



Dryland Agriculture and Improved Dryland Technologies

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Dryland Agriculture Indian agriculture is predominantly a rainfed agriculture under which both dryfarming and dryland agriculture are included. Out of the 143 million ha of total cultivated area in the country, 101 million ha (i.e. nearly 70%) area are rainfed. In dryland areas, variation in amount and distribution of rainfall influence the crop production as well as socio-economic conditions of farmers. The dryland areas of the country contribute about 42% of the total food grain production. Most of the coarse grains like sorghum, pearl millet, finger millet and other millets are grown in drylands only. The attention has been paid in the country towards the development of dryland farming. Efforts were made to improve crop yields in research projects at Manjari, Solapur, Bijapur, Raichur and Rohtak. An all India co-ordinated research project for Dryland Agriculture was launched by ICAR in 1970 in collaboration with Government of Canada and later Central Research Institute for Dryland Agriculture (CRIDA) was established at Hyderabad.

Characteristics of Dryland Agriculture

- i. Uncertain, ill-distributed and limited annual rainfall
- ii. Occurrence of extensive climatic hazards like drought, flood etc.
- iii. Undulating soil surface
- iv. Occurrence of extensive and large holdings
- v. Practice of extensive agriculture, i.e., prevalence of monocropping etc.
- vi. Relatively large size of fields
- vii. Similarity in types of crops raised by almost all the farmers of a particular region
- viii. Very low crop yield
- ix. Poor economy of the farmers

Improved Dryland Technologies

Following are the various improved techniques and practices recommended for achieving the objective of increased and stable crop production in dryland areas.

- Crop planning: Crop varieties for dryland areas should be of short duration through resistant tolerant and high yielding which can be harvested within rainfall periods and have sufficient residual moisture in soil profile for post-monsoon cropping.
- Planning for weather: Variation in yields and output of the dryland agriculture is due to the observation in weather conditions especially rainfall. An aberrant weather can be categorized in three types viz., a. Delayed onset of monsoon. b. Long gaps or breaks in rainfall and Early cessation of rains towards the end

of monsoon season. Farmers should make some changes in normal cropping schedule for getting some production in place of total crop failure.

- Rain water management: Efficient rain water management can increase agricultural production from dryland areas. Application of compost and farm yard manure and raising legumes add the organic matter to the soil and increase the water holding capacity. The water, which is not retained by the soil, flows out as surface runoff. This excess runoff water can be harvested in storing dugout ponds and recycled to donar areas in the server stress during rainy season or for raising crops during winter.
- Crop substitution: Traditional crops/varieties which are inefficient utilizer of soil moisture, less responsive to production input and potentially low producers should be substituted by more efficient ones.
- Cropping systems: Increasing the cropping intensities by using the practice of intercropping and multiple cropping is the way of more efficient utilization of resources. The cropping intensity would depend on the length of growing season, which in turn depends on rainfall pattern and the soil moisture storage capacity of the soil.
- Alternate Land use: All drylands are not suitable for crop production. Same lands may be suitable for range/ pasture management and for tree farming and ley farming, dryland horticulture, agroforestry systems including alley cropping. All these systems which are alternative to crop production are called as alternate land use systems. This system helps to generate off-season employment mono-cropped dryland and also, minimizes risk, utilizes off-season rains, prevents degradation of soils and restores balance in the ecosystem. The different alternate land use systems are alley cropping, agri-horticultural systems and silvipastoral systems, which utilizes the resources in better way for increased and stabilized production from dryland.
- Fertilizer use: The availability of nutrients is limited in drylands due to the limiting soil moisture. Therefore, application of the fertilizers should be done in furrows below the seed. The use of fertilizers is not only helpful in providing nutrients to crop but also, helpful in efficient use of soil moisture. A proper mixture of organic and inorganic fertilizers improves moisture holding capacity of soil and increase during tolerance.
- Watershed management: Watershed management is a approach to optimize the use of land, water and vegetation in a area and thus, to provide solution drought, moderate floods, prevent soil erosion, improve water availability and increase fuel, fodder and agricultural production on a sustained basis.

References

1. Anonymous 2008. Harmonization of wastelands/degraded lands datasets of India. Published by National Rainfed Area Authority (NRAA). Ministry of Agriculture, Government of India. NASC Complex, DP Shastri Marg, New Delhi – 110 012, 5 p
2. CRIDA. 2007. CRIDA - Perspective Plan, Vision 2025. Central Research Institute for Dryland Agriculture, Hyderabad, Andhra Pradesh