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DRY FARMING AND DRY FARMING PRACTICES

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Abstract:

Dry farming *is the cultivation of crops in areas with less than 750 millimeters of annual rainfall. During the crop season, prolonged dry spells are the most common cause of crop failure. These are dry areas with less than 75 days of adequate soil moisture during the growing season. Crop production necessitates moisture conservation practices. Accentuation is on soil and water protection, manageable harvest yields and restricted compost use as indicated by soil dampness accessibility.*

KEYWORDS: *Practices of dry farming, dry farming.*

INTRODUCTION

Dry land agriculture refers solely to the cultivation of crops under rain-fed conditions. Dry land agriculture can be divided into three groups based on the amount of rainfall that is received:

1. Dry farming 2. Dry land farming and 3. Rain fed farming

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Dry land farming is the cultivation of crops in areas that receive more than 750 millimeters of rain annually. Disregarding delayed droughts, crop disappointment is somewhat less continuous. These are semiarid lots with a developing period somewhere in the range of 75 and 120 days. Crop production necessitates moisture conservation practices. However, vertisols specifically require adequate drainage. Conservation of soil and water, sustainable crop yields, and limiting fertilizer use in accordance with soil moisture availability are the primary goals.

Rain fed farming is crop production in areas with more than 1150 millimeters of rain per year. During the cropping season, crops are not stressed by soil moisture. With a growing period of more than 120 days, these are humid regions. The elimination of excess water, maximization of crop yield, high input levels, and management of water erosion are the primary goals.

Dry Farming Practices:

A) Bunding: Bunding is the first essential step in dry farming. Every one hundred feet, the land is surveyed and level contours are drawn. For strange slants, it is suggested that for each fall of two feet, a

bund 18 to 24 creeps in level be built. A 12 inch-tall bund every 250 feet is still useful even on relatively flat land. The construction of periodic waste weirs with a sill that is half the height of the bund releases excess storm water. This will keep water in and reduce topsoil loss to a minimum. The surveyor must use bund lines to mark the land before the bunds can be made. The land should be plowed and harrowed a few feet to either side of it. The bund former should be worked twice side by side along the bund, leaving a furrow in the middle. This wrinkle in the center ought to be filled in with soil from the furrowed segments on the two sides, through a scrubber. The power source or "waste weirs" ought to be built of stones. The regular seepage of the area should not be totally halted however ought to be constrained by giving appropriate outlets to abundance storm water to pass progressively, without conveying a lot of sediment with it, and after completely immersing the dirt and earth. In order to ensure that all fields have an outlet for the additional storm water, the primary natural drains in each village or watershed must be properly maintained.

B) Strip Cropping: Strip cropping is a method that keeps soil fertility and how plants respond intact by increasing water absorption and controlling erosion. In point of fact, it makes use of a number of good farming techniques like crop rotation, contour cultivation, stubble mulching, and other things. Several functions are accomplished by growing crops in alternating strips that allow soil erosion and exposeness and crops that prevent these actions:

- The length of the slope is kept.
- Runoff water movement is monitored.
- Water from runoff is desalted.
- The soil is better able to take in rainwater.
- Thick foliage of the disintegration opposing yield keeps downpour from beating straightforwardly on the dirt surface.

Depending on whether water or wind pose the greatest risk of erosion, strips are planted perpendicular to the slope of the land or the predominant wind direction. Crops that are not resistant to erosion should also be rotated with crops that are. Research has shown that:

- Groundnut (peanut) seeds are effective and suitable for preventing erosion at a normal rate.
- Leguminous crops other than groundnut do not typically produce a canopy that is sufficiently dense to prevent raindrops from striking the soil surface; is ought to be raised to multiple times the ordinary seed rate.

C) Summer Fallow: Every one of the standards of water protection and use relating to dry-cultivating won't cause a yield to develop on the off chance that adequate downpour doesn't fall. Where the dirt profundity surpasses 18 inches (450 mm), in any case, it has been shown that putting away water as soil dampness over time by the utilization of legitimate summer decrepit techniques is conceivable. Up to 75% of the incident water can be retained at a soil depth of 10 to 15 feet, while 20% to 40% is more typical. As a result, the sum of the stored water and incident water will rarely be insufficient for crop production in a region that receives sufficient rainfall on average for crop growth. Drought-induced famine is almost nonexistent in India, where families faithfully reserve 5 to 6 acres for summer fallow each year. A significantly higher yield in the cropping year makes up for some of the crop's partial loss in the fallow year. Such expanded yield in an extended period of disappointment of the general harvest in the encompassing regions has a far more noteworthy worth than a typical harvest of a decent season. To achieve this, the soil must be loose and permeable to absorb rainfall, and the dirt/stubble and mulch must be kept in good condition to reduce evaporation. A tine cultivator is used to work the land, and occasionally, especially after a rain, harrowing is done. Weeds, which use as much or more water than crops, must not grow on the land. Even though this is a relatively small investment in cultivation, failing to provide surface mulch at any time may result in more water loss on a few hot days than the entire season. Experience has demonstrated that locations with annual rainfall of between 10 and 15 inches (250 and 375 mm) Every other year, a fallow field must be cleared, and at 15 to 20 inches (375 to 500 millimeters) per year, each three years.

D) Mulches: Porous soil allows water to easily enter and is absorbed by the soil grains as it seeps downward. A continuous column of water extends from these films to the soil's surface. The film will in general continue as before thickness around all the dirt grains with which it is in touch. The capillary water, a layer of water in the soil, is where plants get their water from. The surface film's thickness will be reduced as a result of evaporation caused by the sun, wind, and dry air. In order to even out the distribution once more, the thicker films in the subsoil will rise. This will go on until the films become so thin that the plant roots can no longer get any more moisture from them. Drought is the result.

E) Tillage Practices: When the soil is in good condition, plowing breaks it up into thin layers and pushes the layers past one another. When the soil is plowed and is too wet, especially if it is heavy, the soil granules or crumbs are destroyed, resulting in puddinging or compacting. Dust and pulverization of the soil are common signs of excessive dryness. Plows with steep moldboards have the greatest impact on the soil, pulverizing it. The furrow with the less steep moldboard tends to puddle the dirt and is of less draft.

- To deliver a harsh, cloddy surface that will increment dampness retention and decrease spillover, as well as disintegration from wind and water.
- to control or eradicate weeds that challenge crops for water, nutrients, and sunlight.
- To get rid of or stop the hard pan (sole) from growing, which can happen when you do a lot of shallow plowing or harrowing. Root growth can be stifled, water storage can be reduced, and the capillary rise of water from the subsoil can be stopped by this hard pan.
- Aerate the soil to encourage the breakdown of residues and the release of nutrients, which in turn will encourage bacterial activity.

F) Seed Bed Preparation: In general, smaller seeds necessitate a seed bed that is finer and more subdued than larger seeds. A well-prepared soil is preferable to a coarse, lumpy soil for seed germination and plant growth, and thorough preparation makes planting and maintaining crops easier. It is possible to prepare the soils too thoroughly. For planting, they should be brought to a granular state rather than powder-fine.

G) Planting: Crops should be planted in rows to allow for inter-tillage.
i) Planting Density. Wider row spacing and lower seeding rates—by half to two-thirds—than in areas with abundant moisture are required because of the limited moisture. Because of this, there will be fewer plants in the field, which means that each plant will get more water and nutrients, increasing the likelihood that the crop will mature before the resources are depleted. Millet, sorghum, sesame, safflower, and other cereals should be planted 7 to 14 inches (18 to 35 cm) apart. in rows spaced 70-105 centimeters (28-42 inches) apart. The practice of planting two or four rows and skipping one succeeds in some instances in further improving the effectiveness of moisture utilization. In general, when there isn't much rain, higher seed rates result in more straw and stubble than grain.
H) Inter-tillage/Cultivation: Crops planted in columns can exploit between culturing rehearses which serve three essential capabilities:

- Simple weeding without fastidious hand work. Since weeds compete for nutrients and moisture, they should be eradicated when they are still small and before they develop more than two or three leaves. On the off chance that seeds are communicated, or thickly planted, they can, best case scenario, just be developed physically, a burdensome undertaking.
- Make bacteria more likely to make nitrates. Development circulates air through the dirt and structures a mulch of dead weeds and stubble on which microorganisms work and structure nitrates. This kind of cultivation should be done at the beginning of the plant's growth and should be fairly deep, about two to three inches.
- As previously mentioned, the formation of a dirt mulch during inter-tillage helps conserve moisture. After heavy rains, cultivation must be carried out. Indeed, even a light downpour can re-structure narrow associations between the put away soil dampness and the outer layer of the ground. It is

possible for soil moisture to be lower than it was prior to the rainfall after a few days of drying like that.

I) Crop Rotation: When it comes to cropping practices, one of the first tenets of dry farming is that crop rotation, which is common in more humid areas, is not always recommended in semiarid lands. The most significant differences are as follows:

- The farmer must sow the crop that is best suited to the moisture conditions at the time because only a small number of crops are adapted to the climate.
- Because moisture is so much of a constraint, "soil improving" crops are much less effective than in areas with more moisture.
- In the face of wildly varying rainfall, it is difficult to succeed with rigid or complex sequences.

Reasons for Crop Rotation:

Crop rotation should be used for the following five primary reasons:

1. Moisture Conservation: Any arrangement of harvest turn ought to be arranged with dampness necessities as the primary thought. A crop can be classified as either moisture conserving or moisture dissipating for a specific set of climate conditions. The soil contains more moisture after harvest than it did when the crop was planted. The success of the subsequent crop may be aided by this moisture reserve. Crops that are sown in rows to allow for inter-tillage and dirt mulching tend to conserve moisture. Conservation may also benefit from undersowing. It's possible that there won't be enough moisture to grow a crop and save enough water to ensure the next crop. In such a situation, the fallow dirt and stubble that has been mulched must be used in the rotation. This will be required at least every other year if the annual rainfall is between 10 and 15 inches (250 and 375 millimeters); if there is at least one in every three inches (375-500 mm) of rainfall.

2. Pest Control: Viruses, molds, blights, and selective insect pests have a tendency to accumulate in the soil when related crops are successively planted in the same location. The majority of these pests will be eliminated from most crops through crop rotation that allows at least two years between plants in the same location.

3. Erosion Control: Plants which are thickly planted or which produce a thick ground cover will quite often oppose disintegration obviously superior to those which are between plowed or will more often than not be dampness monitoring. Erosion-related soil loss is a significant issue in dry farming, so erosion-controlling crops should be included in the rotation, preferably as strip crops.

4. Soil Nutrients and Structure: Specific soil minerals and nutrients are withdrawn faster than they can be replaced by decay or subsoil movement when related crops are successively planted. The soil quickly becomes "worn out" as a result of this selective depletion. Crop rotation uniformizes depletion, allowing soils to "wear out" more slowly. Because of their ability to fix nitrogen, planting legumes like alfalfa, gram, and groundnut tends to restore soil fertility. The use of green manures—plowing under a green crop like alfalfa rather than harvesting it—can also improve the texture and nutrients of the soil. However, the benefits may only last a short time in the tropics, making it difficult for farmers in third-world countries. the planting of any plants with deep or thick roots (like grasses, alfalfa, etc.) like a natural fallow, tends to improve the structure of the soil and brings nutrients from the subsoil to the surface. It can also increase pasturage during dry periods. Cassava and other crops that don't require a lot of nutrients from the soil can also be grown in rotation or when the soil is almost worn out.

5. Distribution of Labor and Risk: The subsistence farmer should generally cultivate all crops in the rotation scheme simultaneously, allocating the required number of fields to each crop. The scheduling and distribution of labor at bottlenecks (planting, harvesting, etc.) benefit from this. so that the crop in its entirety can be completed at different times. In addition, the risk of crop failure as a whole is reduced and the diet contains more variety and nutrients.

J) Crop and Variety Selection: The selection of varieties is crucial. Varieties that have performed well in areas with high rainfall or irrigation are typically unsuitable for dry land. A lack of awareness of the

requirements for selecting a variety is largely to blame for the failure of numerous dry land farming endeavors.

Assortment prerequisites for dry cultivating:

- Varieties with short stems and little leaf surface reduce transpiration.
- Utilization of moisture is enhanced by extensive root systems.
- It is important to have varieties that mature quickly so that the crop can mature before the hottest and driest times of the year and run out of moisture.

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