



Precision Farming for Sustainable Development of Hilly Areas

Dr. Neeraj Singh Parihar

Introduction:

Precision agriculture is characterized as information and technology based farm management system to identify, analyze and manage variability within fields for optimum profitability, sustainability and protection of the land resource. Precision agriculture have been proven successful in developed countries wherein agriculture is characterized by highly mechanized and automated systems, and is driven by market forces and has been professionally managed enterprise. The adoption of precision farming depends on product reliability, the support provided by manufacturers and the ability to show the benefits. The implementation of precision farming depends on different factors such as the ability of precision agriculture to exhibit benefits to the farmers as well as environment, product reliability and the support provided by the manufacturers. India has a diverse topography spanning from 2.2 to 8,586 metres above sea level, dispersed throughout plains, hills, and the mighty Himalayas. A major proportion of people that live in the Himalayan region are from hill agricultural groups (mountains included). They survive mostly

through subsistence farming in marginal rainfed and some irrigated farmlands covering 15.8 percent (53.8 million hectares) of the entire area of the Himalayas. The remaining Himalayan terrain consists of rangelands, pastures, wastelands, so-called bush land-grazing zones, and forests, which account for almost 69 percent of the Himalayan area. Another 15.2 percent is covered in permanent snow and rocky mountains, providing a constant source of clean water to the hill people as well as the rest of the country. Farming system in hills stands upon the differences of availability of resources & its use. Villages at the bottom of hills and near the bank of river area have relatively more flat irrigated lands cut into valley side slopes. Hill agriculture has a considerable potential to grow and contribute towards improving farm incomes, enhancing food & nutrition security and accelerating the overall growth of the region. Every year farmers grow two crops of maize, paddy, wheat and variety of other crops on rainfed land. Unfortunately the growth potential has remained under-exploited. Precision farming is the best remedy for the problems faced by farmers on hills. Various

issues of lack of system-specific production technologies, difficult terrains, inaccessible habitations, crushing of crops by wild animals, management of small, scattered, fragmented, uneven lands etc. can be sought out easily with the methods of precision farming. Precision farming has created scope of transforming the traditional agriculture, through proper resource utilization and management, to an environmentally friendly sustainable agriculture. Research applications of remote sensing in precision farming are numerous and include techniques for detecting water stress, nitrogen stress, weed infestations, fungal disease, and insect damage. Integrating GPS (Global Positioning System) with GIS (Geographical Information System) and RS (Remote Sensing) is the most significant of all applications which require geo-referenced, precise and real or almost real time data. Once the hindrances in integrating the mobile communications are addressed successfully, after their many new application would appear in due course.

The application that would finally be developed, would certainly act as a boon for the hilly farmers in enhancing the production with efficiency, low cost calamity prediction. Precision Farming model for hilly states would provide an innovative route for sustainable agriculture in globalized and liberalized economy.

Dr. Neeraj Singh Pahihar, Asstt. Professor, MS Swaminathan School of Agriculture, Shoolini University of Biotechnology and Management Sciences, Solan (HP)