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Center for Smart Agriculture

Production management of medicinal and aromatic crops



Module 3: Mulching
Session 13: Mulching land material



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Mulching

Mulching Mulching is a soil and water conserving and weed management practice through soil solarisation also in which any suitable material is used to spread over the ground between rows of crops or around the tree trunks. This practice helps to retain soil moisture, prevents weed growth and enhances soil structure..



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Mulching

Mulching between Crop Rows

Mulching around Tree Trunk



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Surface Mulching

Mulches are spread on surface to reduce evaporation and increase soil moisture. Vertical Mulching It involves opening of trenches of 30 cm. depth and 15 cm. width across the slope at vertical interval of 30 cm thus making more surface area available for water absorption. Ways of Mulching



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Organic Mulch

An organic mulch is made up of natural substance such as bark, wood chips, pine needles, dry grasses, paddy straw, dry leaves, saw dust, grass clipping, etc. • organic mulch attracts insects, slugs and the cutworms that eat them. • They get decomposed easily and need frequent replacements.



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Grass Clipping

This is one of the most abundantly and easily available mulch materials across the country.

- It provides nitrogen to the soil, if incorporated fresh.
- However, application of green grass in rainy season may result into the development of its own root system which will be detrimental to plant growth. Therefore, use of dry grass as mulch material is suggested. Straw



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Grass Clipping

This is one of the most abundantly and easily available mulch materials across the country.

- Paddy and wheat straw are commonest mulching materials used for fruit and vegetable production.
- Though straw is poor in nutrient value but after decomposition, it makes soil more fertile.
- Among organic mulching materials, straw has a long life in comparison to other mulches (grasses, leaves and leaf mould).



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Compost

- ❑ The compost is one of the best mulch materials.
- ❑ It increases microbial population, improves the soil structure and provides nutrients.
- ❑ It is the excellent material for improving the health of soil. Dry leaves
- ❑ Leaves, an easily available material, are good for mulching.
- ❑ Though leaves are good for protecting dormant plants during winter by keeping them warm and dry but due to lightweight they may be blown away even by light wind.
- ❑ To counter this problem, it requires anchoring which can be done with stones, chipped bark and covering with net or some form of sheet.



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Saw dust

☒ Saw dust, obtained during finishing operation of wood, is very poor in nutritive value as it contains only half the nutrients of straw. It decomposes slowly. Being acidic in nature, it should not be used in acidic soils.

☐ Newspaper mulching helps to control weeds. One to two cm thick sheet of newspaper should be used and edges should be fastened with materials like pebbles, gravels, etc. The application of newspaper mulch should be avoided on a windy day. Bark clippings



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□ Newspaper mulching helps One to two cm good mulch materials as they are long lasting and allow proper aeration to the soil underneath. Hardwood bark clippings contain more nutrients than softwood but bark clippings are not easily and abundantly available, and some bark products may cause phytotoxicity.



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Inorganic Mulch

Gravel, Pebbles and Crushed stones Soil is covered with pebbles to prevent transfer of heat from atmosphere.

These materials are used for perennial crops.

Small rock Layer of 3-4 cm provides good weed control.

But they reflect solar radiation and can create a very hot soil environment during summer.



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Plastic mulch

Both, black and transparent films are generally used for mulching.

These are two types.

Photo-degradable plastic mulch This type of plastic mulch film gets destroyed by sun light in a shorter period.

Bio-degradable plastic mulch This type of plastic mulch film is easily degraded in the soil over a period of time.



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Black plastic film It helps in conserving moisture, controlling weed and reducing outgoing radiation. Reflective silver film It generally maintains the root-zone temperature cooler. Transparent film It increases the soil temperature and preferably used for solarization.



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Polythene Mulch

Polythene Mulching



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Benefits of Mulching

- Mulch reflects a lot of the sun that otherwise heats the soil. This keeps the soil cooler and helps prevent evaporation.
- Weeds do not grow under it as they do not get the light they need to grow.
- Prevent soil erosion, as the wind or running water does not directly come in its .
- Mulches spread over soil, slow down rainwater run-off, and increase the amount of water that soaks into the soil.
 - Organic mulches also improve the condition of the soil. As these mulches slowly decompose, they provide organic matter which helps keep the soil loose.



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- Organic matter becomes food for the beneficial earthworms and other soil micro-organisms in the soil and create a very good porous soil.
- This improves root growth, increases the infiltration of water, and also improves the water-holding capacity of the soil.
 - Decaying organic matter also becomes a source of plant nutrients.
- Maintains a more even soil temperature.



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Thank You