PLANTING AND GERMINATION OF EASI*flo*™ COTTONSEED

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Abstract

Easiflo cottonseed utilizes corn starch to bind linters to the seed coat providing improved handling of fuzzy cottonseed. This process was developed primarily for the cattle feeding industry which could significantly increase the use of whole cottonseed in high energy livestock rations. The linters remaining on the cottonseed after ginning require special handling systems that are not normally used in the cattle feeding industry. Coating the cottonseed allows for handling in equipment that is already being utilized in the feeding operation. Easiflo cottonseed consists of coating gin-run cottonseed with a concentrated solution of hot gelatinized starch and then drying. The process leaves the fuzzy cottonseed with a smooth surface that is much easier to handle. The expense of delinting planting seed and the interest in coating seed for planting resulted in this study. The objective of this study was to determine if Easiflo cotton seed could be planted using conventional planters and the effect of coating on germination. Two levels of coating were applied to the seed (2.5% and 3.2%) and this was compared to seed that had been acid delinted. The 3.2% seed coating was double coated and dried primarily to evaluate the possible effect of a severe hot air drying treatment. The coated seed and the acid delinted seed were processed through a Clipper seed cleaner to remove foreign matter and immature seeds. One half of the coated and acid delinted seed received no fungicide seed treatment while the other half was treated for seedling disease. This treatment included Apron (2.5 oz/100 lb seed), Captan (2 oz/100 lb seed) and Nuflow M (1.25 oz/100 lb seed). The seed treatments were applied in a separate operation after seed was coated. The physical size of the seed was modified by the coating. The acid delinted seed, 2.5% coated seed, and the 3.2% coated seed had seed weights of 9.6, 11.4 and 11.8 gms/100 seed, respectively, and seed counts of 4725, 3979, and 3844 seed/lb, respectively. The diameter of the seed were measured and the acid delinted seed, the 2.5% coated seed, and the 3.2% coated seed were found to have maximum seed diameters of 4.92, 5.44, and 5.52 mm and minor diameters of 4.28, 4.72, and 4.82 mm, respectively. Germination tests were conducted in the laboratory. The warm germination count at 10 days was found to be significantly higher for the acid delinted seed and the 2.5% coated seed as compared to the 3.5% coated seed. The seed treated for seedling disease resulted in a significantly higher germination for each of the seed coatings. The cool germination test had a similar pattern as the warm germination with the acid delinted seed and the 2.5% coated seed having significantly better germination than the 3.2% coated seed. There was a significant difference in the seed treated for seedling disease for the 2.5% coated seed but that difference was not seen for the acid delinted or 3.2% coated seed. The cool-warm vigor index (CWVI) test indicated no significant difference between the acid delinted seed and the 2.5% coated seed. The CWVI for 3.2% coated seed was significantly less. The seed treatment for seedling disease did not have a significant effect. The treatments were planted in the field with an air planter and a plate planter. Plant counts for the seed planted with the air planter were significantly different for all three surface treatments. The acid delinted seed had the highest emergence while the 3.2% coating the lowest emergence. The plant count for the coated seed may have been lower due to the problem with the seed flowing to the upright seed plate. The test planted with the plate planter included only seed treated for seedling disease. This test indicated that the acid delinted seed had significantly higher plant counts than the 2.5% coated seed or the 3.2% coated seed. Problems with the plate planter included bridging above the plate for the coated seeds and the reabsorption of moisture by the 2.5% coated seed causing the seed to be sticky and causing additional problems with the seed flowing freely. Since it was impossible to determine the number of seed being dispensed by either the air planter or the plate planter, a third planting was made with a cone planter. One hundred seed were planted for each treatment. This test indicated that there was a significant difference for each of the three coatings with the acid delinted seed having the highest stand count and the 3.2% coated seed the lowest count. The seed treatment for seedling disease did not have a significant effect. Additional studies need to be conducted to reduce stickiness due to reabsorption of moisture, reduce roughness of the coated seed surface to improve flowability, and determine if the low emergence of the 3.2% coating was due to coating thickness or excess heating during application of heavier coating.

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