

SUMMARY OF EXPERIMENTAL RESULTS.

(1.) *Dry-dusting Treatments.*—Neither the copper-carbonate nor the anhydrous-copper-sulphate and calcium-carbonate mixture caused any appreciable damage to the wheat-seed in vitality or germinating-power.

(2.) *Bluestone-dip Treatments.*—The bluestone dip in all cases injured the germinating-power and vitality of the wheat-seed. This injury increased with the increased strength of the dip, and also with the length of time that the seed was held in storage after treatment. Washing in water after dipping materially reduced this injury. The presoak methods increased the injury caused by bluestone. Deterioration on post-treatment storage was more pronounced with the varieties Pearl and Tuscan than with Hunters.

(3.) *Formalin-dip Treatments.*—The effect of the formalin dip varied considerably with the different wheat varieties. Pearl appeared to be uninjured by the dip even after twenty-eight days' post-treatment storage. This result is very surprising when considered in relation to the large amount of broken seed-coat in the sample, as specified earlier in this article. Hunters showed a certain retardation of germination the day after treatment by all the formalin-dip methods. After post-treatment storage for fourteen days the vitality of the seed was distinctly impaired. This was reduced by washing the seed in water after dipping, and was entirely eliminated by the preliminary presoak method. The twenty-eight-days post-treatment storage results showed a decrease in vitality all round—reduced to small proportions by presoaking. Tuscan gave results very similar to Hunters, with slightly greater advantage by presoaking.

GENERAL.

The experimental laboratory results here recorded, while in part agreeing with the published records of work in other countries, cannot be accepted as a reliable practical guide until confirmed and extended by field trials in New Zealand.

The methods which show least damage to the seed may not be efficient in controlling the smut, and a method showing good laboratory results may be impracticable on the farm. Further, the relative cost of each method must be balanced against its efficiency.

The most instructive feature of the tabulated results lies not in the total germination, but in the proportion of seed which had germinated at the third-day and sixth-day counts respectively. It is probable that in the field very few of the seedlings whose germination is included in the subsequent counts would ever develop to grain-producing plants.

Quick and strong germination of the seed is a vital factor not only in the subsequent vigour and productivity of the crop, but also in immunity from attack by stinking-smut and other parasitic fungi.

LITERATURE CONSULTED.

- BRAUN, H.: Presoak Method of Seed Treatment. *Journal of Agric. Research*, vol. 19, pp. 363-391, 1921. Effect of Delayed Planting of Seed Wheat treated with Formalin. *Phytopathology*, vol. 12, pp. 173-179, 1922.