

Biologicals – Using the Unknown?

Tom Starkey

Southern Forest Nursery Cooperative



Why Worry?

- Salesman make a living selling their product. Many of our nurseries have been contacted.
 - Arborgen, IFCO, Plum Creek, Rayonier, NC-DFR
- Some products we know the composition (ex. Plant Shield, Root Shield) – others????
- Some products are well documented on the web – others????
- Drop names of “well-know” people or institutions that have verified or back their product.
- Some products have a history of name changing (New product? New marketing scheme?)

Central Florida Lands & Timber Nursery, LLC has great success with **Inoculaid** on Pine Trees

Central Florida Lands & Timber Nursery, a containerized and bare-root nursery in Mayo, Florida, has traditionally had difficulty in growing sand pines. The pines are typically slow growing with poor survival rates. When we applied the **Inoculaid** product through our air blaster to a stand of one gallon potted trees, there was a dramatic difference between the root boot sprayed sand pines and the control. The roots in those containers that were treated were much healthier with increased size and mass, while in the control they were noticeably smaller. The height and survival rates of the treated trees were significantly higher as well. We had to treat the control trees with additional amendments in order to try to catch them up.

We also had an entire stand of slash pines treated with the **Inoculaid** material. They were quickly up to the size needed for customer delivery, well ahead of schedule.

We are very pleased with the **Inoculaid** products and are expanding their use to a nursery wide basis.



Tony Barrington
Central Florida Lands & Timber Nursery
Nursery Manager

Inoculaid®

<http://www.inoculaid.com/>

Introducing Inoculaid®

Applied & Experimental Microbiology™ is the sole producer of Inoculaid®, a microbial product designed especially for the treatment and growth enhancement of all types of plants – including trees, lawns, shrubs, ornamentals and flowers.

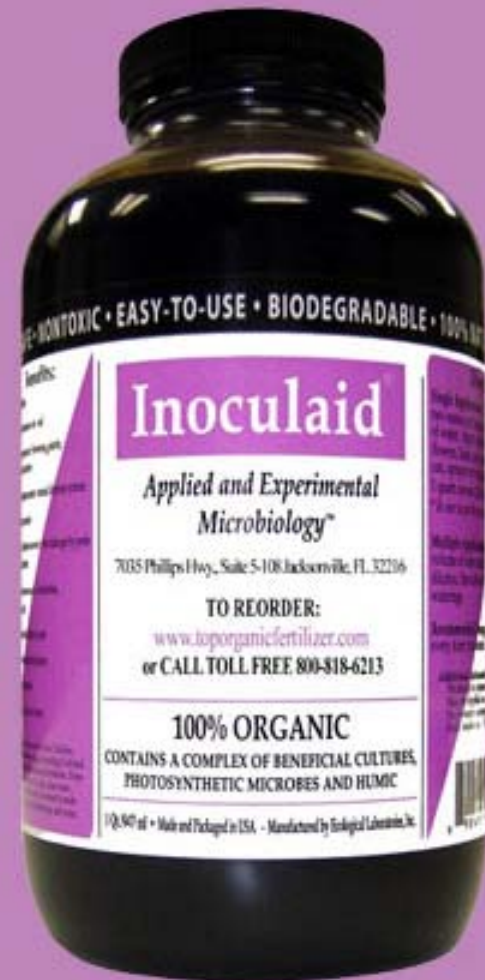
Inoculaid® is a living consortium of microorganisms including photosynthetic strains. Inoculaid® is proven to enhance plant growth and can be used in conjunction with your favorite potting soils and fertilizers. Inoculaid® cannot burn plants because it contains no nitrogen, phosphorous, or potassium.

Inoculaid® is:

- Living Microorganisms
- 100% Natural
- Non-Toxic
- Non-Pathogenic
- Shelf Stable for 3-5 Years
- Produced in a Pharmaceutical Grade Facility

Inoculaid® is not:

- A Chemical
- Made of Genetically Engineered Microorganisms
- An Amino Acid
- A Hormone



SC-27

- No web based information
- “SC-27 Introduced 1995”
- “A soil inoculant SC-27, developed 25 years ago by Australian scientist.”
- “Since that time SC-27 has undergone extensive University testing and Institute-based research confirming its effectiveness on agricultural and horticultural crops.”
- “The composition of beneficial live soil microflora (actinomycetes and bacteria)” which “enhances and bolsters the physical, chemical and nutritional status of many soil systems.”

SC27 & Inoculaid

- Information for both biologicals indicate the product will increase plant growth and vigor.
- Both indicate that it will protect plants from soil – borne pathogens. This was not tested,

Hydra Hume®

- Humic Acid
- Manufactured by Helena Chemical. Similar product can be found other places.
- HYDRA-HUME contains 12% humic acids derived from leonardite + 1% potash.
- Humic acids are water-soluble organic acids naturally present in soil organic matter (made up of C, H, O, N S, P).
- Has positive affect on physical, chemical and biological properties of the soil

Study Details

- Sowed loblolly seed 5/8/08
- 20 cavities /14 container sets/ Treatment
- Standard greenhouse potting media
- Fertilizer – “Miracle Gro” 30-10-10 water soluble
- Beginning 6/3/08 and every 2 weeks the following treatment applied:
 - Inoculaid + Fertilizer
 - SC-27 + Fertilizer
 - Hydra Hume + Fertilizer
 - Fertilizer alone

Bi-weekly treatment applications **per seedling** beginning 6/3/08. Nine total applications

	Water (ml)	Hydra Hume (ml)	Inoclaid (ml)	SC-27 (ml)	Fertilizer (mg N)
Hydra Hume + Fertilizer	46	0.64			1.8
Inoculaid + Fertilizer	46		0.64		1.8
SC-27 + Fertilizer	46			0.64	1.8
Fertilizer alone	46				1.8

Treatment	Percentage Top Clipped to 7" 8/5/08	Final Height (in)	Final RCD (mm)	Dry Wt Top (g)	Dry Wt Root
Hydra Hume + Fert.	42%	11.3 A	3.1 A	1.28 A	0.47 A
Inoculaid + Fertilizer	25%	10.5 B	3.0 A	1.15 B	0.47 A
SC-27 + Fertilizer	11%	9.8 C	2.6 B	0.83 C	0.41 B
Fertilizer alone	27%	10.7 B	3.1 A	1.37 A	0.49 A
<i>lsd</i>		<i>0.4</i>	<i>0.1</i>	<i>0.09</i>	<i>0.05</i>

Price – Qt/a

- SC-27 \$72
- Inoculaid \$12
- Hydra Hume \$3

Next?

- Greenhouse study with humic acid
- Nursery study? Possibly at Shubuta