and that this is fairly constant from year to year and is not merely an environmental relation. Certain exceptions occur, but on the whole, one may expect an increase in yield of grain with a corresponding increase in yield of straw. The ratio of straw to grain is also shown to be fairly constant from year to year. Certain strains produced almost a pound of grain for every pound of straw while others required nearly two pounds of straw to produce a pound of grain. While a heavy yield of straw was found to be correlated with a heavy yield of grain it was in turn correlated with a small amount of meat.

Published May, 1914

FIELD TESTS WITH A TOXIC SOIL CONSTITUENT: SALICYLIC ALDEHYDE.¹

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Salicylic aldehyde has been isolated from an unproductive soil, and compounds of an aldehyde nature have been shown to exist in many soils.² Such soils are usually unproductive. When separated from soils, the aldehyde material is toxic to plants in pure water and in nutrient solutions. The isolated salicylic aldehyde is harmful in quite small amounts. Its toxicity has been demonstrated in distilled water cultures, in nutrient solutions and in soil in pots. The crops tested were wheat, corn, clover, cowpeas, cabbage, and rice, and all of them were injured or retarded in growth by this substance. The question remained whether this soil substance would prove harmful to plants under field conditions and whether it would subsist under field conditions long enough to influence crop yield. Field tests with such substances have so far not been feasible, because of the impossibility of securing enough material to make the tests, but in the case of salicylic aldehyde this obstacle has been overcome.

The effect of the salicylic aldehyde in soils under field conditions was tested on plots at the Arlington Farm, Virginia. Three crops, cowpeas, string beans and garden peas, were grown on the treated soil during the summer of 1913. Adjoining to each plot growing a different crop, two check plots of equal size were planted with that same crop. The area of each plot was one fourth of a square rod.

¹ Received for publication June 3, 1914.