

## Georgia Experiment Station

### FIFTIETH ANNUAL REPORT, 1937-1938

THE Georgia Experiment Station was founded in 1887 by Act of the United States Congress, and is under the control of the University System of Georgia. During its 50 years of service the Station has issued 50 annual reports, 199 bulletins and 115 circulars, and has made many discoveries of benefit to agriculture.

**RAPID CHEMICAL SOIL TESTS.**—More than ten thousand rapid chemical tests have been made on 1200 soil samples taken from fields of known fertiliser treatment and crop response, and correlation studies between the laboratory data and response to fertilisation are in progress. In addition to showing the approximate amount of available nitrogen, phosphorus and potassium necessary to produce good crops on Georgia soils, the quick tests have indicated soil abnormalities other than deficiencies in any of these three elements. There are indications that aluminium toxicity is prevalent in parts of the State. The following data, obtained by rapid soil tests on two soils of widely different nature and location, suggest aluminium toxicity. The results are expressed in pounds per acre.

		Crop	Condition	pH	NO <sub>3</sub>	P	K	Al	NH <sub>3</sub>	Fe	Ca
Soil 1a	..	Corn	Fair	4.65	0	15	426	100	75	20	200
„ 1b	..	Corn	Dying	3.95	0	10	336	500	125	200	200
Soil 2a	..	Wheat	Fair	5.30	10	40	205	100	75	5	150
„ 2b	..	Wheat	Poor	4.55	15	15	111	500	50	5	100

**COLCHICINE TREATMENT OF SEEDS.**—This method holds interesting possibilities for the production of new varieties of pasture and forage plants. Seeds of the more important pasture and forage plants have been treated for varying periods of time, and approximate effective time-concentrations for some plants have been determined. Even rather light treatment of the seeds of some species so weakened and retarded the growth of the seedlings that an unusually high proportion died. It was surmised that the colchicine treatment may destroy or inhibit the production of the plant hormones needed for root and shoot development, and that treatment with Hormodin (or individual plant hormones) might overcome the retarding effect. Some of the legumes, but none of the grasses, responded definitely to hormone treatment. Alfalfa seedlings were much more vigorous when treated with Hormodin. This favourable reaction was used later for getting a greater survival of seeds of the creeping-rooted alfalfa, seeds of which were obtainable in only a limited quantity. Subterranean clover also reacted favourably to the Hormodin treatment subsequent to the colchicine treatment.

**MANGANESE REQUIREMENTS OF COTTON.**—Large well-fruited cotton plants have been grown repeatedly in nutrient solutions containing 0.1 p.p.m. of added manganese. It was found that cotton seedlings grown in a medium without added manganese developed deficiency symptoms in about three weeks. Under certain conditions a medium containing 0.01 p.p.m. of manganese produced almost as much vegetative growth as those containing larger amounts of the element.

**PEACH STORAGE STUDIES.**—Peaches stored at 33° to 36° F. in an atmosphere containing 10 per cent. of carbon dioxide were better preserved than in any other combinations of gases tried. Even at this concentration, however, the fruit had an undesirable flavour at the end of several weeks.

**TOXICITY OF PEANUT MEAL FOR SWINE.**—Swine fed for several days with large quantities of peanut meal developed toxic symptoms and some of them died. Preliminary investigation of this problem indicates that the effects are due, at least in part, to the comparatively high potential benzoic acid content of peanut meal. Although the amount of benzoic acid found in the urine of pigs fed on this material was considerably less than has been reported for cattle fed on the meal, it appeared to be high enough to cause a severe drain on the glycine supply of the animals.