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Title

**DRY LAND FARMING FOR NATIONAL  
FOOD SECURITY**

Author(s)

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**Abstract:**

India is known as a land of golden bird. It was so because of prosperity prevails in all sphere of life of its natives. India was self sufficient for ROTI; Kapara aur Makan. But with the passes of time scenario changed, today we are not able to feed our population. Most of the people blame it for population. Is blaming to population is correct? Is population a curse? In my opinion answer is no. Population is curse when available resources are not in proportion to population. India has abundant resources which can feed not only Indian population but it can feed half of the world population. There are several factors which lead to food insecurity like dry land, unscientific cultivation, poor government policies and its implementation regarding procurement, storage and distribution of food grain. Uncertain, ill-distributed and limited annual rainfall; occurrence of extensive climatic hazards like drought, flood etc; undulating soil surface, prevalence of mono cropping, very low crop yield, poor economy of the farmers, poor health of farmer as well as farmers.

This paper try to focus on issues related to characteristics of dry land, dry land zone in India, and recommendation for dry land area.

**Key Words:** Dry land, dry land farming, food security.

**Introduction:**

It is well-known that there has been very little improvement in the production of food grains, coarse cereals and pulses during the past two decades due to a variety of reasons. Three of them are most important. The first is dry land, unscientific cultivation, and poor government policies. Secondly, consumer preferences have changed. Finally, crop substitution has been the fallout of the very tardy process of technological change in cultivation. About 65 percent of arable land of cultivated area even today depends upon monsoon rains. The productivity of dry land crops not only low but also highly fluctuating depending upon the rainfall. Government of India has taken several measures to improve the position of dry land farmer in India. About 25 percent of the net cultivated area has the benefit of irrigation and of this barely 24 percent is utilized for the sowing

more than once in a year. Dry lands contribute 42% of the total food grain production of the country. These areas produce 75% of pulses and more than 90% of sorghum, millet, groundnut and pulses from arid and semi-arid regions. Thus, dry lands and rain fed farming will continue to play a dominant role in agricultural production.

Dry lands, besides being water deficient, are characterized by high evaporation rates, exceptionally high day temperature during summer, low humidity and high run off and soil erosion. The soils of such areas are often found to be saline and low in fertility. As water is the most important factor of crop production, inadequacy and uncertainty of rainfall often cause partial or complete failure of the crops which leads to period of scarcities. Thus the life of both human being and cattle in such areas becomes difficult and insecure.

### **Characteristics of Dry land farming:**

Dry land areas may be characterized by the following features:

1. Undulating soil surface;
2. Occurrence of extensive and large holdings;
3. Uncertain, ill-distributed and limited annual rainfall;
4. Relatively large size of fields;
5. Practice of extensive agriculture i.e. prevalence of mono cropping etc;
6. Occurrence of extensive climatic hazards like drought, flood etc;
7. Similarity in types of crops raised by almost all the farmers of a particular region;
8. Very low crop yield;
9. Poor market facility for the produce;
10. Poor economy of the farmers; and
11. Poor health of cattle as well as farmers.

Hence an understanding of rainfall pattern and land characteristics is crucial for optimizing use of

available water for dry land areas. Apart from rainfall, the other important elements are moisture availability to crops and chemical composition of soil .

**Issues in Dry land Farming:**

- i. Watershed Programme.
- ii. Agro-Forestry System.
- iii. Crop improvement programme.
- iv. Use of fertilizer.

**Dry land Farming Zones in India:**

Almost all the states in India have some area under rain fed but only the major dry farming areas are discussed here.

**1. The Genetic plains of North India**

This zone includes districts of northern Rajasthan, Punjab, Haryana, North- western M.P., and U.P. This zone is characterized by two major soil types namely light loam and heavy loam. The land is nearly leveled in this area. The soils are very deep and situated at about 700 to 800 ft. above sea level. Because of heavy sand and silt fractions in the soil it has large pore spaces. The soils are rich in essential nutrients like nitrogen, phosphorus, potash, calcium etc. and, therefore, quite good for raising the crop excepting few with high water requirements. The major crops which are grown in this zone are millets, cereals, oil seeds and pulses.

**2. The peninsular plateau of India**

This zone comprises the states of M.P. Maharashtra, Karnataka and Andhra Pradesh. The soil of this zone has been derived from the Deccan trap .The tract is undulating and consists of low ridges and valleys due to erosion which results in rapid run-off. About 40 percent of the land of this zone is not fit for cultivation. The soil may be grouped into three types based on its depth as deep, medium deep and shallow soils. Leaching of lime has resulted in the formation of lime

nodules or kanker on the surface soil. The soil is quite rich in total and available nitrogen, phosphorus and potash which favors production of crops if moisture is efficiently conserved. In this zone two high peaks of rain are observed because the area is affected by both south-west monsoon as well as northeast monsoon. About 40-55 percent of total annual rainfall is obtained from south-west monsoon and the rest from north-east monsoon. Mostly the millets and some oil seeds like groundnut are grown in this zone.

### **3. Plateau of granite formation**

The soils of this zone are grouped as red soils and black cotton soils. Red soils are shallow while black cotton soils are very deep like clayey soils. The topography is of gentle undulations which favors run-off and soil erosion. The high pore space and high swelling of soil obstruct the permeability of rain water in to the lower layers of soil and its shrinkage results in hardening and clod formation on the surface which is unfavorable for plant growth. The red laterite and black cotton soils are deficient in nitrogen and phosphoric acids.

#### **Recommendations for Dry land Farming Areas:**

The research programmes of all India coordinated research projects for dry land agriculture have concluded into certain recommendations to the farmers of dry land areas which are described below.

1. Bounding across the slope and leveling the land should be done before onset of monsoon.
2. Deep summer ploughing should be followed by surface tillage during monsoon months and also rest of the year.
3. Application of organic manures should be done. These manures should be applied about 20-25 days before sowing and should be well mixed in the soil.
4. Fertilizers should be basal placed at a depth of 7.5 to 10cm in the soil and the seeds should be sown in the same furrows about 3 cm. above the fertilizers. This is important especially during winter season. The nitrogen (20-50% of total) should be top dressed by side or band placement method at about 10- 15 cm apart. The crop rows should be done soon after the rains but if there

is not sufficient moisture in the soil, the nitrogen should be applied over the foliage with urea solution containing 3-5% nitrogen. Zinc and sulphur should be applied as basal if needed.

5. Termites and white grub treatment should be done for better yield.
6. Selection of suitable crops and their varieties should be done according to their suitability to a particular region/micro climate.
7. Seeds must be treated with a suitable fungicide and that of legume with Rhizobium culture before sowing. Soaking seeds in plain water for rabi sowing helps in getting higher germination.
8. Proper crop rotation should be followed which should preferably have at least one legume every year.
10. At the event of total crop failure during kharif season a suitable catch crop like urd or toria etc should be sown.
11. Intercropping of oil seeds and pulses should be done with jowar, bajra and maize crops for the purpose of making best use of soil and inter row moisture harvesting.
12. Line sowing by drilling the seed at a depth of 7.5 to 10cm or even more depending upon the situation should be practiced because it helps in better seed germination. This also helps in stabilizing the required plant population and thereby in getting better yield.
13. Proper weed management practices should be followed by adopting integrated weed control measures.
14. Mulching should be done by providing frequent interculture and pulverizing the soil. If intercultural operations are not possible then use of artificial mulches like covering the surface with tree leaves, uprooted weeds, sugarcane leaves, saw dust or polythene sheets are used to check the evaporation of water from the soil.
15. Water harvesting between the rows should be done by growing some pulse crops and runoff water should be collected in some nearby located ponds and used as life saving irrigation.
16. An efficient plant protection measure should be adopted to protect the crop from insect pests and disease damage.
17. The crop should be harvested at proper physiological maturity so that the following or succeeding crop may be sown slightly earlier than the scheduled time and best use of rain water or residual moisture may be made for crop production.

**Conclusion:**

It can be concluded that 35 percent land which is still un irrigated has a great potential for agricultural produce, the example is Indira Gandhi Canal in Rajsthan which converted desert in to green area and first green revolution which developed through evolving and supplying improved seeds; educating farmers in bio-fertilizers; vermin –compost ; indigenous plant protection methods providing service at community center for mechanization of agriculture ;development of market infrastructure and trade policies through acceptable policies and techniques. Hence an understanding of rainfall pattern and land characteristics is crucial for optimizing use of available water for dry land areas. Apart from rainfall, the other important elements are moisture availability to crops and chemical composition of soil.

**References:**

- R.V.Badi and N.V.Badi, Rural Marketing, HPP.
- S.K.Mishra and V.K.Puri, Indian Economics HPP.
- Raj Gopal , Rural Marketing,Rowt Publication.
- Philip Kotler, Marketing Management , PHI.
- Website of ministry of rural development.