

WHAT OTHERS WRITE ON TURF

In this department will be given the substance of research in the various fields of scientific investigation which seems to have a definite bearing on turf improvement. The articles will summarize results of recent investigations made in various parts of the world. They are not published here as recommendations but simply as information for our readers and as suggestions which may have practical applications in many situations. Where the Green Section's tests or the information it has obtained from other reliable sources in this country substantiates or contradicts the results obtained by other investigators, comments to that effect may be included as a guide for our readers. In all other cases the reader will receive in brief the results and conclusions as given in the original papers.

SEED PRODUCTION IN BLUEGRASS

Kentucky bluegrass (*Poa pratensis*) is highly prized in northern Europe as well as in the United States. In Sweden new strains have been developed, the distribution of which depends on local production of seed. Åkerberg has studied the question of seed setting and seed production in Sweden and his paper has been translated for Herbage Reviews.

He found that in Kentucky bluegrass no fertile shoots were produced the first year and that in subsequent years the proportion of fertile to sterile shoots varied with the method of sowing, fertilizer treatment and the strain of grass.

His present investigations confirm earlier work in Sweden, which has demonstrated that in various strains of Kentucky bluegrass, seed is produced without fertilization. In such cases the pollen must reach the

stigma in order to stimulate seed production, but since fertilization does not take place, the characteristics of the progeny are the same as those of the mother plant.

The production of seed without fertilization was found to be common in Kentucky bluegrass. In fact, in an extensive study of Kentucky bluegrass selections, Åkerberg found only four types which he could characterize on the basis of the appearance of the progeny as sexually produced plants. On the contrary, *Poa trivialis* seed appears to be entirely produced by sexual means.

It has been shown in an earlier paper by Nilsson, Åkerberg and Nissen that seed setting ability is readily influenced by external conditions but this sensitiveness is largely a strain characteristic, some strains of Kentucky bluegrass being extremely variable with changing

conditions and others showing only slight and purely accidental variations. It should be possible, therefore, to select plants which set seed without fertilization and uniformly well under different conditions.

Another variation in the seed of Kentucky bluegrass which was studied was the weight of 1,000 seed. He found this weight to vary from .15 to .20 grams in some of his types to .60 to .65 in others, with that for the majority of plants being between .3 and .5 grams. He found some of the Swedish bred strains to have a considerably higher 1,000-grain weight than did American seed which was imported by Sweden.

This ability of certain types of Kentucky bluegrass to set seed without fertilization should be of inestimable value in the development of improved strains by selection. Once a strain has been selected and established vegetatively it could be reproduced readily on a commercial scale, should it be a type which sets seed without fertilization. If this phenomenon is as common in our strains of Kentucky bluegrass as Åkerberg has found it to be in Sweden, the chances should be good that some of our vegetative selections could be propagated by asexual seed.

THE QUANTITY OF ROOTS UNDER BLUEGRASS

One who has handled sod knows that the surface area under grass is full of roots, but few know the tremendous quantities of roots produced by such a plant as Kentucky bluegrass. Howard J. Dittmer studied this matter in Iowa and published his results in the American Journal of Botany. He also determined the quantity of roots produced by rye and oats, but our interest lies in his results with Kentucky bluegrass. Dittmer took soil samples 3 inches square and 6 inches deep. The soil was carefully washed away. All roots, no matter how small, were counted and representative lots were measured for length and diameter. From these figures it was calculated that the 84,000 separate roots found represented a total length of 1,250 feet with a total root surface of 332 square inches.

Even the root hairs, the organs through which the plant absorbs water and nutrients, were counted. Kentucky bluegrass had in each soil sample an average of 51.5 millions of root hairs which, if extended in one line, would reach 32 miles, with a surface exposure of 16.9 square feet. Kentucky bluegrass had 12 times as many roots as rye, 6 times the root length and the roots had 5