International Journal of Multidisciplinary Engineering in Current Research
ISSN: 2456-4265, Volume 6, Issue 2, February 2021, http://ijmec.com/

GREEN SYNTHESIS OF AGRICULTURE PO FILM USING GREEN ADDITIVES

1.Mr.N.Madhu[1], Asst.Professor, Rise Krishna Sai Gandhi Group Of Institutions, Ongole, A.P.,India.
2.V.Anjaneyulu[2] , Asst.Professor, Rise Krishna Sai Gandhi Group Of Institutions, Ongole, A.P.,India.

Abstract

Manufacturing of plastics requires a variety of additives for different purposes. Master batches for coloring, surfactants to stabilize emulsion polymers, polymerization modifiers to influence molecular weights, plasticizers to increase flexibility, lubricants to minimize frictional forces and to improve process ability stabilizers to prevent polymer degradation, light stabilizer and cross linkers to modify polymer networks are employed profoundly

INTRODUCTION

Using bioplastics for packaging, cases of electronic or medical devices and similar purposes is an increasing opportunity to turn the plastic processing industry towards sustainability

This will lead to independence from crude oil and makes costs predictable forthe long term.

Most often the matrix polymer is compostable or biodegradable but the conventional additives are not.

In recent years, a couple of companies developed eco friendly additives to replace those derived from fossil fuel.

Suisse company *Clairant International Ltd* introduced RENOL®-compostable colors and CESA®-compostable additive master batches

The RENOL-compostable product line includes master batches based on over 80 different pigments.

CESA-compostable additive master batches include UV-stabilizer and antioxidant packages.

Application targets for the new products include packaging and single- or limited- use products like plastic utensils, drink cups and pens, where bio-based resins, such as PLA (polylactic acid), currently are being specified.

At the K Fair 2010, Brazil's *Cromex* launched its new lines of color compounds and additives developed for bioplastics made from green polyethylene (PE derived from sugar cane ethanol) and the biodegradable resins based on polylactic acid, derived from plants.

The Canadian *Green Club Inc.* markets introduce Add-iFlex System. Add-iFlex is a thermo-oxidative additive system for polyolefins. In a compost environment the temperature and oxygen present will initiate the molecular breakdown of the polymer.

All of the companies mentioned above introduced their products within recent years. As the development, marketing and application of sustainable polymer additives have just begun, it seemShiro-shiro Coat-5

Durable, light-and-heat-blocking gricultural PO film

International Journal of Multidisciplinary Engineering in Current Research
ISSN: 2456-4265, Volume 6, Issue 2, February 2021, http://ijmec.com/

Sky Coat Shiro-shiro is upgraded and reborn as Shiro-shiro Coat-5 and is now eveneasier to use.

Characteristics

Drip-proofing and mist-proofing are long lasting.

Its light blocking rate is 99.9%. Its heat blocking effect is also amazing, so inside the greenhouse is always comfortable.

Durability has been improved.

It is ideal for work sheds, storehouses, and mushroom greenhouses

http://www.cik.co.jp/eng/products/agriculture/a-material/07_sirosiro5.html

UV Protective Tekinashi 5

High-quality agricultural PO film

UV protective Tekinashi 5 is a 5-layered agricultural PO film that reduces diseases, pests (thus laborsaving) and the degradation of materials inside greenhouses, and is more durable than conventional UV protective films.

http://www.cik.co.jp/eng/products/agriculture/a-material/03_tekinasi5uv.html

Characteristics

Suppressive effects on the breeding of pests and disease damage can be expected.

Because agrichemicals can be reduced, farmers can use it without anxiety and it issafer for farm products.

It can prevent degradation of materials inside a greenhouse.

The first in the industry!! It is a UV blocking PO film of 5 layers with 5 different functions.

The merits of 5-layered film are optimized, and each feature has been properly balanced

Bio additives

- Starch used as filler
- Natural gums such as arabic gum used as colloids
- Pine derivatives: pine tar, rosin, terpene used as tackifiers and processing aids
- Vulcanized vegetable oils or factices used in rubber formulations
- Phenol derivatives used as antioxidants
- Liquid depolymerised natural rubber used as a cross-linkable polymeric plasticizer

International Journal of Multidisciplinary Engineering in Current Research
ISSN: 2456-4265, Volume 6, Issue 2, February 2021, http://ijmec.com/

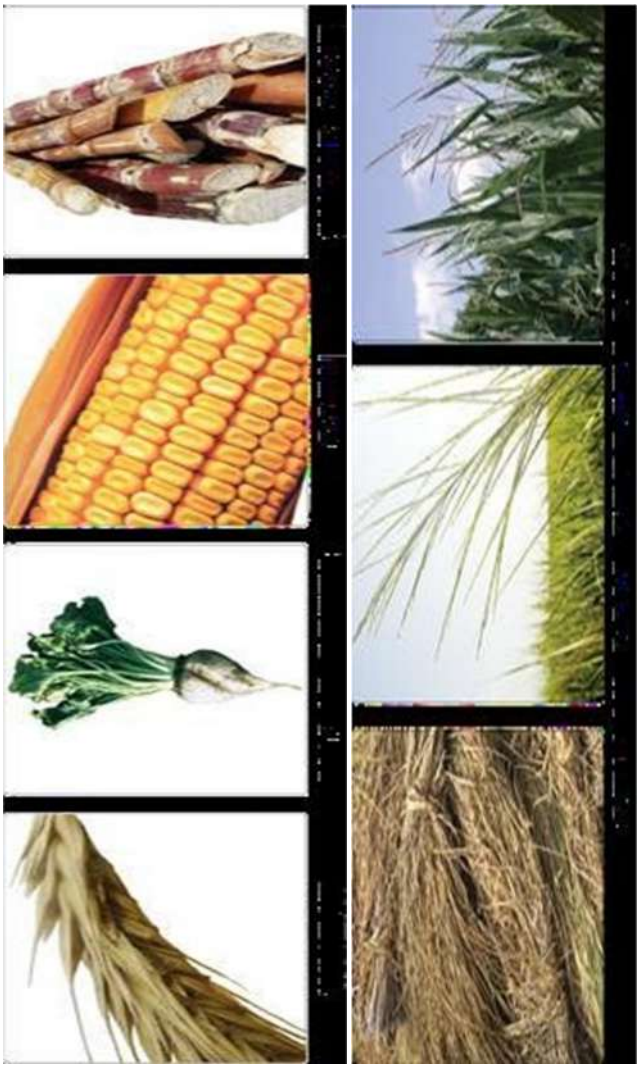
- Natural waxes such as carnauba waxEXAMPLES

While aromatic polyesters are almost totally resistant to microbial attack

Naturally Produced: Polyhydroxyalkanoates (PHAs) like the poly-3-hydroxybutyrate

Renewable Resource: Polylactic acid (PLA);

Synthetic: Polybutylene succinate (PBS), polycaprolactone (PCL)...
Polyanhydrides

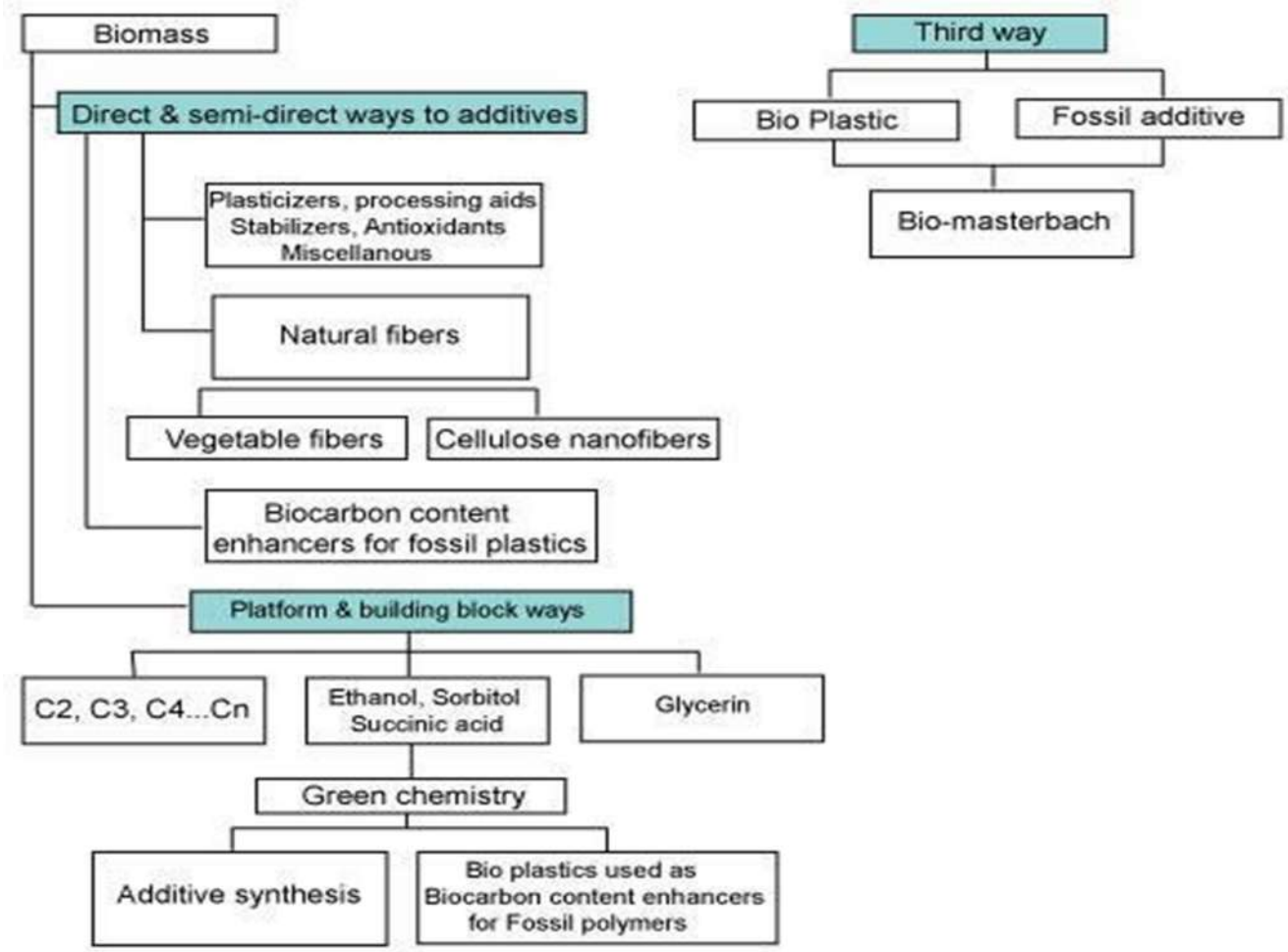


Present & Future: Development of Specific or General-purpose Bio-platforms andBio-blocks

Ford and Ohio State University are looking at dandelions as source of an impact strength modifier for plastics parts such as cup holders, floor mats and interior trim.

Iowa State University researchers have invented a process for manufacturing isobutylene thanks to a natural enzyme that converts the glucose found naturally inplants to make isobutylene. This one can be chemically converted to synthetic rubber, impact modifier for plastics and isooctane.

International Journal of Multidisciplinary Engineering in Current Research
ISSN: 2456-4265, Volume 6, Issue 2, February 2021, http://ijmec.com/



Conclusion

Based on this review it is proved that by using various green additives, UV protective, high quality, durable, low cost-agriculture PO films can be prepared in eco friendly manner.

References:

[1] "Polyolefin Compounds and Materials: Fundamentals and Industrial Applications" by Mariam Al-Ali Al-Ma'adeed, Amar Mohanty, and Yiqi Yang This book covers various aspects of polyolefins, including their synthesis and the use of additives, which can be related to the development of green PO films.

[2] "Additives for Polyolefins: Getting the Most out of Polypropylene, Polyethylene and TPO" by Michael Tolinski This book provides insights into the use of additives in polyolefins, including eco-friendly or "green" additives that can be employed in the synthesis of environmentally friendly PO films.

[3] "Polyolefin Blends" by J.K. Stenzenberger and A. A. Collyer This book discusses polyolefin blends, which can be relevant to the development of green

polyolefin films, as it explores the combination of different materials and additives.

[4] "Plastics Additives Handbook" by Hans Zweifel This comprehensive handbook covers a wide range of additives used in the plastics industry, which can include those suitable for green polyolefin films.

[5] "Polymer Additives" by T.R. Crompton This reference book delves into the use of additives in polymers and plastics, including those that may be used in green PO film production.

[6] "Green Chemistry: An Introductory Text" by Mike Lancaster This book provides a comprehensive introduction to green chemistry principles and practices, which can be applied to the synthesis of environmentally friendly materials.

[7] "Green Chemistry and Engineering: A Practical Design Approach" by Concepción Jiménez-González and David J.C. Constable This book focuses on the integration of green chemistry and engineering principles to design and develop sustainable and environmentally friendly chemical processes, including material synthesis.

[8] "Sustainable Green Chemistry: Principles, Tools, and Practices" by Mark C. Hersam This book discusses the principles of sustainable green chemistry and their application in the design and synthesis of materials that are more environmentally friendly.

[9] "Green Techniques for Organic Synthesis and Medicinal Chemistry" by Wei Zhang This book explores green synthetic methodologies and their application in the synthesis of organic compounds, which can include materials used in various applications.

[10] "Green Materials for Sustainable Water Remediation and Treatment" by Anuradha Mishra and Benoy Barman

[11] "Sustainable Agriculture" by Eric Lichtfouse

[12] This comprehensive book covers various aspects of sustainable agriculture, including green synthesis methods, organic farming, and environmentally friendly practices.

[13] "Organic Farming for Sustainable Agriculture" by Prof. R.K. Malik This book explores organic farming techniques and practices, which are often considered environmentally friendly and sustainable in agriculture.

[14] "Biological Agriculture: An Approach Towards Sustainable Agriculture" by Arun K. Sharma This book discusses biological and ecological approaches to sustainable agriculture, focusing on green and eco-friendly methods for crop production.

[15] "Sustainable Agriculture and Food Security in an Era of Globalisation" by A. B. Mandal This book provides insights into sustainable agriculture practices with a focus on maintaining food security while considering environmentally friendly approaches.

[16] "Green Chemistry for Sustainable Agriculture" by Sunder S. Pandey This book discusses the application of green chemistry principles in agriculture, including sustainable and environmentally friendly practices for crop protection and soil management.

[17] "Agroecology: The Ecology of Sustainable Food Systems" by Stephen R. Gliessman Agroecology is an approach to agriculture that emphasizes sustainability and ecological principles. This book

provides a comprehensive overview of agroecological practices.

[18] "Green Chemistry: Theory and Practice" by Paul T. Anastas and John C. Warner This book is a fundamental text in the field of green chemistry, covering principles and methods for environmentally friendly chemical synthesis.

[19] "Green Synthesis of Nanoparticles: Applications and Prospects" by Tuan Anh Nguyen and Phuong Nguyen Tri This book focuses on the green synthesis of nanoparticles, which is a key area of research for sustainable materials.

[20] "Green Chemistry and Green Engineering: A Framework for Sustainable Technology Development" by Mark T. Holtzapple This book explores green chemistry and engineering principles in the context of designing sustainable and environmentally friendly chemical processes.

[21] "Handbook of Green Chemistry and Technology" by James H. Clark and Duncan Macquarrie This handbook covers various aspects of green chemistry and technology, including synthesis methods that have minimal environmental impact.

[22] "Green Chemistry in the Pharmaceutical Industry" by Peter J. Dunn, Andrew S. Wells, and Michael T. Williams