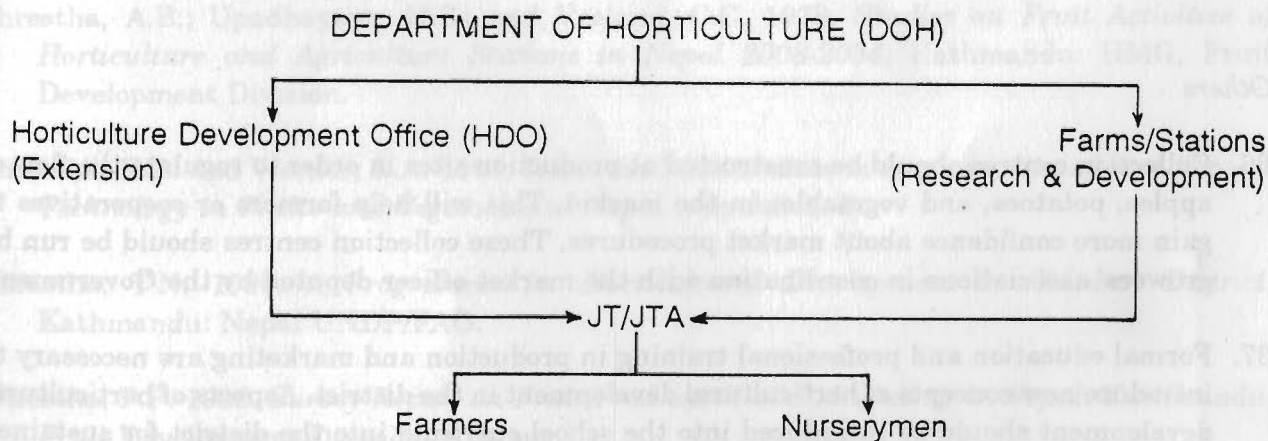


Figure 4: Proposed Extension Services in Rasuwa District

Source: Author

29. The high mountain and Himalayan belts have many barren areas as well as areas covered by bushes or pastures. These lands are more fragile, and, therefore, susceptible to degradation. Such lands should be developed as farm forests where wild walnuts, chestnuts, wild pears, grasses, and fodder crops can be grown. These farm forests will provide root stock for horticultural nurseries as well as improving the environment.

Post-Harvest Handling

30. Farmers at present tend to harvest unripe apples to cater to the pilgrims' needs. Fruits are harvested by pulling or shaking the trees, i.e., in an unscientific manner, and this negatively affects trees as well as fruit.
31. Common grading and packing facilities should be developed in production pockets so that farmers can learn how to grade and pack their produce properly.
32. A policy to encourage and assist the private sector in the construction of cold storage facilities should be implemented in Rasuwa in order to reduce glut production, thus lengthening the marketing period.
33. Until adequate transport facilities are available to farmers or cooperatives for transporting their produce to the market, the Government should develop a systematic transportation system to meet market demands as well as to encourage apple and vegetable growers.
34. Cold storages for vegetables should be constructed in the district.
35. Post-harvest losses are more costly than losses during production. These losses occur during harvesting, packing, storage, and transportation, due to lack of appropriate packing materials, and so on. These losses are also borne by the consumers in the form of price increase. Priority should be given to minimising post-harvest losses.

Others

36. Collection centres should be constructed at production sites in order to regulate the flow of apples, potatoes, and vegetables in the market. This will help farmers or cooperatives to gain more confidence about market procedures. These collection centres should be run by growers' associations in coordination with the market officer deputed by the Government.
37. Formal education and professional training in production and marketing are necessary to introduce new concepts of horticultural development in the district. Aspects of horticultural development should be introduced into the school curricula into the district for sustained promotion of horticulture.
38. Monitoring, supervision, and evaluation should be regularly carried out by the Horticultural Service Centre; Horticultural Development Office, Rasuwa; Central Fruit, Vegetable, and Potato Development Divisions; and the Department of Horticulture.