Mulching is the process or practice of covering the soil/ground to make more favourable conditions for plant growth, development and efficient crop production. Mulch technical term means 'covering of soil'. While natural mulches such as leaf, straw, dead leaves and compost have been used for centuries, during the last 60 years the advent of synthetic materials has altered the methods and benefits of mulching. The research as well as field data available on effect of synthetic mulches make a vast volume of useful literature. When compared to other mulches plastic mulches are completely impermeable to water; it therefore prevents direct evaporation of moisture from the soil and thus limits the water losses and soil erosion over the surface. In this manner it plays a positive role in water conservation. The suppression of evaporation also has a supplementary effect; it prevents the rise of water containing salt, which is important in countries with high salt content water resources.

Yellow / Black Mulch Film
Advantages of Iris mulch Film.

- It is completely impermeable to water.
- It prevents the direct evaporation of moisture from the soil and thus limits the water losses and conserves moisture.
- By evaporation suppression, it prevents the rise of water containing salts.
- Mulch can facilitate fertilizer placement and reduce the loss of plant nutrient through leaching.
- Mulches can also provide a barrier to soil pathogens.
- Opaque mulches prevent germination of annual weeds from receiving light.
- Reflective mulches will repel certain insects.
- Mulches maintain a warm temperature even during night time which enables seeds to germinate quickly and for young plants to rapidly establish a strong root growth system.
- Synthetic mulches play a major role in soil solarisation process.
- Mulches develop a microclimatic underside of the sheet, which is higher in carbon dioxide due to the higher level of microbial activity.
- Under mulch, the soil structure is maintained during cropping period.
- Early germination almost 2-3 days.
- Better nodulation in crops like Groundnut.
- Less nematodes population.
- Water erosion is completely averted since soil is completely covered form bearing action of rain drops.

Red / Silver Mulch Film
Moisture conservation

- Mulch film with its moisture barrier properties does not allow the soil moisture to escape. Water that evaporates from the soil surface under mulch film, condenses on the lower surface of the film and falls back as droplets.
- Thus moisture is preserved for several days and increases the period between two irrigations.
- The irrigation water or rainfall either moves into the soil thru holes on the mulch around the plant area or through the un-mulched area.

Weed control

- Black mulch film does not allow the sunlight to pass through onto the soil.
- Photosynthesis does not take place in the absence of sunlight below black film, hence, it arrests weed growth.

Areas of application Mulching is mainly employed for:

a. Moisture conservation in rain-fed areas
b. Reduction of irrigation frequency and water saving in irrigated areas
c. Soil temperature moderation in greenhouse cultivation
d. Soil solarisation for control of soil borne diseases
e. Reduce the rain impact, prevent soil erosion and maintain soil structure
f. In places where high value crops only to be cultivated

Types of mulch film A wide range of plastic films based on different types of polymers have all been evaluated for mulching at various periods in the 1960s. LDPE, HDPE and flexible PVC have all been used and although there were some technical performance differences between them, they were of minor nature. Owing to its greater permeability to long wave radiation which can increase the temperature around plants during the night times, polyethylene is preferred. Today the vast majority of plastic mulch is based on LLDPE because it is more economic in use.

Silver / Black Mulch Film
Basic properties of mulch film

1. Air proof so as not to permit any moisture vapour to escape.
2. Thermal proof for preservation of temperature and prevention of evaporation
3. Durable at least for one crop season.

Importance of parameters of the plastic film

a) Thickness Normally the thickness of the film does not affect the mulching effect except when it is used for solarisation. But some of the recent references do indicate the impact of film thickness on crop yield. Since it is sold by weight it is advantageous to use as thin a film as possible but at the same time due consideration should be given for the longevity of the film. The early mulch film used was of 60-75 micron (240-300 gauges) thickness, and today it is possible to have 15-30 micron thick film due to advent of film extrusion technology.

b) Width This depends upon the inter row spacing. Normally a one to one and half meter width film can be easily adapted to different conditions.

c) Perforations The perforations may be advantageous under some situations and disadvantageous for some other situation. The capillary movement of water and fertilizer distribution will be better and more uniform under imperforated condition. But for prevention of water stagnation around the plants, perforation is better. But it has got the disadvantages of encouraging weed growth.

d) Mulch colour The colour of the mulch affects i. Soil temperature ii. Temperature of air around the plants iii. Soil salinity a Due to lesser quantity of water used b. Due to reduction in evaporation and prevention of upward movement of water.

Silver / Black Mulch Film