WHY CEREALS WINTERKILL.¹

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Introduction.

Winterkilling has been investigated as little as any of the important phases of cereal crop production. Practically no experiments to determine its causes have been conducted in the United States and only a few in foreign countries. The status of present knowledge depends largely on general observation and a few experiments with other plants, chiefly vegetables and fruits.

Where winter cereals can be successfully grown they usually yield from a few bushels more than to several times as much as spring varieties. There are other advantages, such as early maturity, distribution of labor, and condition of the ground for seeding. Only about one fourth of the world's wheat crop is sown in the fall, however, and a much smaller proportion of oats and barley. The winter varieties of these grains are not sown mainly because of their inability to survive the severe winters of the principal grain-growing areas of the world.

This paper is intended to suggest some probable causes of winterkilling, but especially to bring together the results of experiments and general observation as a basis for further investigations.

Causes of Winterkilling.

The probable causes of winterkilling may, for convenience, be grouped under four heads, though in some cases the boundaries over-