Mulching:

Mulching is the process of covering the topsoil with plant material such as leaves, grass, twigs, crop residues and straw etc. In natural farming, the term mulching refers to the use of organic and biodegradable plant materials. However, mulching may also include covering the soil surface using live crops with fast growth and short life spans. Mulching has multiple benefits such as decomposition of mulch material helps in increasing the organic matter content of the soil, conserves moisture in the soil through lowering of soil temperature, prevents soil erosion and also weed growth.

Major Advantages of Mulching:

Reduces Soil temperature.
Reduces crusting of soil
Reduces surface evaporation
Reduces weed emergence
Reduces soil erosion
Reduces crop failure as a result of drought.

Types of mulching:

Crop Residue Mulch: This comprises any dried vegetation, farm stubble, such as dried biomass waste etc. It is used to cover the soil against severe sunlight, cold, rain etc. Residue mulching also saves seeds from birds, insects, and animals.

Live Mulch: Live mulching is practiced by developing multi-cropping/inter cropping patterns of short durational crops in the rows of a main crop. It is suggested that the pattern should be of monocotyledons and dicotyledons in the same field, in order to provide all the essential nutrients. Monocots, like wheat and rice, supply nutrients such as potash, phosphate and sulphur, while dicots are capable of nitrogen-fixation in fields. Such practice reduces the demand for some essential plant nutrients required for their optimal growth.

SOIL AND WATER CONSERVATION METHOD IN NATURAL FARMING

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Biological measures are applicable in the landscape of d"2 percent slope. These measures reduce the impact of raindrops through the covering of soil surface and increasing infiltration rate and water absorption capacity of the soil resulting in reduced runoff and soil loss through erosion. These measures are cheaper, sustainable, and may be more effective than structural measures. Important agronomic measures favouring soil and water conservation are described below:

Contour farming

Contour farming is the most common agronomic measures for soil and water conservation in hilly agro-ecosystems and sloppy lands.. The ridges and furrows formed across the slope build a continual series of small barriers to the flowing water which reduces the velocity of runoff and thus reduces soil erosion and nutrient loss. It conserves soil moisture in low rainfall areas due to increased infiltration rate, whereas in high rainfall areas, it reduces the soil loss.

Choice of crops: Selection of the right crop is crucial for soil and water conservation. The crop should be selected according to the intensity and critical period of rainfall, market demand, climate and resources of the farmer. The crop with good biomass, canopy cover, and extensive root system protects the soil from the erosive impact of rainfall and creates an obstruction to runoff and thereby reduces soil and nutrient loss.

Crop rotation: Planting different crop species at different times and locations on the same field which helps in improving the structure of the soil, reduces soil erosion and chances of pest build up as well as increases soil microbial activity and thus soil fertility. The inclusion of legume crops in crop rotation reduces soil erosion, restores soil fertility, conserves soil and water and helps supplement atmospheric nitrogen to the soil.

Cover crops: Any crops grown to provide a cover to the soil are called cover crops. They can be annual, biennial or perennial herbaceous plants grown in pure or mixed stand during all or part of the year. Legume crops have better biomass to protect soil than row crops. The effectiveness of cover crops depends on crop geometry and development of canopy for interception of raindrops which helps in reducing the exposure of soil surface for erosion.

Intercropping: Cultivation of two or more crops simultaneously in the same field with definite or alternate row pattern is known as intercropping. Intercropping involves both time-based and spatial dimensions. Erosion permitting and resisting crops should be intercropped with each other. The crops should have different rooting patterns.

Strip cropping: Growing alternate strips of erosion permitting and erosion resistant crops with a deep root system and high canopy density in the same field is known as strip cropping. This practice reduces the runoff velocity and checks erosion processes and nutrient loss from the field. Strip cropping is practiced for controlling the run-off and erosion and there by maintaining soil fertility.

Types of strip cropping

Contour strip cropping: The growing of alternate strips of erosion permitting and erosion resisting crops across the slopes on the contour is known as contour strip cropping. It reduces the direct beating action of raindrops on the soil surface, length of the slope, runoff flow and increases rainwater absorption into the soil profile.

Field strip cropping: In this practice, the field crops are grown in more or less parallel strips across fairly uniform slopes, but not on exact contours. It is useful on regular slopes and with soils of high infiltration rates, where contour strip cropping may not be practical.

Wind strip cropping: It consists of the planting of tall-growing row crops (such as maize, pearl millet and sorghum) and close or short growing crops in alternately arranged straight and long, but relatively narrow, parallel strips laid out right across the direction of the prevailing wind, regardless of the contour.