Crimson clover, *Trifolium incarnatum* L., is regarded as the most important winter annual legume for the South and is extensively used also in the west coast section of the United States. Before World War II, all crimson clover was of the common type. Although reseeding varieties were not developed until the late 1930’s, more than half of the domestic seed produced is of the reseeding type. It has been generally recognized that grazing or clipping during late winter or early spring may slightly reduce seed yields, if spring growing conditions are unfavorable. On the other hand, if some growth is not grazed off and if spring growing conditions are favorable, the stand of crimson clover, Dixie and Chief varieties representing the early, medium, and late, maturity groups, respectively, were grown for 5 years in rectangular plots at the former location of the Dixie and Chief experiments. The treatments consisted of no clipping before full bloom and clippings from each size class were grown in rows and yields were taken when the plants reached full bloom.

The influence of seed size on seedling vigor and yield has long been recognized. Zavititz (14) reviewed the early research on this subject and found that in each of at least 12 different classes of farm crops that large seed gave a greater yield than an equal number of small seed. Schmidt (11) divided crimson clover seed into three lots by weight and found that seed from the smallest class germinated more slowly and the seedlings developed more slowly and were always smaller than those from the larger classes. Moore (8) found that emergence of seedlings from the largest and the smallest seeds was reduced to a greater extent by deeper planting than from the medium-sized seeds. Middleton’s (7) data on *Lespedeza cuneata* show a definite relation between seed size and hardness. Large *Lespedeza cuneata* seed contained only 1 to 3% hard seed while the smallest seed contained 48 to 72%.

Considerable research has been reported on the relation of seed size to seedling vigor of various grass species. Rogers (10) obtained highly significant positive correlation coefficients for the relation of seed weight to emergence at 2- and 3-inch depths of seeding. He concluded that selection for large seed size was a direct method of increasing seedling vigor in crested wheatgrass. Kneebone and Cremer (9) studied vigor of native grass seedlings produced by seed of various sizes in various media in the greenhouse and in the field. The larger the seed within a lot the more vigorous were the seedlings from it. Seedlings from larger seed emerged more quickly and grew more rapidly. Seed size had little effect on germination except in switchgrass. Small seed of switchgrass germinated poorly in all tests.

### MATERIALS AND METHODS

*Dixie* and *Chief* crimson clover varieties representing the early, and late, maturity groups, respectively, were grown for 5 years in a management experiment at State College, Mississippi. The treatments consisted of no clipping before full bloom and clippings when the forage was 4 and 8 inches high during winter and spring. A sickle-bar mower equipped with a pan was used to clip the forage to a two-inch stubble. The last clippings before the full bloom stage were made on March 15, April 1, and April 15. A final clipping was made for all treatments when the clover reached the full-bloom stage. Each year 6 replications of each treatment were seeded in September at the rate of 30 pounds of clean seed per acre on Leeper fine sandy loam in plots 5 x 12 feet. Fertilizer was applied annually at the rate of 500 pounds of 0-6-17 (equivalent to 15-30-15 in P2O5 and K2O).

Seed was hand-harvested in the hull for yield and quality determinations. The seed from each treatment and each variety was hand-threshed and separated into different seed-size classes. Eleven seed-size classifications expressed as fractions of an inch were obtained by using 10 round-hole screens as follows: seed over a 1/13, 1/14, 1/15, 1/16, 1/17, 1/18, 1/19, 1/20, 1/21, 1/22 inch and through a 1/22 inch. The last class will be referred to hereafter as T 1/22. Each year, 400 seeds from the 1/16, 1/17, 1/19, 1/21, and T 1/22 size classes were planted in the greenhouse in flats of field soil. The seedlings were evaluated for stand emergence, survival, and vigor. In addition, 400 seeds were germinated in the laboratory to determine the hard-seed percentage.

In 1958, 10 plants each of *Dixie* and *Chief* from the 1/16, 1/17, 1/19, 1/21, and T 1/22 size classes from the April 15, 8-inch treatment, were potted and grown for 12 weeks. The effect of seed size on seedling development was determined by leaf counts and seedling weights. In 1960, plants from the same treatments were tested in the field. Twenty-five plants from each size class were grown in rows and yields were taken when the plants reached full bloom.