Selecting Persian Clover for Hard Seed

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PERSIAN clover, *Trifolium resupinatum* L., as grown in the southeastern United States for the past 30 years (2), is a winter-annual noted for its consistent natural reseeding in the spring and volunteering the next fall. Ninety-five percent of its seed are hard (3) and remain viable in the soil from spring to fall. When grown in the 1949–50 season, certain newly introduced strains from Iran, India, Afghanistan, and Pakistan had forage characteristics superior to those of common Persian clover, but failed to volunteer adequately in the fall. Some of these strains had 99% or more permeable (soft) seed. In the field, these imbibed moisture readily during summer whenever it was present, and the seedlings died. By fall, the normal time for winter-annuals to emerge, almost no seed remained to germinate. Replanting each fall would be necessary for such seed; a practice not acceptable to farmers and ranchers in the Gulf Coast area who expect winter-annual species to reseed in the spring and volunteer a new, adequate stand in the fall. Selection to increase percentage of hard seed and to retain or improve the other desirable characteristics of the new strains was begun in the fall of 1953.

MATERIALS AND METHODS

Seed of selected lines were soaked in water. Sprouted and swollen seed were removed daily by decantation. Seed that were still hard after 6 days were scarified and planted about 3 inches apart in rows 3 feet apart. Field seeding allowed natural elimination of weak types. In addition, the least desirable plants were rogued out during winter and spring. Final spacing was 3 feet or more between plants. Eight generations were grown. The mature plants were harvested singly. Data obtained on each plant were: date harvested, plant weight, seed yield, and percent of seed hard after six days in moisture.

To facilitate selection of hard seed, threshing without scarification was necessary. This was accomplished by use of an 18-inch section of 2-inch bicycle innertube. The tube was partially filled with dried heads and a little straw to improve threshing, laid on a hard, flat surface, and rolled forward and backward under pressure of both hands. Seed were cleaned in an aspirator. White, common Persian, and hop clovers threshed by this method usually had 95% or more hard seed.

In the first 2 years (1954 and 1955), 1000 seed per plant were placed on wet filter paper in covered petri dishes. Sprouted and swollen seed were removed daily. The next year, 1956, 10 cc. of seed per plant were soaked in a flask. Soft seed were removed by decantation; hard seed were recovered by filtration. Percent hard seed was determined by volume. From 1957 through 1961, 400...