

## Agro textiles For Smart Farming

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### Introduction

Textile fabrics have a long history of use in agriculture. The term “agro textiles” now is used to categorize the woven, nonwoven and knitted fabrics used for agricultural and horticultural applications including livestock protection, shading, weed and insect control, and extension of the growing season. Agro textiles are used in farming, animal husbandry, and horticulture to control the hazardous influences of environmental and climatic factors on crop production and cattle breeding, regulate the nutrient level intake of plants, and assist in the process and post-harvest operations. Adopting the hi-tech farming technique, where textile structures are used, could enhance quality and overall yield of agro-products. Agro textiles contribute 8% share in the technical textiles break up. The usage of agro textiles will be benefited in

### Fibers used for Agro Textiles

There is use of synthetics as well as natural fibers in agro textiles. Fibers used in agro textiles are as follows: Nylon, Polyester, Polyethylene, Polyolefin, Polypropylene, Jute, Wool and Coir. Among all these

fibers the Polyolefin is extensively used where as among natural fibers, jute and wool is used it not only serve the purpose but also after some year it degrades and act as the natural fertilizer.



## Applications of Agro Textiles

Wide varieties of agro textile products are available and the selection of suitable type of products depends on the protection that the crop. Some of the applications of agro textiles are as follows:



**Sunscreens:** Sunscreen nets with open mesh construction are used to control sunshine and amount of shade required. These net fabrics allow the air to flow freely. So the excess heat does not built up under the screen.

**Bird protection nets:** Knitted monofilament nets offer effective passive protection of seeds, crops and fruit against damage caused by birds and a variety of pests. Open-mesh net fabrics are used as a means of protecting fruit plantation. The special open structure repels birds, provides minimal shading and excellent air circulation - allowing plants to flourish, whilst avoiding the risk of dangerous mould developing on the fruit.

**Plant nets:** Fruits, which grow close to the ground, can be kept away from the damp soil by allowing them to grow through vertical or tiered nets in order to keep the amount of decayed fruit to a minimum.

**Ground cover:** Ground cover is an extremely versatile landscaping and horticultural fabric for long-term weed control, moisture conservation and separation. It is mainly used in planted areas. It provides weed suppression and ground moisture conservation, whilst allowing roots to breathe and water, air and nutrients to permeate through.

**Windshield:** Windshields are used in farming to protect fruit plantations from wind and to prevent damage to plants. Fabric structure to sufficiently dampen the wind speed from maximum available in the area to the level which the plant concerned can withstand.

**Insect meshes:** Fine, woven, meshes which resist insect penetration. Clear, woven, and knitted, polyethylene monofilament meshes to exclude harmful insects from greenhouses and tunnels, or to keep pollinating insects inside.



**Mulch mat:** Mulch mats are used to suppress weed growth in horticulture applications. It covers the soil, blocking of light and preventing the competitive wheat growth around seed links. Needle punched non-woven and black plastic sheet are used for this application.

**Monofil nets:** Tough, knitted Monofil, nets for windbreak fences and shading/ privacy screens. A suitable windbreak, set at a right-angle to the prevailing wind, will protect plants against the harmful effects of blustery weather - which can break young branches, damage flowers and cause leaves to dry or tear.

**Cherry covers:** Growing cherries has proved an uncertain business because of their vulnerability to the weather damage - especially during the blossom, stoning and fruit ripening periods. The new cherry cover system has been specifically designed to tackle these problems; offering protection throughout the season from frost, rain, hail and wind. The fabric is very tough, with a high degree of UV stabilization (to protect against breakdown in sunlight), so will provide many years of use, and the suppleness makes it very easy to handle.

### Conclusion

Today agro textile plays a significant role to control environment for crop production,

eliminate variations in climate, weather change and generate optimum condition for plant growth. Selection of the agro textile is greatly influenced by the geographical location. At some location, agro textiles are used to protect the plantation from excessive sunlight while at some places it is expected to protect plant from cold. Therefore, selection of agro textile is done as per the location and the desired protection from the external agencies. With the use of high-quality agro textiles quality and yield of agro products can be enhanced.