

Scope of dry land horticulture in Bundelkhand region

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Introduction:

India is an agricultural country whose main occupation is agriculture and animal husbandry. The economic condition of the population dependent on agriculture is not good, the main reason for which is the undesirability of farming. This means - lack of means of irrigation on 60 to 80 percent of the cultivable land, slope of the cultivable land, non-availability of proper fertilizers and advanced seeds on time, irregularity of rainfall etc.

Dryland farming is also practiced in areas of northern Madhya Pradesh, Uttar Pradesh, Rajasthan, Gujarat and Tamil Nadu.

Crops that are grown or can be grown using dry land agriculture:

With the help of dry land farming, a variety of crops can be grown and cultivated. Foods ranging from cereals to legumes and leafy vegetables can be grown or grown under dry land agriculture, besides fruits can also be grown using dry land farming.

Dry land cultivation such as wheat, maize, and millet further includes wheat, maize, buns, sunflower, watermelon, tomato,

pumpkin, rye, grapes, etc., which are grown in the winter season. Ragi has been proposed as the most suitable crop to be grown in dry land farming.

Under normal dry conditions, marginal rainfed areas often have low, unstable and unprofitable production. The productive capacity of this type of land is reduced in one way or the other. Due to the increase in population, it has become very necessary to use such land. Due to the continuous cutting of trees, the layer of vegetation is decreasing, due to which soil erosion is taking place, due to which the balance of the environment is also deteriorating. Jhansi, Lalitpur, Hamirpur, Banda and Jalaun districts come in Bundelkhand. Their total area is about 29.6 lakh hectare but only 18.9 lakh hectare area is cultivated. While Bundelkhand has gardens in a total area of 1.73 lakh hectares. Due to lack of water resources, less and untimely rainfall, unsuitable soil, excessive slope and rocky, this area is extremely backward.

Mainly two types of soil are found in Bundelkhand.

1- Black soil:

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Two major types of soil are found in black soil – Kabar and Mar. The water holding capacity of this type of soil is very high and the production capacity is also very high.

2- Red soil:

This soil can be divided into two groups, Rakar and Parba. The water holding capacity and production capacity of this soil is very less. Due to the large structure of this soil, soil erosion is very high in it, so conservation of land and water is necessary even on low slope. Fruit trees like lemon, plum, amla, guava, pomegranate etc. can be easily grown in stony, barren and dry plateau areas etc. as their water demand is not high. Horticulture is necessary to bring such barren land to use. By adopting suitable methods of soil and water conservation on sloping land, such land will not only be used properly, but by giving proper fruits, Bundelkhand region will also become self-sufficient in fruit production. Soil and water conservation in gardens can be mainly divided into two parts. Land and water conservation by mechanical method It is necessary to level the bumpy and stony land as much as possible because the rain water takes sufficient amount of soil etc. with it. Water flows at twice the speed compared to the percentage of the slope, due to which the upper surface is washed away, as well as large pits etc. are formed in the fields. Sometimes it takes such a terrible form that the trees and

plants of the garden fall. But due to stony soil in the Bundelkhand region, the leveling is not uniform.

Whether it is winter season, summer season or rainy season, the farmer should do his farming and agricultural practices keeping in mind the vagaries of weather and uneven weather conditions throughout the year.

It is easy to grow crops in areas that are fully irrigated and endowed with sufficient amounts of water for crop production, but what about areas that have enough water and not enough rainfall or areas that are dry? How is farming done in dry areas?

Problems of Dry land Farming for Bundelkhand

Rainfall in arid agricultural areas is erratic, erratic and variable, due to which farmers have to face difficulties. The soils of most areas are deficient in humus and other nutrients, which reduces the fertility of the soil. There is always a danger of soil erosion by wind in these areas. The soil is fertile in some areas, but it is difficult to increase agricultural production due to lack of irrigation systems. Dryland agriculture has great potential for development under changing climatic conditions. Adequate research is needed in this area to take advantage of them. With proper facility of irrigation, control of soil erosion, controlled use of fertilizers and

diversification of crops, etc., it is possible to increase production even from dry farming.

Techniques of Dry land Farming for Bundelkhand:

To practice dryland farming the farmers need to adopt certain techniques or learn about various practices to incorporate the habit of dryland farming into their farming activity.

- 1. Mulching:** Mulching is the ideal way to keep moisture in the soil because evaporation causes more than 75% of rain to be lost. Plant waste, straws, plastic materials, and other items can be used as mulch to keep water in the soil for a longer period. The greatest mulch for holding water is plastic.
- 2. Shelterbelts and windbreaks:** A windbreak is a structure made up of rows of trees or other plants that are planted in such a way as to break the constant flow of the wind, which lowers the rate of evaporation. Also known as a shelterbelt, this combination of plants and trees protects the inner plants from strong winds. Shelterbelts and windbreaks are nearly identical.
- 3. Weed control:** Another practical method for slowing the evaporation process is weed control. Regular weeding prolongs the life of the

moisture in the soil by ensuring that it is only available to helpful plants.

- 4. Antitranspirant:** The antitranspirant is a substance that keeps the water in a good condition by limiting plant transpiration. To lower the rate of transpiration, it is sprayed to plant leaves.

5. Fencing:

After leveling, it is very important to make strong bunds around the field so that soil erosion can be prevented. Due to the ridges, the maximum amount of rain water goes underground and this moisture can be easily used by the plant in summers. Building a dam not only helps in rainwater harvesting, but the practice of stray cattle in Bundelkhand can also be solved to a great extent by this method. By growing thorny plants, crops and trees on the ridges, they can be protected from stray animals.

The embankment has many advantages like it is easy to water the field and when it rains the field gets filled with water. Due to which the moisture in the field also increases and the water level under the ground also increases. Along with this, it is easy for the farmers to measure their fields with the embankment and the record of this also remains with the government. It is very important to make various drains on the lower end of the mountains, so that the accumulated

rain water can reach the lower part of the watershed without erosion. On the other hand, due to flowing in the opposite direction of the slope, the rain water remains in the drain for a longer time and the ground absorbs it in sufficient quantity. With this, both the problems of drought and water scarcity can be solved easily.

6. Staggered trenching/excavation on contour

In places where the gradient is high and it is not easy to level them, pits should be dug on the contour in a staggered manner. Fruit trees should be planted in the lower part of these pits. This method has the following advantages:-

1. The steeply sloping hill is divided into small parts and the staggered ditches act as small storage ponds.
2. By keeping the excavated soil at the bottom of the pit, moisture remains in it for a long time, which is available to the plants.
3. Due to the self staggered trenches, the rain water flows slowly instead of flowing rapidly, which prevents soil erosion and conserves water.
4. By planting plants with this type of soil work method, they grow rapidly, which acts as a vegetative barrier on the sloping hills and permanently stops soil erosion.

In view of less rainfall and its irregularity in Bundelkhand, the process of collecting rain water in ponds or pits is called water harvesting. The collected water can be used in times of drought or in the rabi season. 6 hectares in a reservoir. By collecting water, at least two irrigations can be done in about 10-15 hectares of land. Small dams should be made in the drains to control the flow of water. The method of collecting water at low places is called 'submerged dam'. Through this method, along with land and water conservation, water harvesting and using it at the right time can increase horticultural production.

How to Improve Soil Water Absorption for Bundelkhand?

To preserve soil moisture, several techniques can be used. Most of these soil moisture conservation methods are affordable. Many of the techniques focus on giving the soil some sort of protection from the sun and heat to reduce evapotranspiration and direct soil exposure.

In general, most techniques used to preserve and improve soil quality will also aid soil moisture conservation. The following are a few examples of techniques for preventing excessive soil moisture loss:

- **Deep tillage:** Deep tillage, which is suitable for regions and soils, can assist raise the porosity and permeability of

the soil to increase its capacity to absorb water.

- Growing a variety of crops with varying planting schedules and growth phases is known as mixed cropping and interplanting.
- **Contour plowing:** By ploughing the soil along the contour rather than the uphill and downhill slopes, the rate of runoff is slowed down, forming even barriers, and more water is stored in the soils and dispersed evenly across the field.
- Rotating your crops each season increases the soil's structure and, as a result, its ability to hold water. As plants take water from various depths inside the soil, examples include rotating deep-rooted and shallow-rooted crops that make use of previously unused soil moisture.
- Growing plants purely for the aim of adding them to the soil to boost their organic matter and nutrients is known as "green manuring." The enhanced soil quality also enhances the soil's ability to retain water.

Instructions to farmers:

Bundelkhand of Uttar Pradesh is counted among the drought affected areas. Due to less rainfall in the area, every year the farmers have to bear a lot of loss in

agriculture. Apart from mango, aonla, guava, bel, ber, pomegranate, fig, dragon fruit shitafal, kaitha, charonji, ramphal, lemon, orange, kinnow and jamun, jackfruit trees can also be planted to develop a fruit orchard. Karonda fence can also be installed for the protection of the orchard. Now farmers have found an alternative to avoid these losses. The villagers of many villages of Bundelkhand have now started cultivating dragon fruit. In order to encourage the farmers, the government has also started giving a grant of Rs. 30 thousand per hectare. Dragon fruit can be produced in any type of land. After planting once, farmers can get fruits continuously for 15 to 20 years. Its fruit is sold in the market for three hundred to four hundred rupees per kg. This is the reason why the farmers of Bundelkhand are fast turning towards dragon fruit cultivation.

Stevia, a plant grown in Iran to control the moon, will be commercially produced in Bundelkhand. The origin of Bangra and Mauranipur blocks is largely attributed to the stevia plant. That's why the industry center has decided to form groups of farmers under the cluster scheme of the Government of India and the Government of Uttar Pradesh. Under this, a group of 100 to 200 farmers will be formed, who will cultivate stevia.

The variety of kesar, which spread the magic of its sweetness in Gujarat and

Maharashtra, is now going to become the pride of Bundelkhand. The Department of Horticulture has set a target of cultivating pomegranate of this species in Damoh, Tikamgarh and other districts as an experiment. In which Damoh has got the target of planting pomegranate in 50 hectares. Some farmers have also started plantation after getting saplings from the department. Many of these farmers are going to plant the highest yielding pomegranate tree in Jalgaon for the first time. After which the picture and fate of the farmers of Bundelkhand will change. In fact, till now farmers in the district do traditional farming, even if they do fruit farming, they do it on ridges, so that there is no problem in farming, but now farmers are cultivating pomegranate commercially in the area by moving away. Will do farming. In the first phase, pomegranate will be cultivated in 50 hectares of Damoh district.

Multiple cropping is the method in which crops of different heights are grown simultaneously on the same land. Bundelkhand farmers can plants ginger inside the ground in February. In this month, amaranth is planted over ginger. Meanwhile, he plants papaya saplings at some distance. Kundru vine gives yield for five to ten years. This vine grows with the help of bamboo planted in the middle of the field and spreads in the pavilion.

The pavilion is meditated upon with the help of bamboo and grass. Made of natural material, this circle does not harm the environment in any way and once installed, it lasts for five years. The shed also protects the crops from weather vagaries like hail, heavy rain and sunlight.

Farmers should use indigenous seeds only in multi-level farming. This serves two purposes. One gets rid of expensive seeds and second these seeds have the strength to withstand the effects of climate change. The damage caused by insects is also minimal when cultivated with these seeds. This is very important in drought prone areas like Bundelkhand. All these features of layered farming and the inputs used make it a sustainable model.

Water is also saved by this method of farming. In this, we do not even need much water like sorry. It works only once a day. Four curves are prepared in such a little water and anyway it becomes four times.

This principle has been named as "toxic free cow based farming". He has five indigenous cows whose dung and dung he uses as manure. He has prepared many types of organic pesticides from cow urine. Along with this, vermicompost has also been prepared. This compost contains 75 percent cow dung and 25 percent rock phosphate. Akash also earns extra income by selling vermicompost

and milk. He says that if farmers across the country adopt this method, then farming can be made profitable.

Mega food Park will be built

Chief Minister Yogi Adityanath has selected Bundelkhand, Purvanchal, Madhyanchal, Paschimanchal, Dakshinchal and Awadh regions to make Mega Food Place. In this, a plan is being prepared on how the crops and plants grown in less water will be used. Under this, mega food places will be prepared under the cluster development scheme. In this sequence, Bangra and Mauranipur have been selected.

Conclusion:

80 percent of the farmers in India have less than five acres of land. Dry land horticulture can be of great help to the farmers. Dryland farming ensures the preservation of current resources as new approaches would need to be developed to increase the sustainability and productivity of the delicate dryland ecosystems. We must use the most recent technological advancements to turn drylands (grey regions) into green spaces to realize the evergreen revolution. Drylands provide excellent opportunities for the development of horticulture, Horti-agroforestry, and other agricultural areas that not only provide food, fuel, and fodder for cattle but also provide an appropriate vegetative cover for ecological preservation.