THE EFFECTS OF MONTMORILLONITE CLAY AND PARAMAGNETIC ROCK ON SORGHUM-SUDAN GRASS

Synopsis of
Developmental Research

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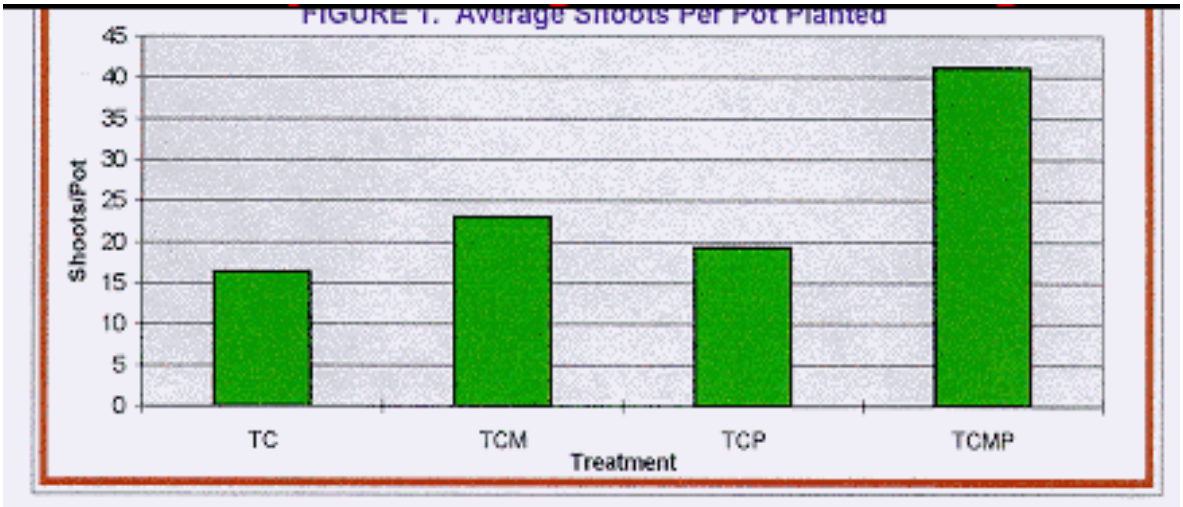
Montmorillonite clay and paramagnetic rock were tested independently and in combination with a blend of topsoil and compost using Sorghum sudan grass seeds. The objective was to determine if the plant supplements had individual and additive effects when used in combination on plant germination and vigor. Treatments were: 1. 85% topsoil, and 15% compost (TC), 2. Topsoil, compost, and Montmorillonite clay (TCM), 3. Topsoil, compost, and paramagnetic rock (TCP), and 4. Topsoil, compost, Montmorillonite clay, and paramagnetic rock (TCMP). (AbzsumPlusú is a commercial blend of Montmorillonite clay and paramagnetic rock.)

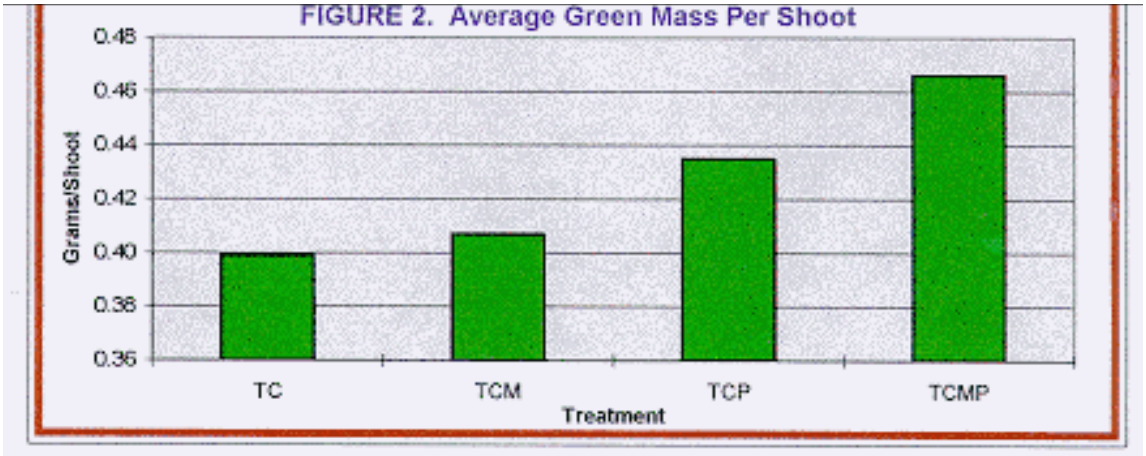
Each of the four treatments had five identical replicate containers containing the appropriate treatment soil blend. Twenty seeds were sown in each container 9/10/98 and allowed to mature in the Northern Michigan College greenhouse before they were harvested on 11/13/98. All containers were equally watered and rotated to ensure equal exposure to light and heat.

Results:
The average **number of shoots per container** are shown in figure 1. The



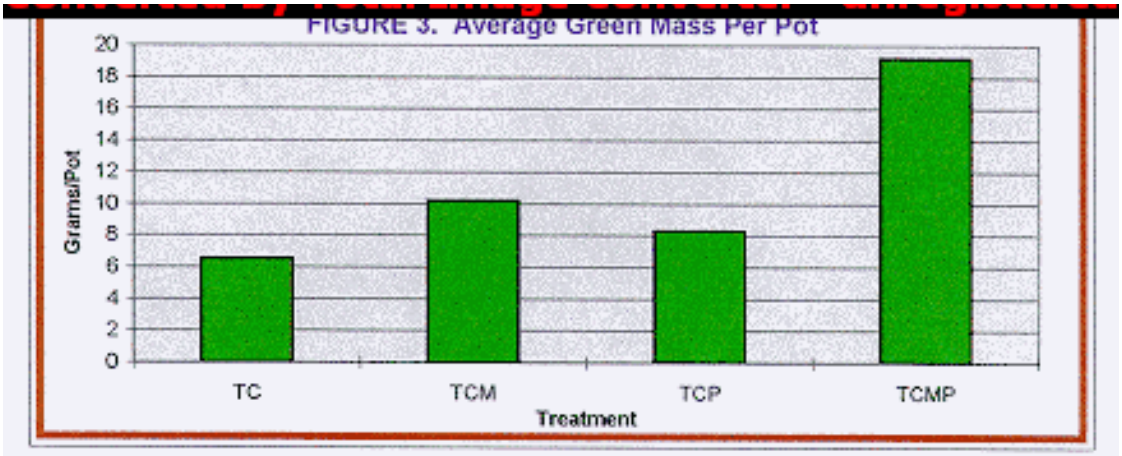
Montmorillonite clay and paramagnetic rock combination (commercially known as AbzsumPlusú) averaged 41.2 shoots per container. The blend with Montmorillonite clay only had 25 shoots, the paramagnetic rock blend only had 19.4 shoots, and the soil/compost blend only had 16.4 shoots per container.

The **average green mass per shoot** is shown in figure 2. Montmorillonite clay



and paramagnetic rock in combination (AbzsumPlusú) had the greatest green mass of 0.466 grams per shoot. The average green mass per shoot for the paramagnetic rock treatment was 0.435 grams, the montmorillonite clay was 0.407 grams, and the soil/compost blend weighed 0.399 grams per shoot.

Figure 3 shows the **average total green mass** per treatment container.

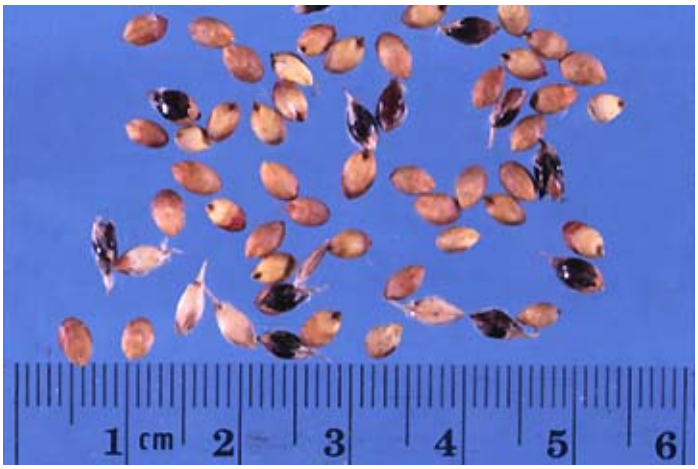


AbzsumPlusú, the Montmorillonite clay and paramagnetic rock combination had the highest total green mass of 19.2 grams per container. Next was the montmorillonite clay treatment with 10.2 grams, followed by the paramagnetic rock treatment with 8.3 grams, and the soil/compost blend with 6.5 grams of total green mass per container.

Conclusions:
The combination of Montmorillonite clay and paramagnetic rock, commercially known as AbzsumPlusú, produced 65% or more shoots per container than either soil supplement alone. AbzsumPlusú produced the greatest average green mass per shoot. In addition, the AbzsumPlusú produced 88.2% greater total green mass per container than the montmorillonite clay alone and 131.3% more total green mass per container than the paramagnetic rock alone. The combination of montmorillonite clay and paramagnetic rock to produce AbzsumPlusú appears to have an additive effect on seed germination and plant growth of Sorghum-sudan seed.

Caution

Members of the Sorghum family contain dhurrin, a glucoside that breaks down to release hydrocyanic acid also known as prussic acid. A sudden disruption of growth such as frost, drought or cutting, causes prussic acid to be released inside the plant at a more rapid rate. High prussic acid levels may be lethal to cattle. Prussic acid will breakdown in one to two weeks, so material made into hay or silage is safe to use. See Nutritional Concerns and Animal Health Hazards, below. http://www.omafra.gov.on.ca/english/crops/facts/98-043.htm



http://www.agry.purdue.edu/ext/forages/publications/grasses/sxs.htm