RAMA UNIVERSITY

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FACULTY OF AGRICULTURAL SCIENCES & ALLIED INDUSTRIES

Rainfed Agriculture and Watershed Management

Lecture -1

Rainfed farming-introduction and definition and importance

Agriculture is the single largest livelihood sources in India with nearly two thirds of peopledepend on it. Rainfed agriculture is as old as agriculture itself. Growing of crops entirely under rainfed conditions is known as dryland agriculture.

Total geographical area of India is 328.12mha. In this 175 mha of land is degrading everyyear due to erosions (soil, water & wind). Among the total geographical area dryland area is 85 mha. Total net cultivated area in India is 143mha.

DEFINITIONS:

Depending on the amount of rainfall received, dryland agriculture can be grouped into threecategories:

Dry farming: It is cultivation of crops in regions with annual rainfall less than 750 mm. Cropfailure is **most common** due to prolonged dry spells during the crop period. These are **arid regions** with a growing season (period of adequate soil moisture) **less than 75 days**. Moistureconservation practices are necessary for crop production.

Dryland farming: Cultivation of crops in regions with annual rainfall **more than 750 mm**. Inspite of prolonged dry spells crop failure is **relatively less frequent**. These are **semiarid tracts**with a growing period between **75 and 120 days**. Moisture conservation practices are necessary for crop production. However, adequate drainage is required especially for vertosols or black soils.

Rainfed farming: is crop production in regions with annual rainfall **more than 1150 mm**. Crops are not subjected to soil moisture stress during the crop period. Emphasis is often on disposal of excess water. These are **humid regions** with growing period more than 120 days.

United Nations Economic and Social Commission for Asia and the Pacific distinguished dryland agriculture mainly into two categories: dryland and rainfed farming. The distinguishing features of these two types of farming are given below.

Importance of Dry farming in Indian Agriculture:

- About 70% of rural population lives in dry farming areas and their livelihood depend on success or failure of the crops
- Dryland Agriculture plays a distinct role in Indian Agriculture occupying 60% of cultivated area and supports 40% of human population and 60 % livestock population.
- The contribution (production) of rainfed agriculture in India is about 42 per cent of the totalfood grain, 75 per cent of oilseeds, 90 per cent of pulses and about 70 per cent of cotton.
- By the end of the 20th century the contribution of drylands will have to be 60

per cent if India is to provide adequate food to 1000 million people. Hence tremendous efforts both in the development and research fronts are essential to achieve this target.

- More than 90 per cent of the area under sorghum, groundnut, and pulses is rainfed. In caseof maize and chickpea, 82 to 85 per cent area is rainfed. Even 78 percent of cotton area is rainfed. In case of rapeseed/mustard, about 65.8 per cent of the area is rainfed. Interestingly, but not surprisingly, 61.7, 44.0, and 35.0 per cent area under rice, barley andwheat, respectively, is rainfed.
- At present, 3 ha of dryland crop produce cereal grain equivalent to that produced in one ha irrigated crop. With limited scope for increasing the area under plough, only option left is to increase the productivity with the modern technology and inputs, since the per capita land availability which was 0.28 ha in 1990 is expected to decline 0.19 ha in 2010.
- The productivity of grains already showed a plateau in irrigated agriculture due to problemsrelated to nutrient exhaustion, salinity build up and raising water table. Therefore, the challenges of the present millennium would be to produce more from drylands while ensuring conservation of existing resources. Hence, new strategies would have to be evolved which would make the fragile dryland ecosystems more productive as well as sustainable. In order to achieve evergreen revolution, we shall have to make grey areas (drylands) as green through latest technological innovations.
- Drylands offer good scope for development of agroforestry, social forestry, horti-sylvi- pasture and such other similar systems which will not only supply food, fuel to the village people and fodder to the cattle but forms a suitable vegetative cover for ecological maintenance.