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LECTURE NO. 2

HISTORY OF RAINFED AGRICULTURE



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2.1 Pre-Independence period:

The chief form of agriculture in the dryland tracts of India was cultivation of drought resistant crops viz., millets for food and fodder. It used to be a gamble with rainfall.

- Under rainfall- farmer will get surplus grain and fodder.
- **Water is the most important** single factor of crop production.
- Inadequacy and extremely uncertainty of rainfall - causes partial or complete failure of crops leading to periodic food scarcities and famines.



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- ❖ Drought was a frequent phenomenon.
- ❖ 1880 - First Famine Commission started.
- ❖ 1928 - Royal Commission on Agriculture by GOI.
- ❖ The Commission revived the Department of Agriculture of the Government of India and simultaneously founded the Departments of Agriculture in all the provinces.
- ❖ The Departments concentrated more on the best performing crops, but neglected millets and other crops of the rainfed areas.



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- ❑ Study conducted Manjari Farm concluded that the problem of cultivation of dryland crops was vast in extent and complex in nature.
- ❑ It required simultaneous in-depth research on different aspects such as conservation/collection of excess rainwater, soil characteristics and water requirements of crop plant.
- ❑ The dry spells extended from 3 to more than 8 weeks during the rainy seasons felt that good crop production, conservation of soil moisture.



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In the Deccan Plateau, under normal cultivation, soil slope, low rate of infiltration and high intensity rainfall causes runoff. It was between 12 and 20 % with a concurrent upper soil loss of 10-14 t/ha/year due to erosion.

During the rainy season, in the cropped fields, about 10 % of the rainfall was lost as runoff from black and about 25 % from red soils. It was realized that the land needed some kind of vegetal cover to minimize the runoff and soil loss.

Kharif crops such as Bajra & Redgram provided cover to the soil, thus resulting in considerable reduction in runoff and soil loss. Deep ploughing, soil stirring and mulching helped to conserve soil moisture. Good yields were realized from sowing in wider rows with low seed rates of selected crop varieties.



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The packages of practices were popularly known as Bombay, Madras and Hyderabad Dry Farming Practices.

The recommended practices constituted the following:

- Constructing contour bunds as the basic and essential treatment
- Occasional deep ploughing of lands, once in 3 years
- Repeated shallow cultivation of soils (4 to 5 inter-cultivations) to remove weed and conserve moisture during the rainy season, particularly for rabi (post rainy) season sorghum (*Sorghum bicolor*)



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- Add FYM to maintain the fertility & Soil structure
- Sow seeds in 45 cm row spacing for sorghum with lower seed rate
- Adopting mixed cropping / crop rotations wherever possible

Unfortunately, the returns from the adoption of these technologies resulted in lower yields (40 to 100 kg grain/ha) probably due to: discouragement to use inputs and nonavailability of proper biological material. Thus up to independence, the dryland agricultural research and development made no significant progress.



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2.2 Post-Independence period:

- ❖ Food shortages were continued after post-independence period. The dryland research was also confined to long duration crops. Hence efforts were intensified to improve productivity and stability from rainfed areas.
- ❖ Another programme on ‘Soil Conservation in the Catchments of River Valley Projects’ was launched in 1962. It was later realized that this project focussed more on prevention of siltation of reservoirs and controlling floods, and gave secondary importance to agronomic aspects (Randhawa, 1983).



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In spite of major and minor irrigation projects and so also improvement in the availability of inputs like seeds, fertilizers, electricity and the like since India's independence, food shortages continued, and gradually food grain imports reached 10 million tonnes by 1966.

At this juncture, with international collaboration, Indian agricultural scientists developed high yielding varieties / hybrids of major crops like wheat, rice, maize, sorghum and Bajra were introduced to the farmers during the period from early to late sixties.



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2.3 Green Revolution

- Keeping in view these continuing problems, the ICAR formulated an exhaustive programme on dryland agricultural research. Thus, the All India Coordinated Research Project for Dryland Agriculture (AICRPDA) was launched in 1970 with the support from Canadian International Development Agency through an instrument of bilateral collaboration signed between the Governments of India and Canada.
- The Consultative Group on International Agricultural Research had established the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) at Hyderabad in 1972.



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- The Krishi Vigyana Kendras (KVKs) were initiated in 1974
- The dryland agricultural research was further strengthened with the establishment of the All India Coordinated Research Project on Agrometeorology (AICRPAM) in 1983 at Hyderabad with 12 Cooperating Centres (now 25).
- The modest beginning of AICRPDA resulted into establishment of a full-fledged research organization – the Central Research Institute for Dryland Agriculture (CRIDA) at Hyderabad in 1985.
- Main purpose of this institute was to focus on lead research in dryland agriculture, leaving location specific problems and their solutions to AICRPDA and AICRPAM. The present mandate of CRIDA is (Anon., 2005a):



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1. To provide consultancy. In order to reduce the regional imbalances in agriculture, the ICAR set up the National Agricultural Research Project in 1987 to build up infrastructure and to strengthen the zonal research stations under SAUs for conducting location specific research.
2. The impact of accelerated growth rate in agricultural production did not last very long. Almost since the 1990s, there has been a stagnation or decline in the productivity and production of many crops in the country.

In other words, rainfed agriculture is synonymous to non-irrigated agriculture. It includes rainfed wetlands (N.E. status) as well as rainfed/drylands.



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THANK YOU