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The work in crossing

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at the close of the cooking. This is a question of economic importance which should be definitely settled.

The results of this investigation do not admit of more concise summing up than is found in the foregoing tables. To facilitate comparison all the results are tabulated together in table VI.

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THE WORK IN CROSSING.

A. A. CROZIER.

To obtain improved varieties of fruits which shall be hardy in Iowa, several thousand successful crosses were made during the past season, mostly upon apples. About one thousand seeds of these crosses, representing nearly fifty varieties, are now preserved in damp sand to be planted next spring. The crosses were mainly of the best American winter apples upon Russian varieties growing at the College. In this work I was aided by the Director’s assistant, Mr. John Craig, and by the following students of the Agricultural College: Mr. F. W. Mally, Mr. J. G. Abraham, Mr. E. A. Sheafe, Mr. Albert McClelland, and Mr. Fred L. Lightner. The selection of the varieties to be crossed was made by the Director and Prof. J. L. Budd. Thanks are due to G. B. Brackett, Denmark, Iowa, N. K. Fluke, Davenport, Iowa, John Saul, Washington D. C., O. R. L. Crozier of Ann Arbor, Michigan, and others, for pollen which they kindly furnished.

It is not expected that all the crossed varieties will prove worthy of propagation, but it is believed that a much larger percentage will possess the desired qualities than with chance seedlings. The young trees will be carefully studied, and those found sufficiently hardy and vigorous will be grafted on older stocks to bring them into bearing at an early date.

IS THE EFFECT SEEN THE FIRST YEAR?

Frequent observations were made upon the crossed specimens while growing, and again after they were ripe, to determine whether any effect of the cross could be observed in the fruit the first season. A full report upon this subject will be found in Agricultural Science for December, and need not be
given at length here. It may be said that the examinations failed to show any differences which could be attributed to the influence of the cross. The crossed specimens were frequently somewhat smaller than the others, rather lighter in color, and freer from scab and other fungi, these differences being undoubtedly due to the fact that they were kept covered during the greater part of their growth. In several instances different varieties were crossed upon the same tree, but the resulting fruits did not differ materially from each other, or from the remainder of the crop upon the tree. In one case ten varieties of apples were crossed upon a tree of the Soulard Crab in order if possible to obtain kinds having the size and qualities of the various varieties with the hardiness and keeping property of the crab. From eight to thirty-six apples were obtained of each cross. These were all gathered upon the same day and placed side by side, and with them was placed a quantity of uncrossed apples from the same tree. The specimens were examined by a number of good judges of fruit, but no essential differences were discovered between the different lots, nor was any one able to select from among the others the lot which had not been crossed.

To make a further study of this subject, crosses were made between different varieties of squashes and melons, which are often supposed to be especially liable to mix in the fruit the first year if grown side by side. To be brief, it may be simply said that in no case was such a result obtained. The large dark green Hubbard squash, for example, crossed upon the small nearly white Perfect Gem, gave squashes which differed in no respect from the others upon the same vines. An examination was made of twelve varieties of squashes and melons growing near together upon the station grounds. It is believed that every fruit upon each variety was seen, but no case of mixture with a neighboring variety was found. Specimens were seen which were not true to the variety, but in such cases all the fruits on the plant were alike, showing the cause to have been in the seed, and not in an adjoining variety this season.

From this and other evidence, I regard it as perfectly safe, so far as the immediate crop is concerned, to plant different kinds of squashes, melons, and other vegetables or fruits near together as it is desired. Seeds from kinds so grown however will in many cases be unreliable to grow the next year.