

GROWTH SUBSTANCES ON TURF GRASSES

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In the preceding article the fact has been emphasized that, although growth substances are unquestionably significant in the life of plants, they are almost universally distributed in plants and in organic matter in the soil and are therefore normally accessible to plants growing under favorable conditions. It is, therefore, only in cases where they are the factors which limit growth that stimulation can be expected from their application. Even then, the right substance must be applied at the proper concentration if germination or growth is to be stimulated.

In spite of these well recognized facts, however, voluminous publicity has been given to the claims of commercial firms as well as of enthusiastic investigators concerning the amazing results achieved by their application. Little cans or bottles of these amazing chemicals to be used as dust or in solution, and even seed which has previously been dusted with one hormone or another, are now available on the market under various trade names, and results little short of miraculous are promised to those who use them.

Exploratory investigations have been necessary to determine whether or not hormones are as effective on turf grasses as scientists have found them to be on some other plants, or even a fraction as beneficial as some enthusiasts claim they are. So far, the most uniform and best results appear to have been obtained with cuttings. It was only logical to suppose, there-

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fore, that hormones might have some effect in accelerating the rooting of grass stolons, particularly those of the slow growing species such as *Zoysia* and velvet bent.

In addition, it appeared that some of these growth substances might prove to be valuable in midsummer when the failure of roots in turf is most pronounced. If, by adding them to turf at this time, root growth could be stimulated, injury from drought and other causes might be avoided. Also, it appeared that some of them might be useful in speeding up the germination of the seed of such slowly germinating grasses as Kentucky bluegrass when a quick establishment of turf is desired.

Therefore, during the past 2 years, the Green Section has been testing in a preliminary way the effects of a few of the growth substances on the rooting of stolons, root development of grass in turf, and the germination of grass seed. So far, no encouraging results have been obtained. The results have either been entirely negative or so inconsistent that no conclusions could be justified either in favor of or opposed to their use in the establishment or maintenance of turf.

HORMONES ON STOLONS

In three series of greenhouse experiments in the fall of 1938 and the spring of 1939, stolons of *Zoysia matrella*, velvet bent, and the Washington and Metropolitan strains of creeping bent were used. The bent grass stolons, about 2 inches long, were taken from mature growth in the center of nursery rows and the *Zoysia* stolons from the old growth of plants growing in a warm greenhouse. Although an attempt was made to select uniform stolons, there was some difference in the number of nodes per stolon planted. The nodes on the Washington stolons