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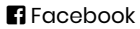
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Know about Dryland Agriculture and Farming Technology

27 October, 2017 12:00 AM IST By: KJ Staff

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(https://www.linkedin.com/shareArticle?url=https://krishijagran.com/news/know-about-dryland-agriculture-and-farming-technology/&title=Know about Dryland Agriculture and Farming Technology&summary=Dryland agriculture refers to cultivation of crops entirely under natural rainfall without irrigation. It is a form of subsistence farming in the regions where deficit of the soil moisture retards the growth of water consuming crops like rice (Oryza sativa), sugarcane etc. Dryland areas are characterized by low and erratic rainfall and no assured irrigation facilities. Dryland agriculture is important for the economy as most of the coarse grain crops, pulses, oilseeds, and raw cotton are grown on these lands. Dryland



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areas receive rainfall
between 500 and 1200
mm.)



Dryland Agriculture refers to cultivation of crops entirely under natural rainfall without irrigation. It is a form of subsistence farming in the regions where deficit of the soil moisture retards the growth of water consuming crops like rice (*Oryza sativa*), sugarcane etc. Dryland areas are characterized by low and erratic rainfall and no assured irrigation facilities. Dryland agriculture is important for the economy as most of the coarse grain crops, pulses, oilseeds, and raw cotton are grown on these lands. Dryland areas receive rainfall between 500 and 1200 mm.

Types of Dryland Agriculture

Depending on the amount of rainfall received, dryland agriculture has been grouped into three categories:

- **Dry farming:** it is production of crops without irrigation in areas where annual rainfall is less than 750 mm. Crop failures are more frequent under dry farming condition owing to prolonged dry spells during crop period. The growing season is less than 200 days. It is generally practiced in arid regions of the country
- **Dryland farming:** cultivation of crops in areas receiving rainfall above 750 mm is known as dryland farming. Dry spell during crop duration occurs, but crop failures are less frequent. Semi-arid regions are included under this category.
- **Rainfed farming:** It is practice of crop cultivation without irrigation in areas receiving 1150 mm rainfall, mostly in sub-humid and humid areas. Here chances of crop failure and water stress are very less.

Distribution of Drylands

Our country has fertile cultivable land and receives the highest rainfall on per unit area basis anywhere in the world due to short duration of rainfall in a year. One hundred and twenty eight districts in India have been recognized as dryland farming areas. Of these, 91 districts are

spread in the states of Madhya Pradesh, Chhattisgarh, Uttar Pradesh and Tamil Nadu, representing typical dry farming tracts. Rest of the districts belongs to Central Rajasthan, Saurashtra region of Gujarat and rain shadow region of the Western Ghats.

India has about 108 million hectares of rainfed area which constitutes nearly 75% of the total 143 million hectares of arable land. In such areas crop production becomes relatively difficult as it mainly depends upon intensity and frequency of rainfall. The crop production, therefore, in such areas is called rainfed farming as there is no facility to give any irrigation, and even protective or life saving irrigation is not possible.

Major dry farming crops are millets such as *jwar*, *bajra*, *ragi*, oilseeds like mustard, rapeseed, and pulse crops like pigeon pea, gram and lentil. Almost 80% of maize and *Jwar*, 90 per cent of *Bajra* and approximately 95% of pulses and 75% of oilseeds are obtained from dryland agriculture. In addition to these, 70% of cotton is produced through dryland agriculture. Dryland areas also contribute significantly to wheat and rice production. Thirty three per cent of wheat and 66% of rice are still rainfed.



Prospects of Dryland Areas

More than 75% of the peasants involved in dry farming are small and marginal. Therefore, improvement in dry farming would raise the economic status of farmers thus helping in poverty elimination. Dryland farming holds immense significance especially in the context of fluctuating food grain production and expanding population in our country. The biggest employer in our country, the cotton mills are fed by raw cotton grown mostly in dryland areas. Increasing production of cotton subsequently leads to increase in exports of cotton good. The expanding import of oilseeds is a cause of concern to Indian nation. The improvement of production of oilseeds in these regions will save valuable foreign exchange reserves. By enhancing the productivity of crops like *jowar*, *bajra* and *ragi* which are mainly grown in dryland farming would increase the nutrient consumption levels of our nation.

Marginal lands in the semi-arid regions offer potential for fodder production to feed the cattle population which is an integral component of farming practice of this region. Providing importance to these areas can solve the problems of pulses, oilseeds and cotton. The dryland areas have also tremendous potentiality of increased food grain production. Thus enhanced agricultural production in these areas would boost the agriculture dependent economy of India. Moreover it would also be helpful in eliminating the problem of hunger and malnutrition prevailed in below poverty line society of the country.

Constraints of Drylands

Drylands are characterized by low and uncertain rainfall therefore, crop failure is common feature. The various constraints of drylands includes:

1. In dryland areas in general, the rainfall is low and highly variable which results in uncertain crop yields. The distribution of rainfall during the crop period is uneven, receiving high amount of rain when it is not required and lack of it when crop need it.
2. Generally in dryland areas when the monsoon sets in late, the sowing of crops are delayed resulting in poor yields. At times, the rains may cease very early in season exposing the crop to drought and during flowering and maturity stages which reduces the crop yields considerably.
3. Soils of the drylands are not only dry but also deficient in macronutrients like nitrogen and phosphorous. Thus in other words drylands are not only thirsty but they are hungry too.
4. The temperature in dryland varies greatly. During the period of moisture stress and drought, the temperatures accelerate the crop development resulting into forced maturity. Chilling or frost injury at flowering results in poor grain setting and deteriorates the grain quality.
5. Dryland areas suffer from various process of soil degradation especially soil erosion.
6. Small size of land holdings (less than 2 hectares) usually fragmented and scattered, lack of market facilities, frequent crop failure, poor economic condition and other socio-economic problem related to drylands.
7. Extremely poor condition of farmers, lack of infrastructure to boost production.

Major Areas of Concern

Major areas of concern in dryland agriculture are :

- Proper marketing and price policy to cover crops and animal products.
- Conservation of soil and water resources.
- Need to evolve high yielding and drought resistant crop varieties.
- Low cost and locally suited agricultural implements.
- Judicious and balance use of costly chemicals.
- Proper financial availability to purchase inputs; and
- Extension education.

Dryland Farming Technology

The following farming technology is needed to enhance agricultural production in dryland areas.

1. Timely preparatory and seeding operations including conservation of stored soil moistures.
2. The use of improved crop varieties should be done which can withstand stress. For moisture conservation in the soil, deep tillage, surface cultivation and stubble mulching need to be practiced. Deep tillage is required to break plough soles and layers because repeated ploughing over centuries has resulted in the growth of hard compacted layers which restrict infiltration and movement of water and penetration of water.
3. Conjunctive use of rainfall, surface and ground water.
4. Harvesting of water for use in dry periods. Watershed a natural hydrological unit is a good device for water harvesting. Proper watershed management can stop not only further degradation of ecosystem, but degraded lands can also be restored.
5. Soil conservation by contour bunding, terracing, land sloping and land levelling and also by practicing conservational tillage (zero tillage and minimum tillage).
6. Practice of drip irrigation to save water.
7. Lining of canals to minimize water loss.
8. Agronomic practices like mixed cropping and crop rotation which increase the yield of crops need to be practiced.
9. Integrated nutrient management need to be practiced with special emphasis on use of bio-fertilizers to maintain the soil fertility.
10. Integrated weed management and integrated pest management need to be adopted to control weeds and pests, respectively.
11. For the non-farm operation dryland areas have to be supplemented with non-farm occupation like animal husbandry, fisheries, poultry, social forestry and cottage for the development of these areas.
12. Alley cropping, pasture management, tree farming, silvi-pastoral management systems and agro-horticultural system which are more relevant to dryland situations have to be adopted for successful dryland farming system.

Dryland areas constituting more than two-third of total arable lands in India are the chief contributor of pulses, oilseeds, coarse grain crops and cotton. Drylands also contribute significantly to wheat and rice production. Therefore, it is the need of the hour to adopt and practice the available dryland technology to maximum extent for the enhancement of agricultural production in these areas which would not only boost the food grain production of the country but would also improve the economic status of farmers in these areas.

Contributed by : Piyush Pradhan & Mukesh Kumar Pandey

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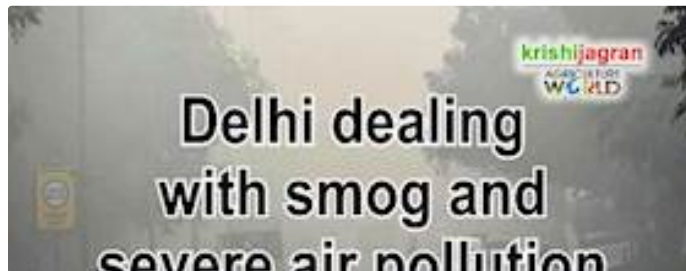
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