

Polymer All solutions in one basic application

I. Researching principles:

Soil Net supplies the most complete selection of polymer products available from any single manufacturer. We are committed to offering you a product line broad enough to meet all of your customers' application needs.

In this facility we are constantly working on current products as well as working with our clients/partners to enhance and improve on their past and future products. In this way we are able to transfer to you more than 30 years of experience we have in the agriculture/soil, waste management and polymer technology fields.

Through our advances and ideas we have been able to approach companies around the world with a solution to problems that have not been foreseen and technologies that have not been created.

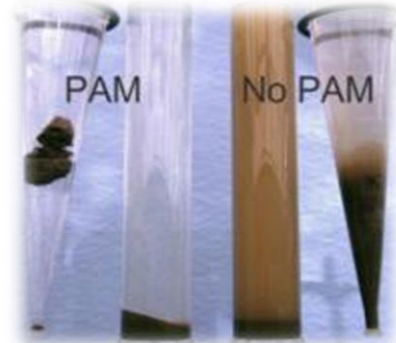
II. Applications:

1. Erosion control

Increasing the aggregate protection and stability with polymers reduces the effect of raindrop impact on the soil, thereby reducing erosion. Mulch and polymer application to the soil may also retard surface sealing, reduce particle soil detachment, reduce sediment in suspension, and compensate for low residue.

Polymer can be applied in:

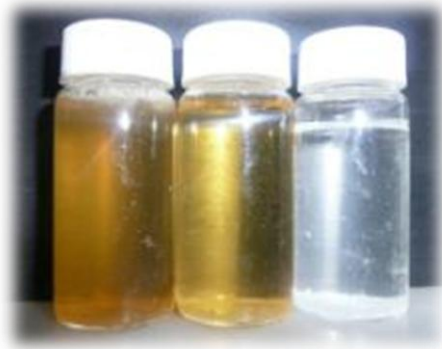
- a) Erosion control for construction sites and agricultural lands
- b) Water clarification
- c) Irrigation
- d) Dragging and soil restoration
- e) Seed germination



2. Dairy industry

Polymers can help in: Solids separation → cleaner water → better and more recycled water eliminate the system problems caused by solids → better and cleaner liquid manure for biogas.

- a) Manure separation
- b) Manure solidification
- c) Water recovery
- d) Fiber recovery
- e) Sand recovery



3. Dust control

Soil Net provides products to reduce dust:

Soil Net Liquid formulation of TRIPAM products is the best to control dust in sandy soil and sands susceptible to wind erosion, or rotor-wash in helicopter landings, heavily used roads, crops of high value susceptible to dust contamination.

Polymer can be applied in:

- a) Dirt roads
- b) Stock piles
- c) Active construction
- d) Ore piles
- e) Cows and horse arenas



4. Sugar industry

- a) Sugarcane juice clarification and color removal
- b) Molasses clarification
- c) Animal feed



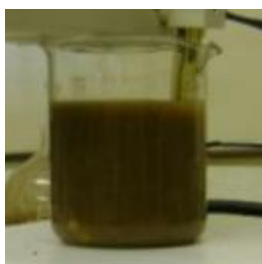
5. Ethanol industry

- a) Ethanol yeast separation
- b) Ethanol waste clarification
- c) Animal feed

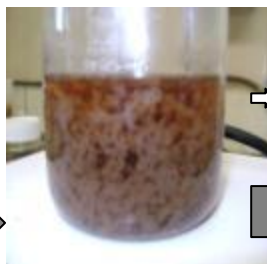
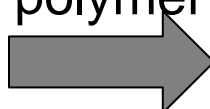


6. Coffee Industry

- d) Coffee effluents clarification and color removal



+Soil Net
polymer



7. Starch industry

We have developed technologies to separate the solids in effluent from the production of starch from numerous different sources such as: Tapioca (cassava), corn, potatoes and sweet potatoes, sugar cane. In addition to this technology is also used in the treatment ethanol effluent.

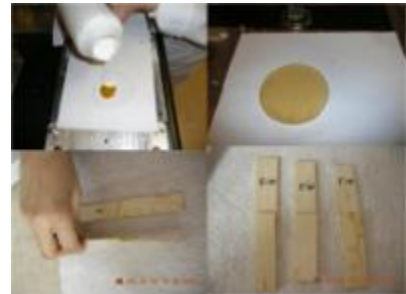
Soil Net has developed technology to use these separated solids and turn them into: Fertilizers, animal feed (pellets, blocks and mineral salts), and fuel.

- a) Starch recovery
- b) Effluent separation
- c) Byproducts



8. Protein separation, adhesives and binders

- a) Protein separation from sweetener manufacturing (corn, cassava)
- b) Protein separation from cow blood, milk whey, chicken feathers, yeast
- c) Adhesives for particle board, pellets, briskets
- d) Binders for fertilizers pellets
- e) Binders for slow release fertilizer technology



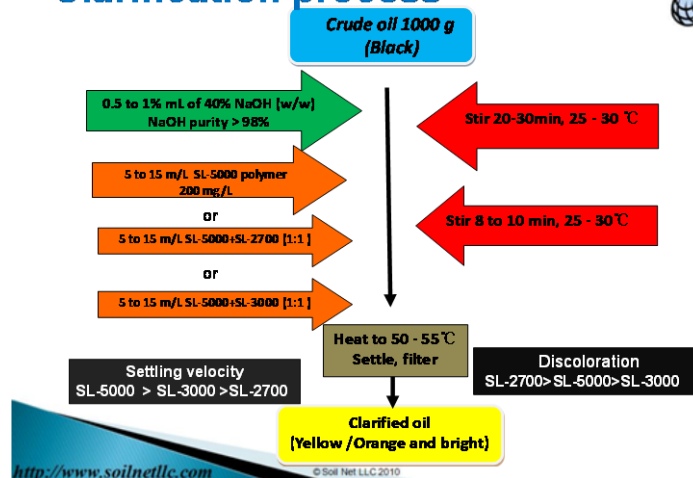
9. Vegetable oil

- Vegetable oil refining: to increase separation efficiency, unsaturated free fatty acids, proteins, phospholipids, solids, color and for cottonseed oil gossypol clarification.
- Biodiesel refining: Pure vegetable oil works well as a fuel for Diesel engines itself. However, it's limited in burning by the viscosity.

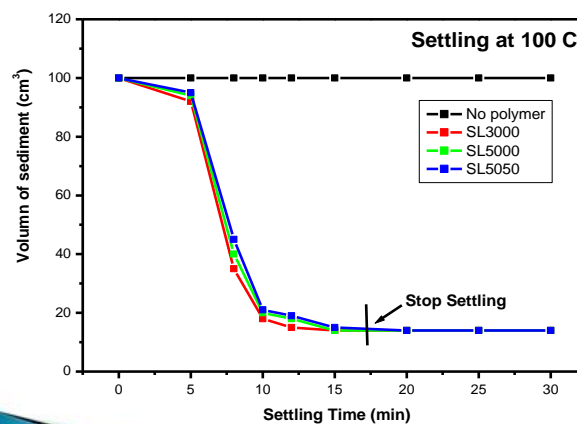
Biodiesel is the name given to fuel for Diesel engines created by the chemical conversion of vegetable oils.



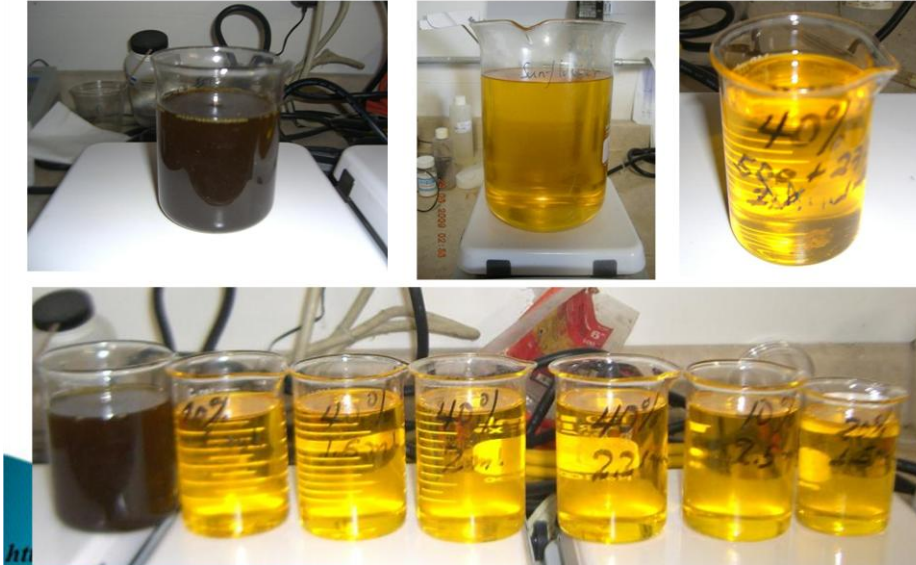
Clarification process



Cottonseed oil settling velocity at 5 mg/L



Clarification process: Sunflower oil



Testing Result for: Canola oil

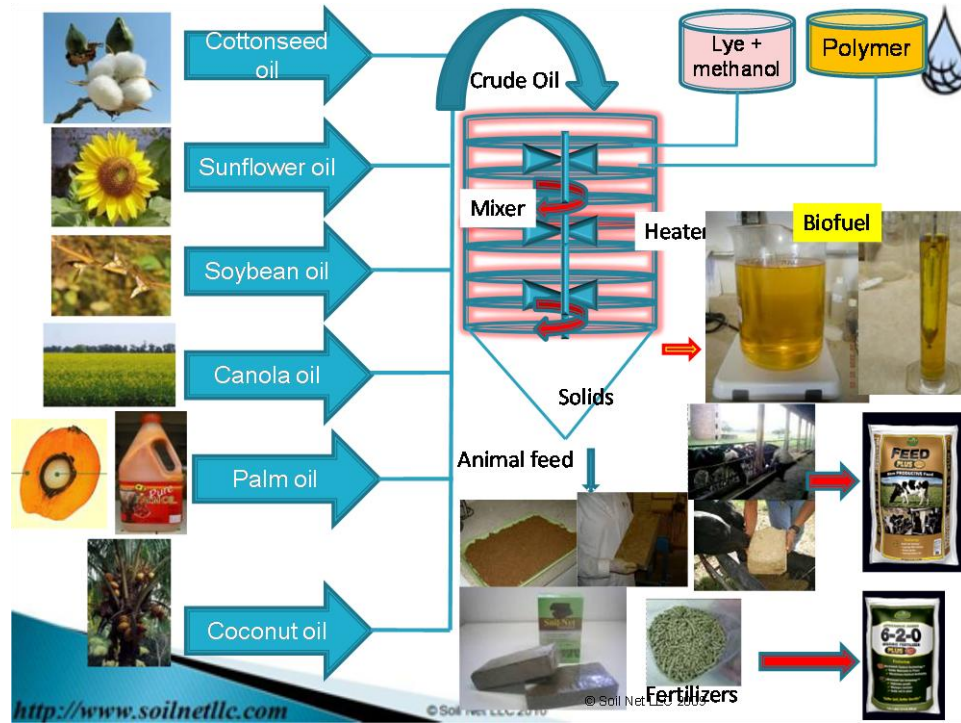
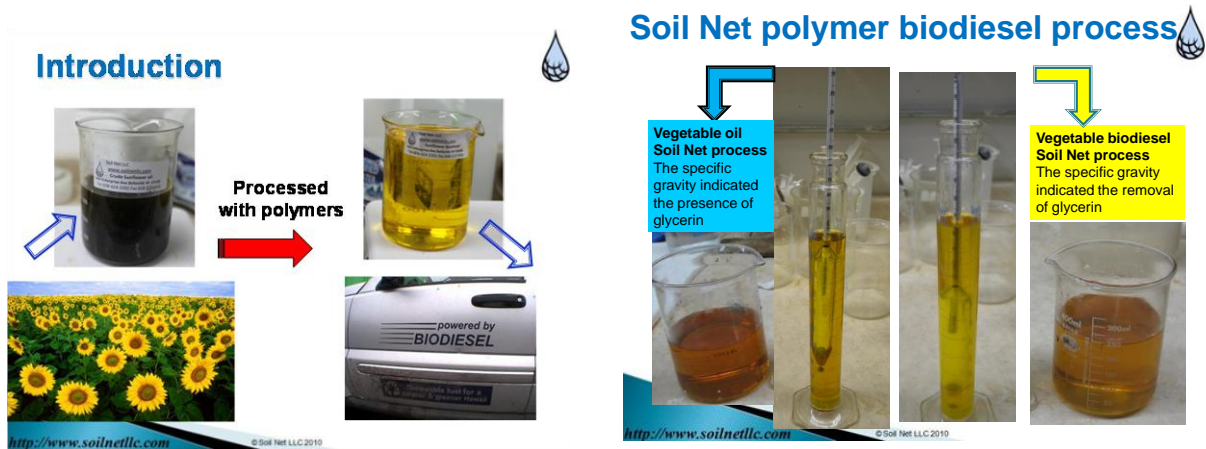


Number	Dosage and reaction time	FFA%	Color
1	0.27% NaOH (w/w, 20% solution), stirring 25 min, 7.0 ppm polymer 2700.	0.06	3.9R70.0Y
2	0.20% NaOH (w/w, 40% solution), stirring 25 min, 7.0 ppm polymer 2700.	0.05	4.2R70.0Y
3	0.27% NaOH (w/w, 40% solution), stirring 25 min, 7.0 ppm polymer 2700.	0.04	3.7R70.0Y
4	0.33% NaOH (w/w, 40% solution), stirring 15 min, 7.0 ppm polymer 2700.	0.04	3.9R70.0Y
5	0.27% NaOH (w/w, 40% solution), stirring 25 min, 3.3 ppm polymer 2700.	0.04	4.2R70.0Y
6	0.27% NaOH (w/w, 40% solution), stirring 25 min, 7.0 ppm polymer 3000.	0.05	3.9R70.0Y

10. Vegetable oil biodiesel

a) Vegetable oil biodiesel refining increase separation efficiency of: of glycerin, unsaturated free fatty acids, proteins, phospholipids, solids, color and for cottonseed oil gossypol clarification.

b) Biodiesel refining: Pure vegetable oil works well as a fuel for Diesel engines itself it's not limited in burning by the viscosity due to the removal efficiency of glycerin by the conversion of vegetable oils to biodiesel by the chemical reaction of vegetable oils into biodiesel by the methyl-ester transesterification process.



11. Plant and wood fiber modification

Biomass will come into the biomass treatment area from the farm in bales or loose form depending on the material. It will need to be milled and preprocessed to reduce particle size, be broken down mechanically and increase its bulk density.

The fiberizing step opens the plant's cell wall structure, which is a lattice of crystalline polymeric sugars intertwined with lignin. The Soil Net technology is a strong maceration process to minimize inhibitors and enhance chemical treatment. The first pretreatment is to inject ammonia vapor of a dilute ammonia process from EDA or Urea. It provides a number of benefits. Ammonia from EDA at 1% and Urea are relatively inexpensive and common industrial chemical; it can be easily obtained and added in the process; and it is a fermentation nutrient, which helps to keep input costs down. Because it is easily dispersed in the preprocessed biomass, it can be used at low concentrations, and at low temperature and pressure. Finally, Soil Net pin mixer design produces excellent results with short residence time.

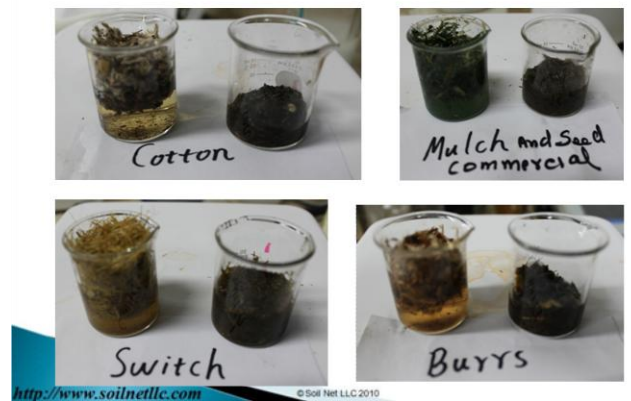
By hydrolyzing the fibers applied polymer, we can increase the water holding capacity from hydrophobic to hydrophilic fiber.

- Erosion control
- Cellulosic ethanol

Results

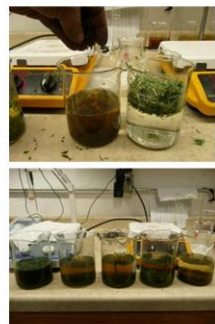


Results



Hydrolyzing process for fibers

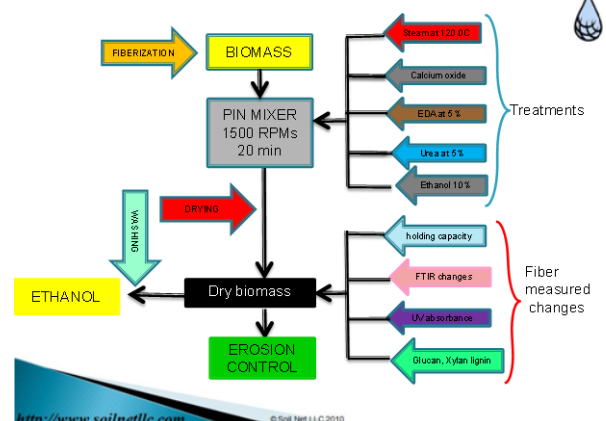
Hydrolyzing equipment with injection ports valves



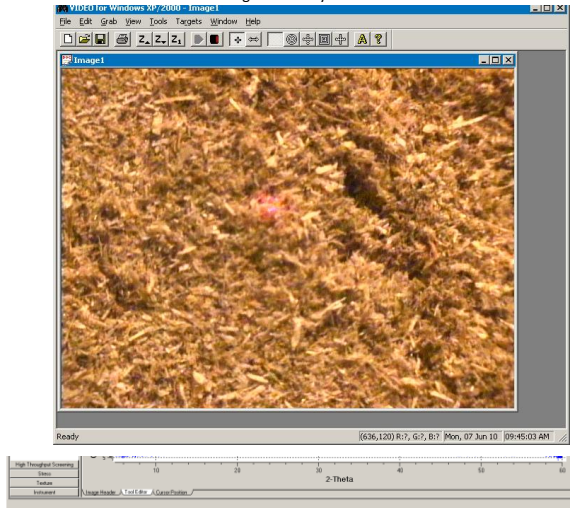
Hydrolyzed mulch process
Intake of water 12 times its weight

<http://www.soilnetllc.com>

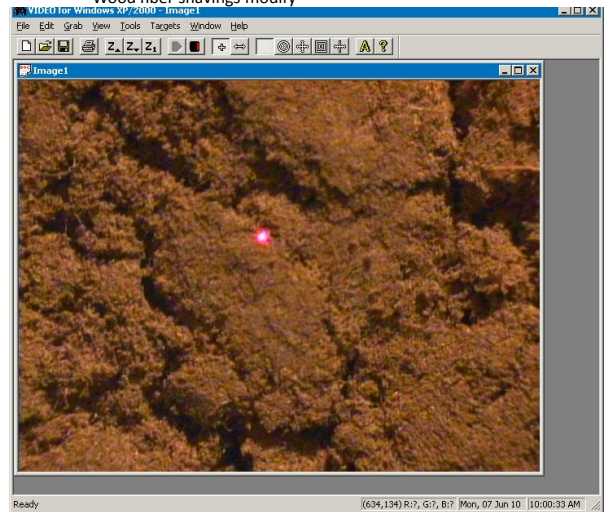
© Soil Net LLC 2010



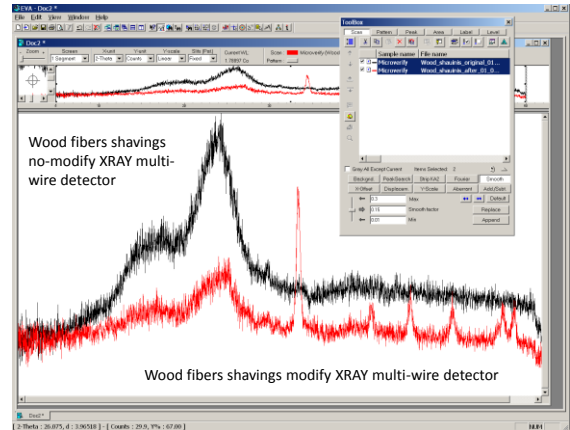
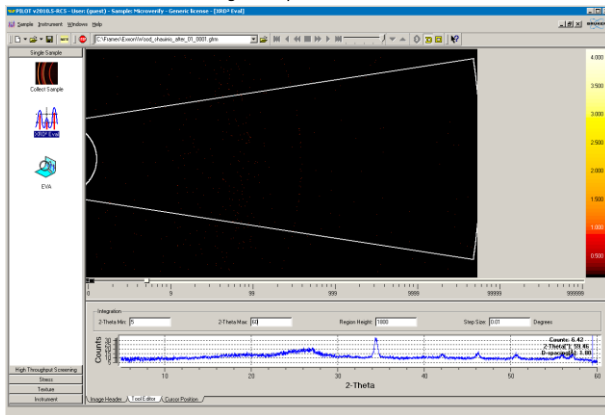
Wood fiber shavings no modify



Wood fiber shavings modify



Wood fibers shavings modify XRAY multi-wire detector



12. Mine industry

Polymers can help in: Solids separation → clean water → better and more recycled water eliminate the system problems caused by solids in a confined space in deep underground mines → better and cleaner recycle water for mines and effluent release into the environment.

- f) Solids separation to recover more precious metals
- g) solids solidification for future recovery
- h) Water recovery
- i) Solids recovery in confined space
- j) solids recovery in a rotating drum as alternative technology