



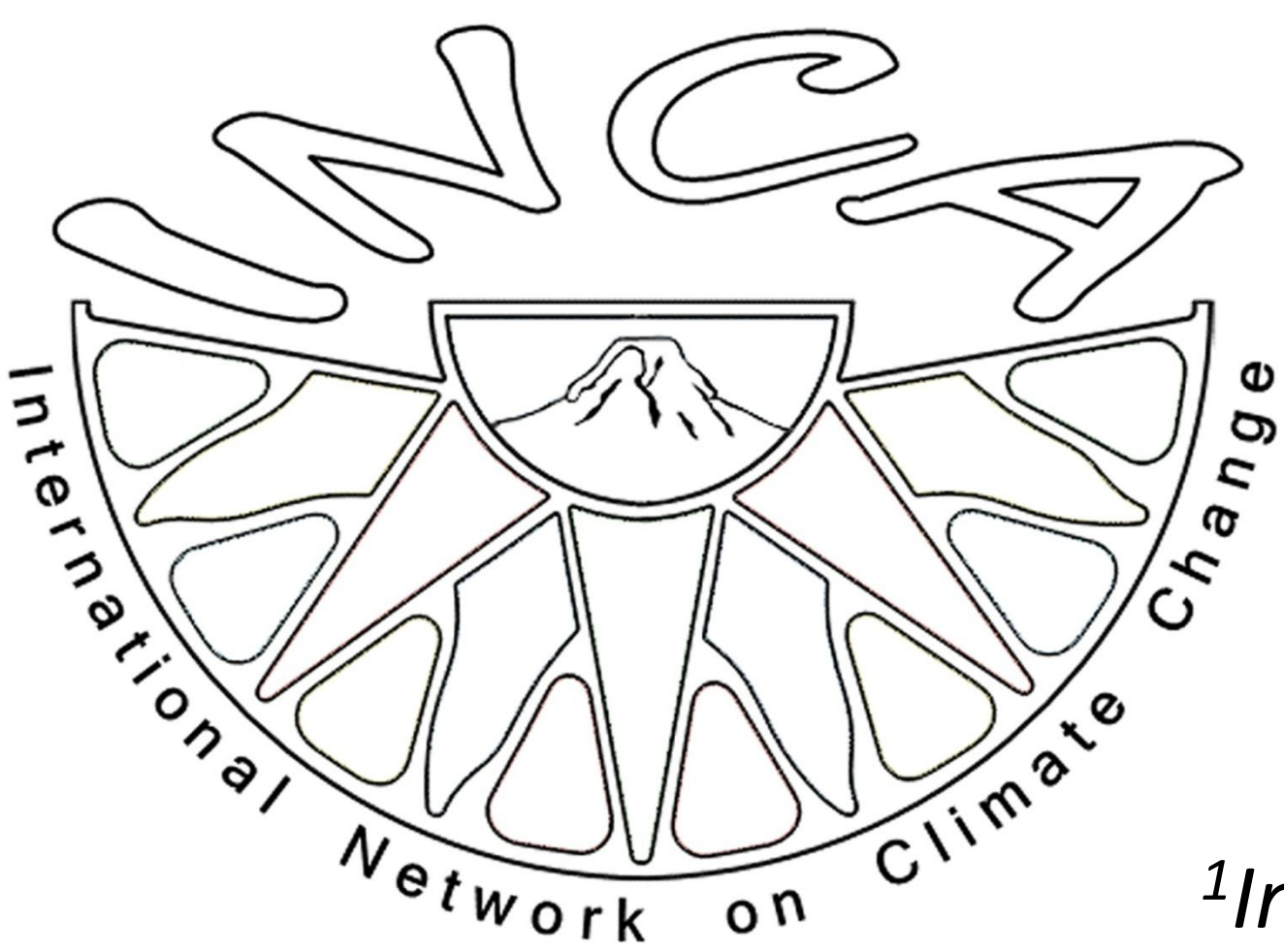
Challenges Presented by Climate Change in the Andean Region: Land Use Cover Change and Adaptive Response of Small Farmers

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The INCA is a scientific network specialized on climate change that seeks to understand the situation of farming and forestry systems in the Andean Region and to assess the adaptation capacity of local farmers. Currently, research is mainly focused in the Achamayo watershed located in the Andean Region of Peru, at 3300 – 4650 a.s.l.

First results of the INCA project include research on:

AGRICULTURAL LOSSES DUE TO EXTREME WEATHER EVENTS*

- Frost and heavy rainfalls are pointed out by farmers as important causes of agricultural loss.
- The decrease of water springs during dry season has a direct impact on the livestock which rely on natural grasslands as main fodder source.

Have you suffer agricultural losses due to climatic events in the past 3 years?

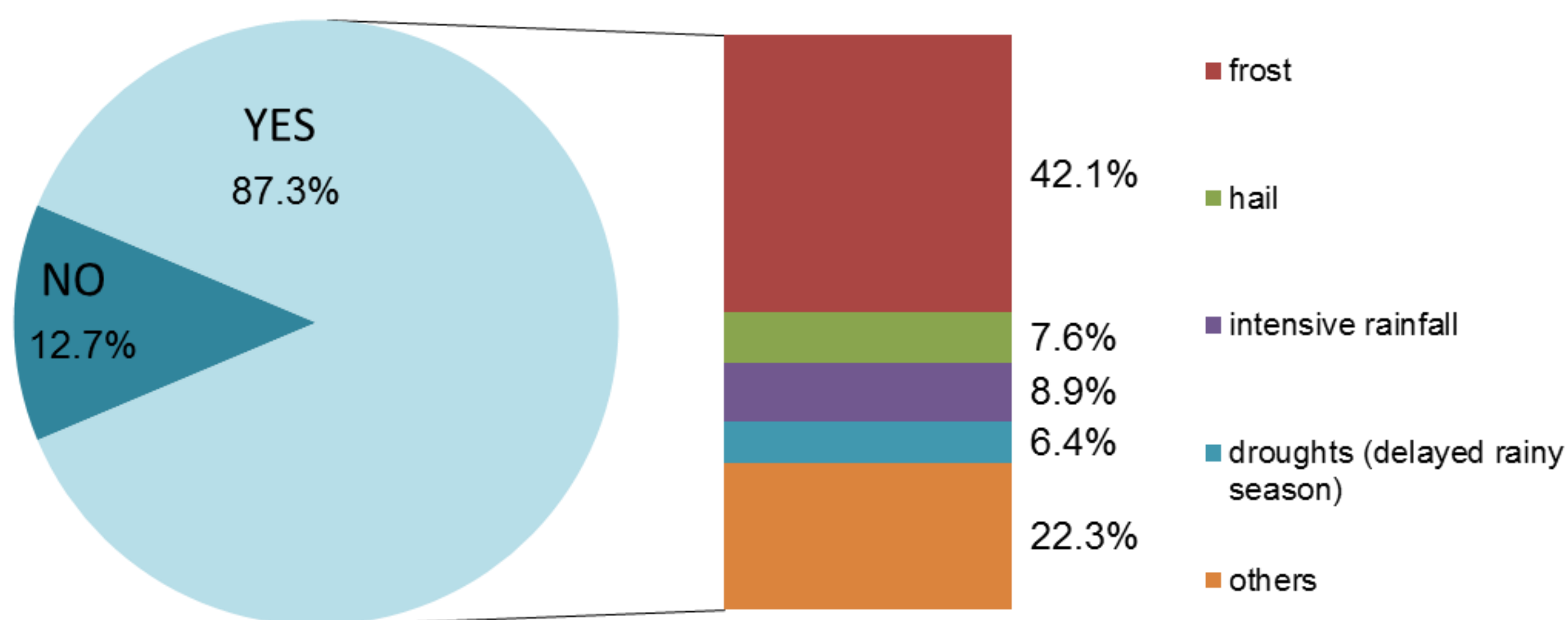


Figure 1. Farmer's experience with extreme weather events. *Interview at household level. INCA project (2011)

CURRENT AND PAST LAND USE/COVER*

- Trend analysis for land use cover/change for the 1985-2010 time period
- Grassland with high vegetation density presented a decrease of 52.94 km² (- 21.26%). Overgrazing, reduction of water springs and soil erosion are possible reasons for this reduction.
- Urban areas increased by 17.81%. Urban expansion is happening in areas of high quality agricultural use.
- Forest plantations represent 2.96% with an increase of 5.89 km² since 1985.

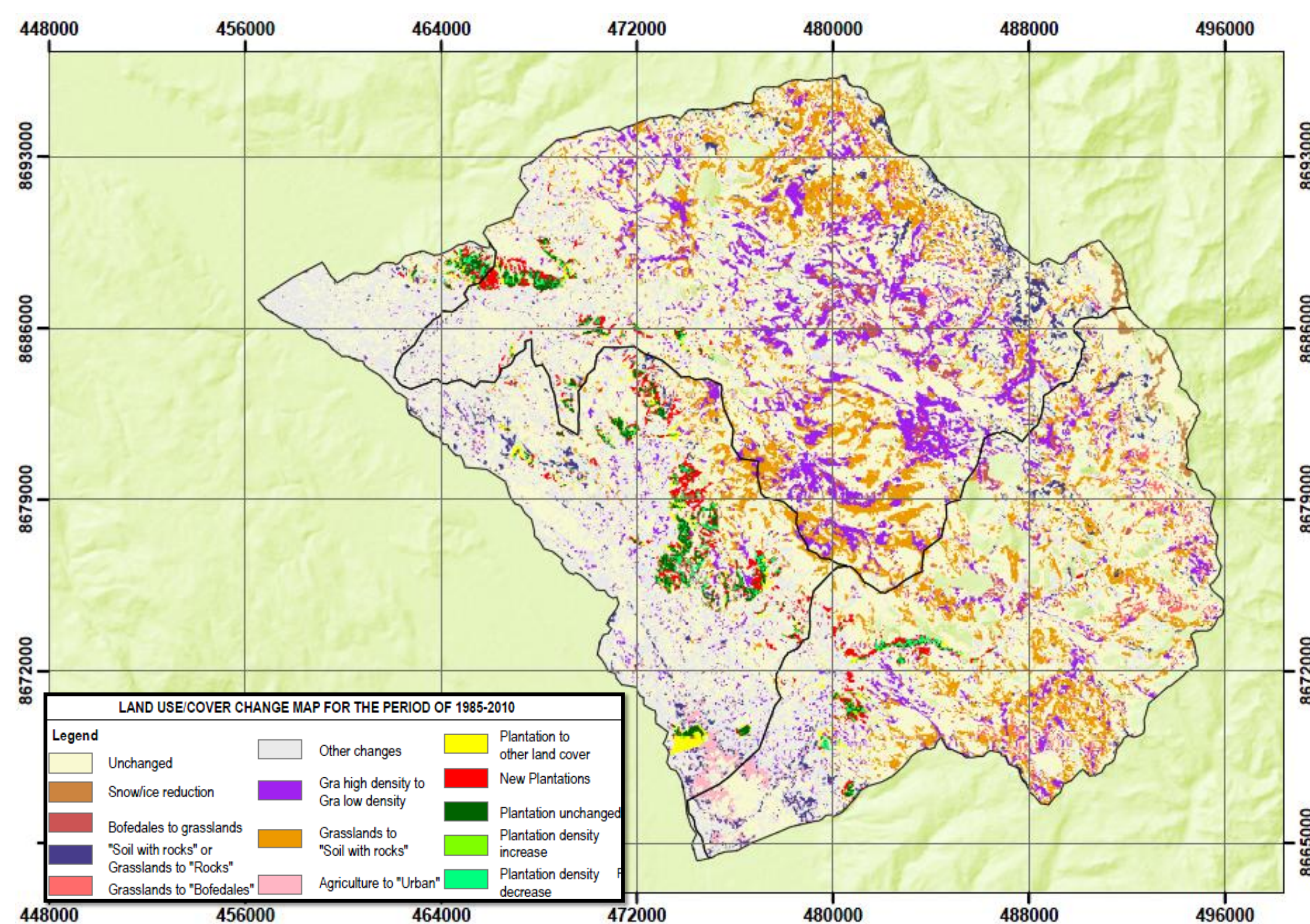


Figure 2. Land use/cover change map for the period of 1985-2010. *Landsat image analysis from 1985 and 2010

APPLIED ADAPTATION STRATEGIES TO COPE WITH CLIMATE VARIABILITY

- An holistic adaptation strategy to reduce the impacts of climate change includes forecast, dispersion and mitigation techniques.
- Most farmers ignore forecasting techniques, which impedes them to foresee climatic events, and therefore to take preventive actions.
- The fact that farmers rely on only few (and mainly modern) techniques may increase their vulnerability in the long-term.

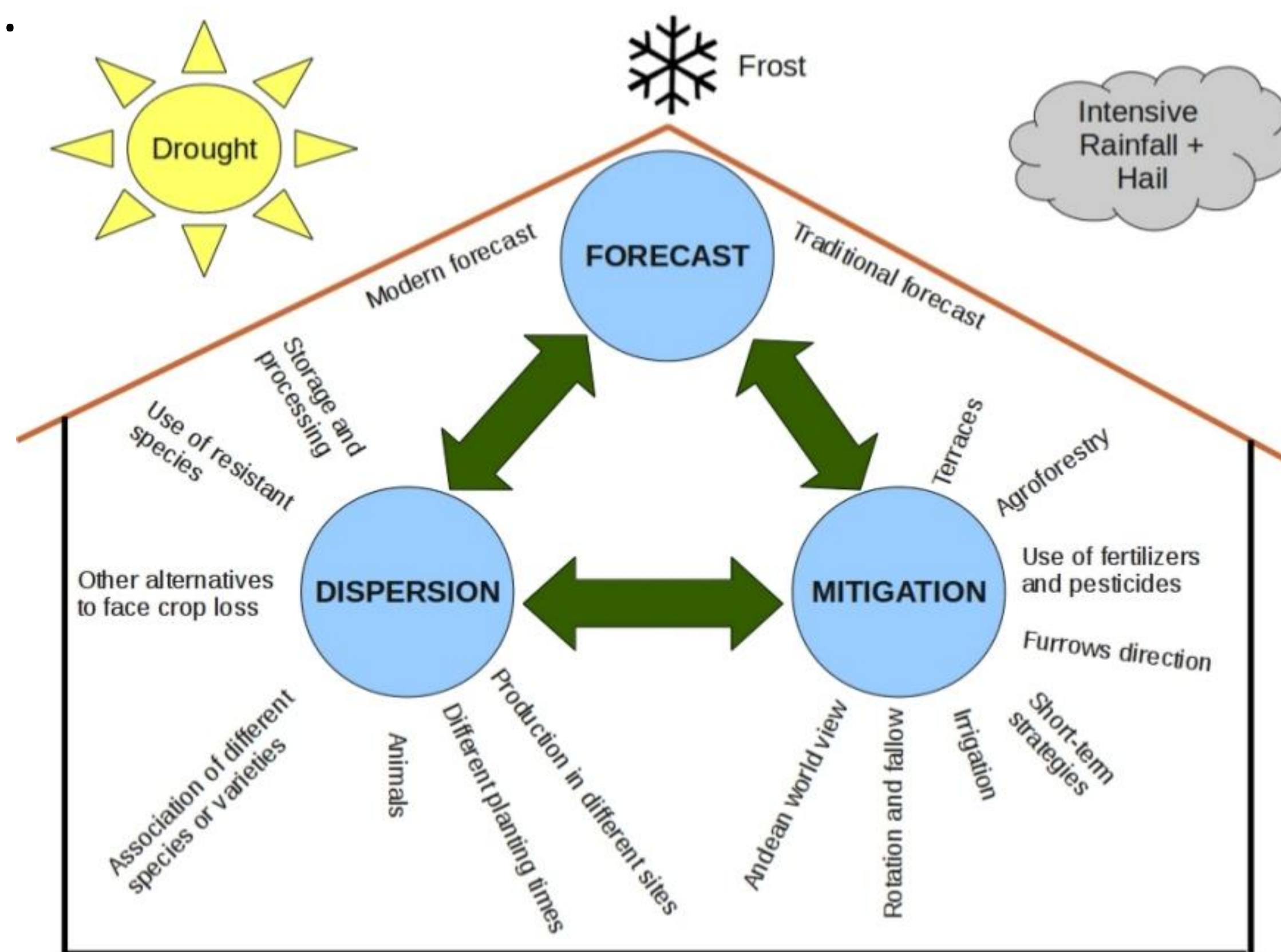


Figure 3. The holistic framework of an adaptation strategy to climatic hazards