

Martens' Farm Compost Trial Results 2004 and 2005

(Note: this material is repeated in the Weed Learning Module of the Living Laboratory Course)

Results for 2004: Compost increased corn yield up to a rate of 1.5 ton/a (see figure 1). The two types of compost had similar effects on corn yield.

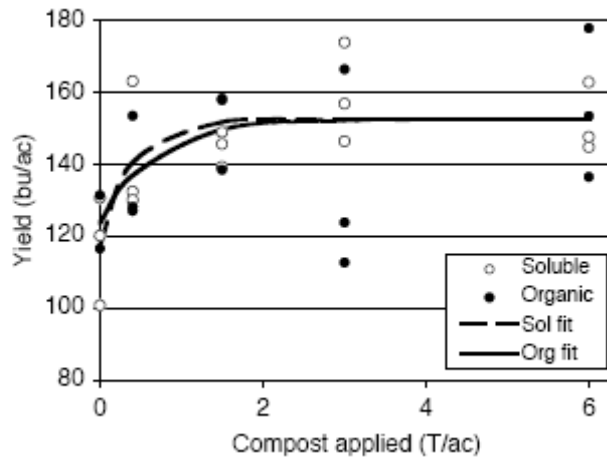


Figure 1. Response of corn yield to compost. applied the previous fall. Soluble refers to the high N compost made from chicken manure, whereas organic refers to the low N compost made from chicken litter.

Number of weeds did not differ among rates of compost at either of the counting dates for any species. Thus, higher N fertility did not appear to be promoting weed seed germination in 2004.

Weed size did not respond to compost rate for any species in the high N "soluble" compost. With the low N "organic" compost, however, lambsquarters, foxtail and common ragweed all increased in size with compost rate (Figure 2). Unlike corn which reached peak production at about 1.5 ton/a of compost, these weeds continued to increase in size up to the highest compost rate. Thus, as hypothesized, the high compost rates favored weed growth without corresponding increases in yield. The leveling off of corn yield could not have been explained by greater weed growth, however, since even at the largest size, none of the species were abundant enough to have affected yield. Also, the

height and number of quackgrass shoots, did not respond to compost rate, and this was the most abundant weed species in the field.

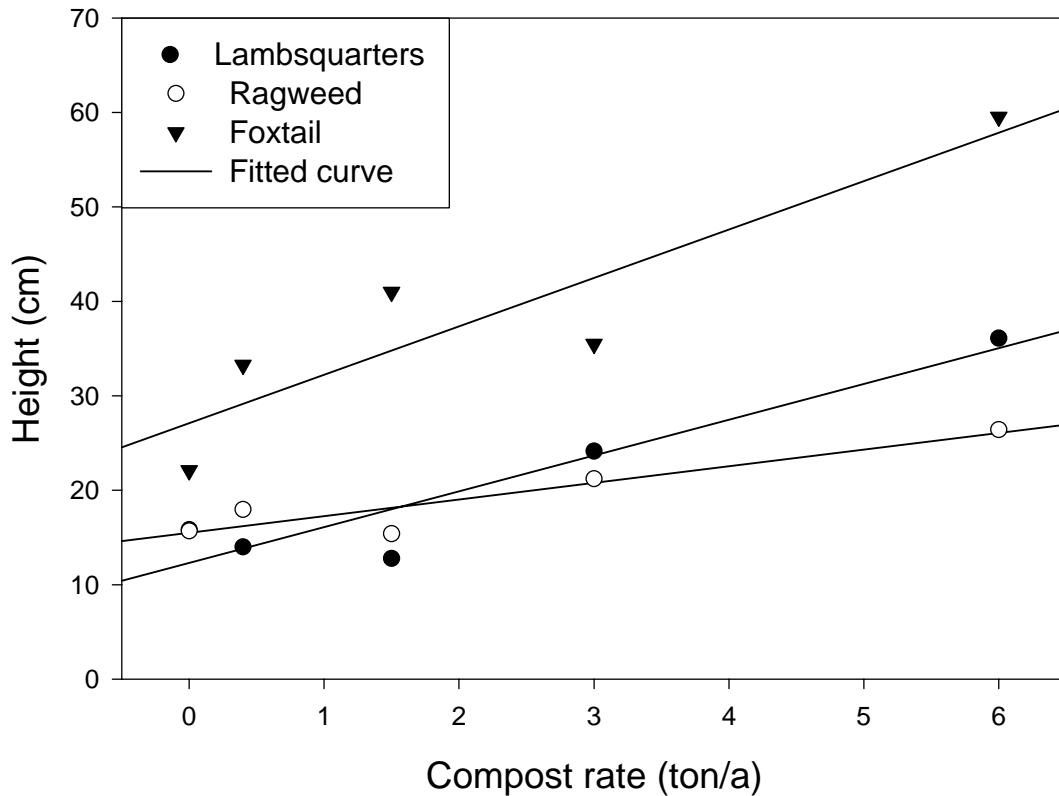


Figure 2. Height of three weed species in relation to application rate of the low N compost..

Results for 2005: Results from the 2005 soybean crop differed in detail from results for the 2004 corn crop, but the bottom line message was similar. Soybean yield was not significantly affected by compost rate, though there may have been a slight increase in yield from 0 to 0.15 ton/a.

The only species to show a response of plant height to compost rate in 2004 was Powell amaranth (a pigweed species). In the high N compost, Powell amaranth height continued to increase up to the highest application rate. Note that this species did not respond to application rate of either compost type in 2004.

Unlike 2004, weed density responded to application rate for both types of compost. In the low N compost, the response of individual species was too variable to be statistically significant, but when species were combined into groups, the density of both annuals and perennials increased with application rate. For the high N compost, density of common ragweed and Powell amaranth (a pigweed) but not giant foxtail responded to application rate.