

Bio Based Agro Textiles

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Abstract : With the continuous increase in population worldwide, stress increased among agricultural peoples, so it is necessary to increase the yield 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 agro-products. Most of today's synthetic polymers are produced from petrochemical bi-products and are not biodegradable. Persistent polymers generate significant sources of environmental pollution, harming wildlife when they are disposed in nature. The disposal of non degradable plastic bags adversely affects human and wild life. Moreover incineration of plastic waste presents environmental issues as well, since it yields toxic emissions. Material incineration is also limited due to the difficulties to find accurate and economically viable outlets. In addition plastic recycling shows a negative eco balance due to the necessity in nearly all cases to wash the plastic waste as well as the energy consumption during the recycling process phases. As plastics represent a large part of the waste collection at the local regional and national levels institutions are aware of the significant savings that compostable or biodegradable materials would generate. Polylactic acid (PLA), which is one of the most important biocompatible polyesters that are derived from annually renewable biomass such as corn and wheat, has attracted much attention for automotive parts and also can be applied in agro textiles. The manufacturing method of PLA is the ring-opening polymerization of the dimeric cyclic ester of lactic acid, lactide. For the stereo complex PLA, we developed by the four unit processes, fermentation, separation, lactide conversion, and polymerization. Then the polymer is converted into mulching film and applied in agriculture field. PLA agro textiles have better tensile strength, tearing strength and with stand from UV rays than polyester agro textile and polypropylene-based products.

Keywords : biodegradation, environment, mulching film, PLA, technical textiles

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