soil used.

The inoculum production system

Prepare a small plot in an area of the farm that receives full sun and that is conveniently near a water source. Cover the ground with the weed barrier fabric. The black plastic bags containing the compost and vermiculite mixture will be placed on this surface.

Table 1. Chemical characteristics of composts used in on-farm inoculum production.[1]

	Compost type		
Characteristic	Yard Clippings	Dairy Manure + Leaf	Controlled Microbial
pH	7.7	8.0	8.1
Total N	2.0%	2.1%	1.3%
Phosphorus	0.27%	0.47%	1.04%
Potassium	1.00%	1.11%	1.70%
C:N	13.1:1	15.9:1	9.3:1
N:P	7.4:1	4.5:1	1.25:1

1 Analyses were conducted by the Penn State Agricultural Analytical Services Laboratory, University Park, PA 16802. Dry weight basis, elemental N, P, and K.

Maximal production of inoculum in this system requires the proper dilution of the nutrient rich compost with a nutrient poor substrate such as vermiculite. This is because colonization of roots by AM fungi, and hence growth of the fungus, is inhibited by high nutrient levels, notably of available P (see the general considerations, above). We did try growing the bahiagrass plants in pure compost one year and saw no spread of colonization within the root system or spore production by AM fungi. Further, the extent of the dilution will vary for composts with different nutrient levels. Table 1 shows important characteristics of three composts studied in the development of this technology. We conducted a complete factorial experiment (all possible combinations were examined) with three AM fungi, three composts, and five dilution ratios. Inoculum production was quantified in terms of spore production by the fungi (Fig. 1). Notice how spore production in the composts with the lower P levels and high N:P ratios (yard clippings compost and dairy manure plus leaf compost) was better at lower dilutions while that in the compost with high P and low N:P ratio (controlled microbial compost) was better when the compost was diluted more. We have developed predictive equations (Douds et al., 2008) in which compost nutrient levels are used to estimate compost and vermiculite dilutions for the growth of three AM fungi. In general, however, we have had success routinely with dilutions ratios of 1:3 to 1:9 (1:4 typically) compost:vermiculite, volume basis.