THE EFFECT OF ALFALFA SEED SIZE AND DEPTH OF SEEDING UPON THE SUBSEQUENT PROCUREMENT OF STAND

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T HE most desirable rate and depth for seeding alfalfa, Medicago sativa L., in the procurement of stand has long been a subject of considerable controversy. The objective obviously is to obtain the best possible stand without a waste of seed. The present seed shortage has intensified the importance of seed conservation and efficiency in seeding.

It seemed desirable at the outset of this study to probe further into the subject to determine not only what rate or depth of seeding might be the most efficient, but also to determine, if possible, the relation of seed size and depth of planting upon seedling vigor and seedling mortality.

The present study was performed wholly in the greenhouse and in the seed laboratory. The greenhouse seedings, like the seed germination chambers in the laboratory, were maintained at the best conditions possible to promote optimum germination and growth. The effect of seed size upon seed viability as determined by blotter tests has been discussed elsewhere (2). Fig. 1 which shows the relative value of alfalfa seed of different sizes when germinated in blotters in seed germination chambers and when germinated in soil under greenhouse conditions.

Studies of the problem have frequently indicated that the seed should be sown shallow. Few workers, however, recommend any specific seeding depth. Robertson, et al. (5) recommended that 8 to 10 pounds be used per acre, either drilled at a 1/2-inch depth, or broadcast on the surface. On the basis of 10 pounds per acre a distribution of 55 seeds per square foot may be expected. A seeding rate of 15 pounds per acre will provide each square foot of soil with about 83 seeds. It is a common practice in many areas to seed alfalfa at even higher rates. Klime and Mann (4) recommended 25 to 30 pounds per acre. This latter rate would provide each square foot of soil with 137 to 165 alfalfa seeds.

Whitcomb (6) observed that 40 plants per square foot would be an unusually thick stand, far in excess of what is found under normal field conditions. Some observations made by the writer tend to indicate that 10 plants per square foot make an excellent stand and might be considered as the normal upper limit of capacity. There are instances where farmers have sown only 4 pounds of alfalfa seed per acre and have obtained satisfactory stands. It appears that when such high seeding rates as 20 to 30 pounds are used there must be

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3Numbers in parenthesis refer to “Literature Cited”, p. 972.