BIANNUAL CROPPING OF WHEAT HYBRIDS

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The production of new varieties of plants by hybridization is at best a long time process. In creating new varieties of cereals by hybridization it is necessary to grow the hybrids from six to eight generations before it is advisable to select material which breeds true to type. Ordinarily, therefore, it takes at least an equal number of years before the results sought in a cross can be realized.

In the case of hybrids with the spring habit of growth, plant breeders occasionally shorten the required time by growing one or more of the earlier generations in the greenhouse during the winter months. This practice accomplishes the desired end, but it is difficult to control greenhouse temperatures properly for the production of a normal crop, and the expense of growing the hybrid material is greatly increased. The problem is to reduce the time element and to do it economically.

On account of the range of climatic conditions existing in the state, California offers opportunities for economically reducing the time requirement. By a choice of suitable locations two generations of both wheat and barley and possibly of oats can be grown in one year. After the regular crop of hybrid wheat material was harvested at University Farm, Davis, California, in June, 1922, a preliminary attempt was made to grow a second crop in that same year. Seed was sown in July but difficulty was encountered in securing germination and the experiment was not successful. The lack of success was attributed in part to excessively high temperatures prevailing at the time. It was then decided to repeat the experiment in the San Francisco Bay district where summer temperatures normally are moderate and rarely excessive.

Through the courtesy of W. F. Wight, Pomologist of the Office of Horticultural Investigations, Bureau of Plant Industry, U. S. Department of Agriculture, seed of two wheat hybrids was sown in his garden three miles from Palo Alto, and about 30 miles south of San Francisco, on August 6, 1923. Prompt germination was secured. The land was irrigated before sowing and twice during the growing

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