

**Seminar On
Agro textiles: Emerging Opportunities
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**CONCEPT PAPER
ON
AGROTEXTILES**

**Prepared by
SASMIRA**

About SASMIRA

The Synthetic & Art Silk Mills' Research Association (SASMIRA) is a co-operative venture set up by the man-made textile industry of India after independence as a multi-functional institute to serve its scientific and technological needs. SASMIRA was established on 12th January, 1950 after due recognition by the Council of Scientific and Industrial Research under the Ministry of Science and Technology, Government of India. Later it was linked to the Ministry of Textiles. Since then, SASMIRA is engaged in multifarious activities with the prime objective of rendering scientific & technical assistance to the textile industry, thereby assisting its growth and development.

SASMIRA is engaged in various research and development projects in man-made textiles for apparel, industrial and defence applications. Considering the importance of this field SASMIRA had altered its focus towards technical textiles for the past ten years. Various products and processes have been developed viz. geotextiles, Agrotextiles, defence textiles, sport textiles, etc. a few of which have been patented also. Seminars, conferences and workshops are also conducted regularly, both national and international level, to cater awareness in emerging areas of technical textiles. SASMIRA has fully equipped laboratories to carry out testing, evaluation and investigation of a variety of textile and allied materials, with specialised services for technical textiles. SASMIRA laboratories are recognised by International Bureau for Standardisation of Man-made Fibres (BISFA), Bureau of Indian Standards (BIS) and several Government agencies. The laboratory is accredited by NABL

SASMIRA's education programme conduct diploma and certificate courses in various disciplines of textiles e.g. knitting, fashion, apparel merchandising and retail management. In addition to the regular courses on textile technology, wet processing, knitting technology etc.

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PREAMBLE

Technical textiles are defined as 'textile materials and products manufactured primarily for their technical and performance properties rather than their aesthetic or decorative characteristics. Technical textiles are reported to be the fastest growing sector of the textile industrial sector and account for almost 19% (10 million tonnes) of the total world fiber consumption for all textile uses. Agrotextiles is one of the growing areas of technical textiles. Agrotextiles is application of textile materials in the agriculture field. With the continuous increase in population worldwide, stress on agricultural crops has increased. So it is necessary to increase the yield and quality of agro-products. But it is not possible to meet fully with the traditionally adopted ways of using pesticides and herbicides. Today, agriculture and horticulture has realized the need of tomorrow and opting for various technologies to get higher overall yield, quality and tasty agro-products.

You may be aware that considering the importance of technical textiles, SASMIRA on their own had started various awareness programmes in the form of seminar, workshop and conferences both in national and international level for the past ten years.

SASMIRA is designated as lead agency for Centre of Excellence (COE) for Agrotextiles in association with Man-made Textile Research Association (MANTRA), Surat, Navsari Agricultural University (NAU), Navsari, and IIT Delhi as knowledge partner. This seminar is part of the awareness programme under COE jointly organized by Office of Textile Commissioner, Ministry of Textiles, Govt. of India in association with FICCI-WRC. In view of this, SASMIRA has gathered and consolidated information on Agrotextiles and compiled it to the present format of concept paper.

This concept paper will surely enlighten the readers to know all about Agrotextiles.

1. INTRODUCTION

“Agriculture is the backbone of our country” went the saying so far. Now it says, “Textile can be the backbone of Agriculture?” A textile fabric has a long history of application in agriculture. The word "agro textiles" now is used to classify the woven, nonwovens and knitted fabrics applied for agricultural & horticultural uses. The practice of textiles is also now widening to safeguard the agro products like plants, vegetables and fruits from weather, weed and birds, etc.

Agriculture is looked upon as an industry in many parts of the world so as to ensure extensive use of all the land available in the country irrespective of the environmental factors. Controlling the environmental factors offers plants and crop protection for specific target and ensures quality maintenance by elimination of the variations and hazards associated with the weather. It is possible to control temperature and humidity with varying degree of precision, avoid damage from wind and rain, regulate nutrients level to meet plant requirement by using green/poly house techniques. Textile structures are used as controlling factors in green house as well as in fields. The main areas of textiles in agriculture include applications in farming, animal husbandry and horticulture. The volumes of special textiles that are manufactured for agricultural applications are increasing day by day not only world-wide but also in India. Also a wide variety of textile products that are designed for general industrial applications are used for agriculture in large quantities. These products include hoses, ropes, conveyor belts, tyres, composites, containers, pots, filters, tarpaulins, sacks, etc. With the apparent exception of protective clothing for insecticides, farmers usually make use of existing fabrics to fulfill their needs.

The most important requirements of textiles for agricultural applications are weather resistance, resistance to microorganism, stable construction and lightweight. Therefore, synthetic fibres are the best choice for agricultural products. The use of textiles in horticulture (fruits, vegetables, nurseries and

flowers) is increasing more rapidly than any other area in agriculture. Textiles in different forms are exclusively used for many agricultural end uses it includes knitted, woven, non-woven, extruded sheet, moulded product, ropes, belt, etc. Man-made fibres gives advantages over natural fibres, mainly due to their favourable price / performance ratio, ease of transport as well as setting up, space saving storage and long service life. The use of non-wovens, especially spun bounded fabrics are increasing in agricultural applications at the expense of woven fabrics.

2. APPLICATIONS OF TEXTILES IN AGRICULTURE

The various field of application in Agriculture are as follows:

- ***Animal Husbandry***

Nylon and polyester identification belts are used for cows. Textile nets are used to support the large udders. Non-woven fabrics are used to filter the milk in automatic milking systems and as an underlay to reduce mud on cattle paths and trails.

- ***Horticulture***

Application of textile materials in horticulture is growing fast. Nets, non-woven mats, movable screens for glass/poly houses, non-woven sheets, mixed bed for mushrooms, cordage and strings are used in horticulture. Trees are covered by nets so as to protect the expensive fruits from birds. Nets are also used for protection against hailstorms, intense sunrays, etc. Light resistant woven and non-woven polyester fabrics are used in the inside of green houses to protect the plants from extreme hot or cold conditions. They are also used on the outside of the green houses as screen to control sunlight. Fabric protective greenhouses provide virus-free cultivation of young plants. Non-woven sheets are used in the field to protect young plants such as strawberries, potatoes and lettuce from extreme cold weather, night frost and viruses. Nylon fabric beds are used to grow mushrooms. A mixture of horse manure and compost is laid on the fabric, which is wrapped around rollers to easily remove the mixture.