DALLIS grass, *paspalum dilatatum* Poir., ranks first among the perennial grasses that are being planted in improved pastures in the Southeast. Its palatability and nutritive value make this popularity well deserved. It is well adapted to lowland and fertile upland soils but cannot compete with some of the other grasses on soils low in fertility.

Many of the Dallis grass plantings made in recent years have failed. Perhaps first among the factors that have contributed to these failures has been the poor quality of the seed planted. Ergot, *Claviceps paspali* Stevens and Hall., a fungous disease that destroys the seeds, has been largely responsible for this poor quality and indirectly for the high price that Dallis grass seed has commanded. Inadequate fertilization of the poorer soils and anthracnose, caused by *Colletotrichum graminicolum*, have also hindered establishment and have caused good stands to die out and to be replaced by other grasses.

During the past 8 years a careful study of this species has been made in an effort to determine to what extent the problems just mentioned might be solved by the plant breeder. It is the purpose of this paper to report some of the findings of this study.

MATERIALS AND METHODS

A 3 X 3 foot spacing of individual seedling plants was used for studying the variability within different lots and strains of Dallis grass. The plants for these studies were established in the greenhouse as follows: In January or early February each lot of seed was planted in a separate pan of steam-sterilized soil. When the seedlings in these pans had developed their third leaf, they were transplanted individually to 2-inch clay pots of sterile soil. These were placed in well-rotted saw dust, were well fertilized, and were held in the greenhouse for about 3 months before they were transplanted in the field. This technic produced large plants that could be transplanted to the field without loss, giving the desired perfect stands without replanting.

In the fall of 1941 an experiment was designed to determine the variability within and between different seed sources of Dallis grass. Seed lots from South Africa, Uruguay, Australia, and the principal seed-producing areas in the United States were obtained. On May 21, 1942, seedlings from 24 different seed sources were space-planted in four-plant family rows replicated 10 times. On April 29 of the same year, 10 of these strains were seeded in 4 X 18 foot plots replicated six times. The weed growth on these plots was mowed several times in 1942, and in 1943 and 1944 yields of dry matter were obtained by clipping the plots at 2-week intervals with a power lawn mower.

In making the yield and green growth ratings on the spaced plantings, each plant was rated from 1 to 5 on the basis of its relative size and amount of green foliage, the best plants receiving a rating of 1. In the last two ratings plants nearly dead were rated 6 and dead plants were rated 7. The total rating for the