

## HORMONE-TREATED SEED

In several series of experiments, Italian ryegrass seed and Kentucky bluegrass seed from two different sources were treated with talc dust containing various concentrations of several different hormones as given in the table on this page. The seeds were treated with the dust at the rate of 1 ounce of dust to 10 pounds of seed. Treatment simply consisted of

TABLE OF TREATMENTS USED ON SEED OF ITALIAN RYEGRASS AND KENTUCKY BLUEGRASS

Key letter of treatment	Compound used	Proportions in talc	Parts per million (p.p.m.)
A	None		
B	Talc alone	Pure talc	
C	Alpha naphthalene-acetic acid	1:2,000	500 p.p.m.
D	Ditto	1:1,000	1,000 p.p.m.
E	Ditto	1:250	4,000 p.p.m.
F	Beta indole-butyric acid	1:2,000	500 p.p.m.
G	Ditto	1:1,000	1,000 p.p.m.
H	Ditto	1:250	500 p.p.m.
I	Rootone	As directed	
M	Thiourea	1:1,000	1,000 p.p.m.
N	Vitamin B <sub>1</sub> (thiamin)	1:1,000	1,000 p.p.m.
O	{Thiourea, 1 part Naphthalene-acetic acid, 3 parts}	1:1,000	1,000 p.p.m.
T	Hormodin A	As directed	

coating the seeds with the dust by shaking them in a jar with the calculated amount of dust.

The seeds were then placed in sand, in flats or in petri dishes on filter paper for germination. In most of the experiments the petri dishes were kept in the dark in the laboratory, whereas in some of the Kentucky bluegrass experiments they were placed in thermostatically controlled germinators and sub-

jected to the optimum conditions of alternation of temperature and light. In still other experiments, Kentucky bluegrass seed was treated with hormones and sown in well-prepared seed beds in order to follow the effects of the hormones on the establishment of turf.

#### Italian Ryegrass Seed

Duplicate lots of 50 Italian ryegrass seeds were dusted with hormone treatments A to O, inclusive, and the seed germinated in petri dishes in the dark in the laboratory. Germination counts were made after 48, 66, 72, and 96 hours. After 96 hours, the length of tops and roots of the best 25 seedlings in each lot were recorded and the average compared with that for the best 25 seedlings coming from untreated seed. The experiment was originally set up on January 31 and repeated on February 5 and February 17. In general, results which might have appeared significant in one experiment were not duplicated in other experiments.

Although at the end of 48 hours there were indications of increased germination in some of the lots of treated seed, notably those treated with 1,000 p.p.m. of beta indole-acetic acid, such increases were scarcely evident after 66 hours. At the end of 96 hours the untreated seed had germinated as well as any of the lots of treated seed. It was concluded that under these conditions and at the rates used, the final percentage of germination of Italian ryegrass seed was not significantly altered by any of the growth substances used. The stimulation in speed of germination which, in a few instances, appeared at the end of 48 hours was of such short duration that it could not be considered as worthwhile in practical large scale plantings of the seed.

Measurements of the 25 best seedlings showed considerable variation in length of roots and tops in both the treated and untreated seed. A comparison of the averages of root length shows that in both experiments in which measurements were taken there was a significant increase in length following 7 of the 14 treatments tried. However, the increase with talc dust alone was as great as or greater than that with any of the other treatments except for beta indole-butyric acid at 1,000 p.p.m. and Vitamin B<sub>1</sub> at 1,000 p.p.m. The only treatment which was accompanied by a significant increase in length of tops in both experiments was 1,000 p.p.m. of indole-butyric acid. It should be remembered that these seedlings were growing in petri dishes and were discarded after the ninety-sixth hour.

#### Kentucky Bluegrass Seed

In February, Kentucky bluegrass seed was dusted with hormones, using treatments A to T, inclusive, as given on page 116. Immediately after treatment the seeds were planted in flats of sand and germinated in the warm greenhouse at 80° F. Germination counts were made from the eighth to the twentieth day. Probably because of slight inequalities in watering, the results in duplicate flats varied over such a wide range that the significance of any differences which appeared was questionable. There was an apparent retardation in germination in evidence from the eighth to the twelfth or thirteenth day following treatments with talc alone, 1,000 p.p.m. and 4,000 p.p.m. of alpha naphthalene-acetic acid, 1,000 and 4,000 p.p.m. of beta indole-butyric acid, Rootone and Vitamin B<sub>1</sub>. However, by the twentieth day germination was approximately equal in treated and untreated seed.

In April, Kentucky bluegrass seed was again dusted with hormone treatments A, B, D, G, H, I and T. Duplicate lots of 200 seed were placed on blotters in petri dishes and germinated under conditions of alternating temperature and light which are generally accepted as the most favorable for the germination of Kentucky bluegrass seed. Germination counts were made on the ninth, thirteenth, eighteenth, and twenty-seventh days but no significant differences appeared between the percentage of germination of the untreated and any of the treated seed.

At the same time, bluegrass seed from the same sources was treated with the same hormones and planted in field plots. There was no apparent difference in the rates at which the bluegrass seedlings appeared following any of the treatments as compared with the plots planted with untreated seed. As the season progressed, crabgrass invasion was equally severe in all of the plots.

In mid-August of this year the experiment was repeated and at the time of writing (3 months after planting) all of the plots are practically equally covered with bluegrass seedlings. To date, therefore, the field experiments as well as the germination tests indicate that under our conditions and at the rates applied, alpha naphthalene-acetic acid, beta indole-butyric acid, Vitamin B<sub>1</sub>, Rootone and Hormodin A have had no significant effects in increasing the speed of germination or the total germination when applied to Kentucky bluegrass seed.

#### VITAMIN B<sub>1</sub> ON TURF

Turf of redtop (*Agrostis alba*) was grown on soil from which the topsoil had been removed to a depth of 1½ inches. Duplicate 4- by 4-foot plots of this turf were watered three