

Role of Agro Textiles in Agriculture Industry

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Agriculture is the oldest occupation of mankind. People have been involved in this profession since the beginning of creation and it is still one of the largest global industries. The word "agro textiles" is used to describe the uses of woven and nonwoven fabrics in agriculture. Agro-textiles have been used in the agriculture sector for thousands of years for the protection of products like plants, vegetables and fruits from weather, weed and birds. Globally, one of the major issues is food security due to the threat of climatic changes, at present most of the agricultural products are non-biodegradable and petroleum-based.[1] By utilizing biotechnology, the textile sector can bring a big revolution in the field of textile processing. Textile processing has led to the synthesis of a giant amount of cellulose fibres that can be used in several sectors going from biomedical to agriculture [3]With time we can notice a significant increase in environmental awareness and development of technology, substantial attention has been diverted to the application of textile fibers in agriculture. All natural cellulose-based agricultural products are environment friendly with low manufacturing cost. Agro textiles helps to protect crops from harsh weather, unwanted pests and birds. Agro-textile products like shade nets, harvest nets, and mulch mats can be used as these textile products are biodegradable and non-toxic.

Applications of agro textiles

There are many applications of agro-textile products like :-

Sunscreen – it is used to protect crops and greenhouses from high solar radiation. It also saves the crops from direct sunlight.[2]

Bird protection net – it is used to protect crops, seeds and fruits from the damage caused by birds and hailstorms.

Fruit covers – they are used to keep the fruit from decaying by the action of bugs and insects. They help in keeping the fruits safe.



Ground cover –in the field Weed creates problems in the growth of plant and also effect the quality of the fruit or grain. In order to avoid this problem of weeds mulch mats are used as they can cover the ground and only keeps the area open is for the plant.

Windshield – it is used to protect fruit plant from wind and also helps to prevent damage to the plants.

Root ball net – it is important for safe and speedy growth of young plants.

Insect meshes – these are very effective in keeping out the harmful insects from greenhouses.

Turf protection net – it is important to minimize soil erosion loss and improve land conservation.

Net for covering pallets – mesh nets are used transportation of fruits and vegetables to the market, they helps in ensuring safety of the fruits and also helps to stop the boxes from getting damaged and being turned upside down .

Fiber/Raw Materials Used in Agro Textiles

Natural Fiber:

1. Jute fibre
2. Cotton fibre
1. Wool fibre
2. Sisal fibre
3. Hemp fibre
4. Coir fibre

Synthetic Fibres:

1. Polyester

2. Viscose
3. Nylon
4. Polypropylene
5. Polyethylene

Man made fibers are preferred for agricultural sector compared to the natural fibers mostly because of their low price and high performance ratio, ease of transport, space saving storage and long service life. Currently, the agro-textile market is dominated by polyolefins or petrochemical-based agro-textiles. Natural fibers degrade so fast in the environment that their recovery from the field becomes difficult and unattractive even by efficient recycling or combustion, and their lifetime is usually limited to 1 or a maximum of 2 years. The development of bio-based agro-textiles will reduce the harmful impact on the environment and with extended durability is foreseen to initiate the growth in the bio-based economy.

The world is gradually preparing the shift toward a bio-based economy, and research for sustainable bio-based alternatives has already been initiated. This article provides insight into the various agro-textiles used in agriculture and the research going on in the area of agro-textiles it also offer alternative solutions to the current agro-textile market and problems. With the use of agro textiles we can reduce the usage of harmful pesticides and herbicides

to render a healthy farming culture. Unique manufacturing techniques and properties of this blend of agrotexile sector products whose cost is lesser than that of pesticides and chemical herbicides have been discussed.

Textiles are flexible in its suitability in different geographical locations. So now it's our duty, to carefully and beautifully shape this technology, and contribute to a developed economy and a developed country.

References

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