AM120

Mycorrhizal Inoculum

The Function of Mycorrhizal Fungi in the Ecosystem:

Evolution and Mycorrhizal Fungi:

450 million years ago, mycorrhizae fungi enabled plants to make the transition from water to land by connecting to their primitive, poorly developed root systems, and burrowing far deeper into the soil than the plant root could go. These fungi found a reliable source of food by doing this – the plant fed them carbohydrates in return for the water and nutrients the fungi provided the plants. As a result of this evolution, at least 90% of modern plants associate with mycorrhizal fungi.

What are mycorrhizal fungi?

Mycorrhizae fungi attach to the plant roots and extend their hyphae into the soil, greatly increasing the plant root system – creating up to 1000 times more surface area to absorb water and nutrients. Mycorrhizal fungi are completely dependent on a host plant to keep them alive. Plants provide them with carbohydrates to grow and survive and in return, the plants receive water and nutrients from the fungi.

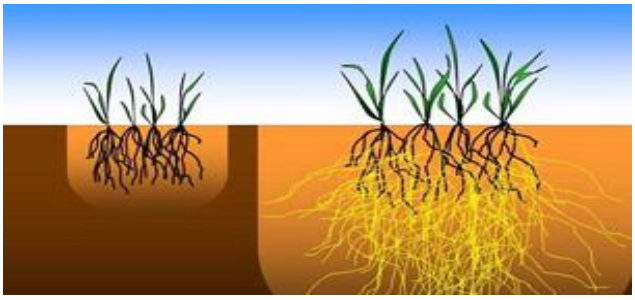
Mycorrhizae are the key connection between most plants and the soil.

2000 - Sugarite Mine / New Mexico inoculated with AM120

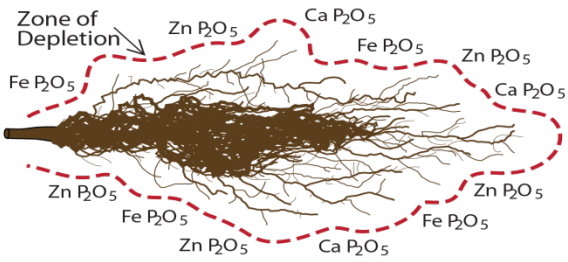
2001 – Successful restoration with AM120

What are hyphae?

Hyphae are filaments produced by mycorrhizae fungi that attach and extend from the roots of the host plant. If a plant does not have a mycorrhizal association, it can only extract moisture and nutrients from just slightly beyond the reach of the roots. Once all the nutrients have been used up, this area becomes known as the "Zone of Depletion" and the plant becomes incapable of obtaining food unless it receives an application of fertilizer or it forms an association with mycorrhizae fungi.
With this association, the hyphae will extend far beyond the zone of depletion and obtain moisture and nutrients unlike non mycorrhizal plants. Non mycorrhizal plants include many weed species that will naturally be outcompeted. The mycorrhizal native species will then establish and grow faster.

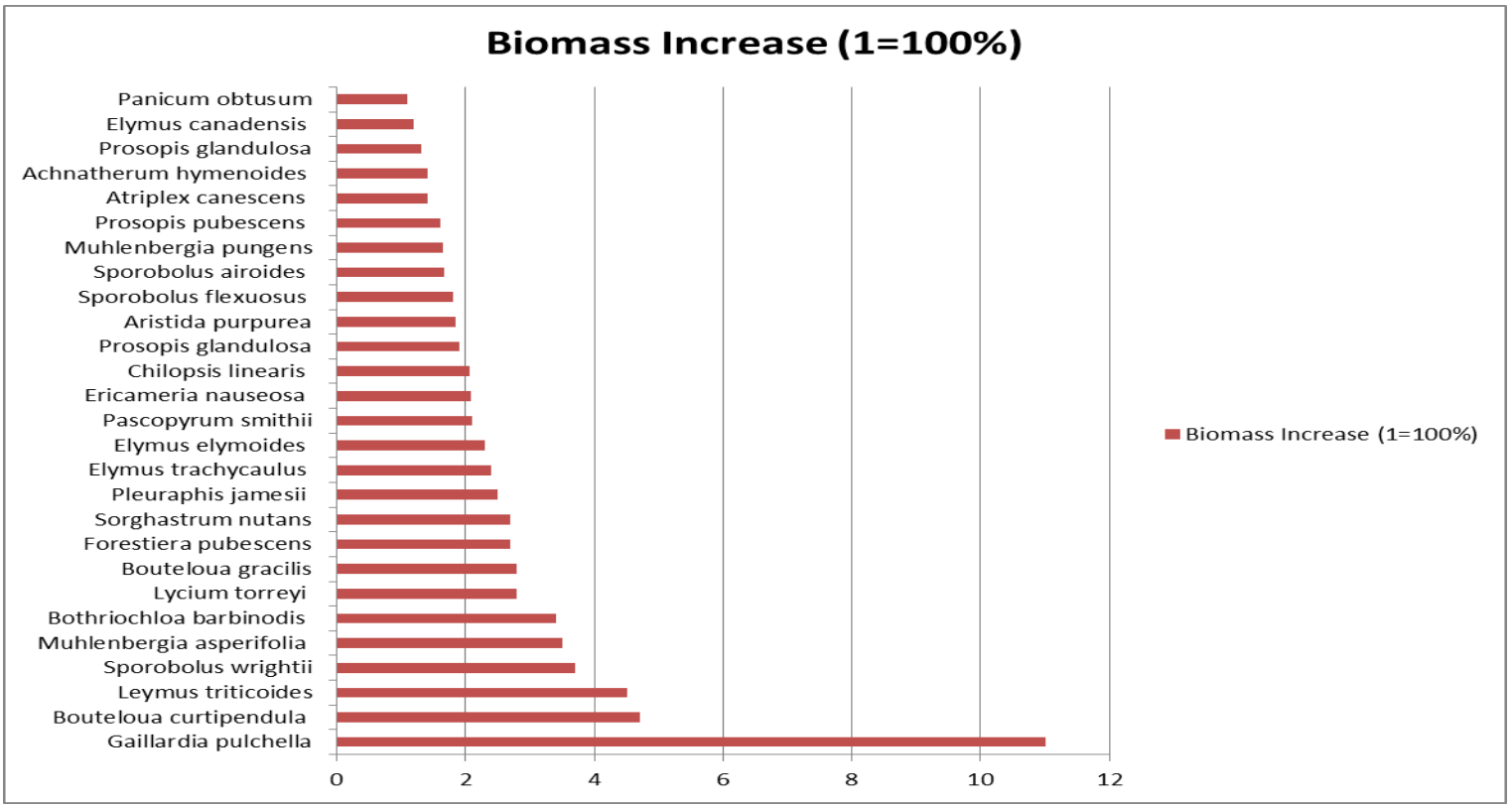


Plant without hyphae **Plant with hyphae**



Once roots have extracted all the moisture and nutrients they can reach, the attached fungal hyphae can reach beyond this to access additional available nutrients

AM120 was used in this 2009 study with native species



Beauchamp, V.B., et al., Salinity tolerance and mycorrhizal responsiveness of native xeroriparian plants in semi-arid western USA. Appl. Soil Ecol. (2009), doi: 10.1016/j.apsoil.2009.07.004

Glomus intraradices species:

Glomus intraradices has been thoroughly tested and found to be very effective in plant establishment and growth-enhancement as well as being very adaptive to widely varying growing conditions. ***Glomus intraradices*** has been used successfully throughout a broad range of environments from boreal sites in Northern Canada to tropical sites in South America. Trials conducted by the USGS on a broad range of native western plant species determined that ***Glomus intraradices*** either improved germination or increased biomass development in over 70% of the species tested.

Benefits of Mycorrhizal Inoculum in Restoration:

- Reduced transplant shock
- Increased plant establishment rates
- Improved plant health
- Increased resistance to soil borne pathogens
- Out competition of weed species
- Improved soil aeration and drainage
- Reduced soil erosion
- Greater tolerance to soils with excess salts and heavy metals

Without a mycorrhizal component to new restoration projects, the site is much more vulnerable to weed establishment, subject to greater drought stress and will have a reduced level of plant diversity.

Will introduced mycorrhizae interfere with native mycorrhizae?

Once a site is disturbed, the dynamics that supported the original ecosystem, including the native mycorrhizal component is gone. There is nothing there to help new plantings establish efficiently. Re- introducing native mycorrhizae from adjacent areas is time consuming and not cost effective. The species used in AM 120 inoculants are proven to quickly colonize disturbed areas. Once a stable and self sustaining colony has been restored, the conditions for native mycorrhizal fungi from adjacent sites to reestablish will become favorable.

NON-MYCORRHIZAL PLANT FAMILIES

Amaranthaceae (Pigweed) **Brassicaceae (Mustard)**
Chenopodiaceae (Goosefoot) **Zygophyllaceae(Caltrop)**

Application Rates

Seeding Rates: 60lbs. Per acre (67.5 kg/ha)/1.4 lbs. Per 1,000 ft^2(0.7 kg / 100 m^2). Rate provides approximately 3,600,000 living propagules per acre (8,956,000 propagules /ha).

Hydroseeding: Apply in first pass with seed and a controlled release or organic fertilizer. A second pass with mulch to cover exposed seed and inoculum is recommended.

Seed Drilling: Incorporate into the soil at a depth range at or below the seed. Broadcast and Till: Evenly distribute across seedbed after seeding. Cover the exposed seed and inoculum by harrowing, chain dragging or applying an organic topdressing. Do not leave inoculum exposed to sunlight for more than four hours.

Row Crop Applications: Side dress seed furrows or transplants at rates of 5 to 8 lbs. per acre (5.61 kg/ha) on 30 inch to 40 inch spaced rows. Rate provides 18 to 28 living propagules per linear foot of row crop (60 to 90 living propagules per meter of row crop). Incorporate at 2 inches to 6 inches (5 to 15 cm) below soil surface.

Nursery Medium: Evenly blend at 5 lbs per yd^3 (3 kg. Per m^3). 1 lb. (454 grams) contains approximately 60,000 living propagules. Rate provides 300,000 living propagules per yd^3 (396,000 living propagules per m^3) or 6.5 living propagules per in^3.

granite SEED
and erosion control

Utah Location
1697 West 2100 North
Lehi, Utah 84043
Ph: 801.768.4422
Fx: 801.768.3967

Colorado Location
490 East 76th Ave., Unit A
Denver, Colorado 80229
Ph: 888.577.5650
Fx: 888.695.5450

RTI Reforestation Technologies International

AM 120
Mycorrhizal Inoculant
Glomus Intraradices

1341 Dayton Street Unit G
Salinas, CA 93901
800-784-4769
www.reforest.com