

Climate-Resilient Practices for Large Cardamom Agro-forestry Production Systems

ICIMOD



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Weather Smart

- Plant varieties based on altitude
- Keep weeds intact in the field until the winter is over to prevent frostbite
- Delay harvesting by a few days if rainfall is predicted
- Practice putting dried weed and crop traces on top of the bushes to protect the tender leaves from frost or snow



Soil and Nutrient Smart



- Use well-decomposed dung
- Plant leguminous trees or shrubs
- Apply cow urine + plant extract based 'Jholmal' as bio-nutrient fertilizer as well as bio-pesticide
- Intercrop nitrogen-fixing pulses or beans to enrich the soil nutrient base
- Thin old and dense alder tree (>15 years old)
- Prepare bio-compost and vermi-compost
- Use slashed pseudo-stem, weeds or leftover fodder residue with dung for mulching to provide additional nutrients and conserve soil moisture
- Plant *titepati* in the large cardamom farms to control harmful insects

Water Smart



- Dig out several pits throughout the plantation stands to store water during the rainy season and increase soil moisture
- Make water ponds above the plantation which helps to improve the soil moisture status
- Establish water harvesting plastic ponds at suitable locations within the plantations to arrest rainwater during monsoon, which can be used during the dry season
- Use sprinkler irrigation during dry periods at least twice a week
- Use weeds to mulch around the bushes for soil moisture retention

Energy Smart



- Promote improved dryer that consumes less fuel wood and emits less carbon while saving labour
- Use dry fuelwood from hardwood species such as *chilaune* and *katus* that provide enough heat
- Monitor fire flames constantly and reshuffle the capsules while drying to make the colour of dried capsules brownish and smokeless.

Knowledge Smart



- Promote ICT-based information on market price, weather and crop advisory services to help producers to minimize risks and increase bargaining power
- Create social capital working in groups and cooperative
- Facilitate buyer-seller meets and buy-back arrangements
- Engage producers groups in collective business enterprises