Food and Agriculture Organization of the United Nations

Planting of KS Kuroda variety carrots to withstand heavy and prolonged rainfall, Philippines

Source	FAO, Strategic objective 5 - Resilience, in FAO
Keywords	Risk management, disaster prevention, climate change, carrots, climatic hazards
Country of first practice	Philippines
ID and publishing year	7865 and 2013
Sustainable Development Goals	Zero hunger, responsible consumption and production, climate action and life on land

Summary

The objective of this practice is to enhance the profitability and resistance to climate variability by using a disease-resistant variety of carrots during the wet season and to avoid purely chemical control of diseases, thereby contributing to nutrition security, soil fertility and more stable production.

Description

This good practice option (GPO) was tested in the project "Enhanced Climate Change Adaptation Capacity of Communities in Contiguous Fragile Ecosystems in the Cordilleras (2009 – 2011) between August 11, 2010 and January 13, 2011. Through active participation and involvement of local stakeholders and end-users in both training and field demonstration activities, the project identified the planting of KS Kuroda carrots as a location-specific and appropriate option for climate change adaptation.
The GPO was tested in the municipality of Atok located in the province of Benguet, Philippines in 2010 and 2011.

Carrots are planted during the wet season and can contribute to disruptions in disease cycles when correct planting time is observed. Based on agronomic documents published by the Philippines Department of Agriculture and the first-hand experience of the department's regional technical specialists / agronomists, carrots grow best in areas with elevations higher than 1,000 meters above sea level. The demonstration site used was more than 1,500 meters above sea level. Under this agro-ecological condition, carrots are more succulent, tender, less fibrous, and have better texture and deeper colour. Roots gain optimal colour when air temperature is between 15 to 21° C and deepen rapidly in colour three weeks before harvest.

1. Implementation of the technology

1.1 Land preparation, planting and irrigation

A hectare of land requires about 6 kg of seeds depending on the size of the bulbs and the distance of planting. The rate of fertilizer application should be based on soil analysis. Before planting clean the area through the use of grab hoe, sickle or trowel. Continue to dig the plots to 25 cm deep and 15 cm high. Then prepare furrows at a distance of 10 cm. Plant three seeds per hill and irrigate every 4 to 5 days.

1.2 Management

Thin the carrots three weeks to one month after sowing. Conduct second thinning

TECA
TECHNOLOGIES and PRACTICES for SMALL AGRICULTURAL PRODUCERS

after hilling-up and retain one plant per hill. Hill-up twice if the roots are observed to be coming out. Side-dress the plants one month after emergence or after thinning. Clean the planting area regularly by hand weeding. For pest control (e.g. cutworms) apply insecticides as recommended by the agricultural technicians in the area

1.3 Harvest and postharvest handling

The carrots can be harvested three to four months (90 to 120 days) after emergence. Carefully loosen the soil using a spading fork or similar tool and slowly pull the carrot roots. Before washing and air-drying, cut the leaves 5 to 8 cm from the shoulder. The carrots can then be sorted based on size and appearance. (sources: Department of Trade and Industry; Department of Science and Technology - Philippine Council for Agriculture, Forestry and Natural Resources Research and Development).

Figure 1. Planting of KS Kuroda variety carrots to withstand heavy and prolonged rainfall, Philippines

© FAO/TECA

2. Environmental services and benefits

The project team identified factors that should be taken note of or avoided in order to prevent the GPO from introducing new environmental problems or compounding existing problems. Based on the field interviews, the initial fertilizer usage was higher than standard because of the frequent rainfall, which wash away the recently applied fertilizers. Apart from leading to fertilizer overuse and changes in soil chemistry (e.g. increase in acidity thru ion exchange leading to sulfuric acid formation; and/or leaching), the latter can also lead to surface and nutrient run-off.

To address this, members of the project team / local working group initiated the putting up of hedgerows and improvement in the contours. Cooperators have also been made more careful of the timing of the application of fertilizers.

Figure 2. Planting of KS Kuroda variety carrots to withstand heavy and prolonged rainfall, Philippines

© FAO/TECA

4. Economic benefits, social and cultural acceptability, and farmers feedback

It was found that planting Sakata variety in the same elevation and crop management condition has yielded about 30 % lower than KS Kuroda (given the same conditions). Planting KS Kuroda was thus deemed more profitable. It was also found to have a higher Return on Investment (ROI).

This good practice option is recommended for further trial in Atok, Benguet with training and technical assistance from the Department of Agriculture and the Municipal Agricultural Office and improved soil management practices to better determine more efficient fertilizer use and strengthen analysis on the yield advantages of KS Kuroda over Sakata variety.

5. Further reading

- MDG-F 1656 Outcome 3.1 Project Website: climatechange.da.gov.ph
- Compendium of Good Practice Climate Change Adaptation Options in Agriculture. Published by the Philippines Department of Agriculture and Food and Agriculture Organization of the United Nations through the MDG-F 1656 Outcome 3.1 Project. June 2012.
- Philippines Department of Agricultural Research AGFISHTECH Portal: http://www.bar.gov.ph/
- Carrot Production Guide by the Bureau of Micro, Small and Medium Enterprise Dev, Dept of Trade and Industry; Philippine Council for Agriculture, Forestry and Natural Resources Research and Development; Small Enterprise Technology Upgrading Program, Philippines

6. Agro-ecological zones

- Tropics, warm

7. Objectives fulfilled by the project

- Labour-saving technology (LST);
- resource use efficiency; and
- Pro-poor technology.