second in May. Thus, the latest transplanting into the field would be in June, allowing an ample growing period even for the second lot of cuttings.

The method has facilitated the utilization of cuttings for two other purposes. Since crossing in the field is very difficult, cuttings were used in making backcrosses in the greenhouse. A few cuttings were taken from desired F1 hybrids growing in the field and placed in plant bands in the greenhouse. After rooting they were transferred into 12-inch pots and then successfully used as parents. Cuttings were also used to maintain certain plants. It should be possible to continue the plants indefinitely. This can be valuable in critical studies where it is desirable to utilize the same plants for various crosses in successive generations.

CROSSED AND SELFED SEEDS WITHIN ALFALFA PODS PRODUCED BY ENDEMIC POLLINATORS

N. R. Bradner and R. V. Frakes

This paper reports the occurrence of both crossed and selfed progeny within the same alfalfa (Medicago sativa, L.) pod following visitation by endemic pollinators in a semi-arid region of northeastern Oregon. Prior to this investigation, it was assumed that most of the pods which had three or more seeds were the result of cross-pollination while those pods with two or less seeds were the result of self-pollination.

Forty pods for each of the 4 pod descriptions listed in Table 1 were collected at random from 52 vegetatively established propagules of a recessive white flowered genotype of alfalfa grown uncaged in close proximity to a colored flower pollen source. Seeds from each pod were planted in plant bands and maintained in the greenhouse until flowering occurred. The data reported are from pods where all seeds within pods produced plants that flowered. The average self-fertility of this white flowered clone was 49% based on the number of pods set when 553 florets were tripped.

Ninety-five percent of the pods with 1 seed produced selfed progeny. Eighty-eight percent of the progeny from 2-seeded pods were selfed. There was a considerable decrease in the percent of selfed progeny from the pods with 3 seeds (36%) and a further decrease when the pods had 4 or more seeds (25%). Within each pod description, there were some pods that produced all selfed progeny and some that produced all crossed progeny. One-half of the pods with 4 or more seeds produced some selfed progeny. One pod with 7 seeds produced 3 selfed progeny.

These data indicate that both selfed and crossed seed may be present in the same pod when endemic pollinators are used for crossing purposes. A study is underway to determine if similar results occur under cage conditions using various bee species.

RELATION OF YIELD AND NUMBER OF DAYS FROM PLANTING TO FLOWERING IN EARLY MATURITY MAIZE HYBRIDS OF EQUIVALENT GRAIN MOISTURE AT HARVEST

Sherret S. Chase

Comparisons of the yielding ability of early maturing maize (Zea mays L.) hybrids with equivalent grain moisture content at harvest suggest that, in general, higher yields may be expected from those hybrids flowering later in the season and then drying rapidly after the stage of physiological maturity of grain than from those flowering earlier and having a slower rate of drying. In the study reported below it was assumed that the time from flowering to physiological maturity of grain was roughly equivalent for all hybrids or, at least, that the time required for this growth period was not related to the length of time required for drying of physiologically mature grain.

For an initial test a comparison was made of 42 3-way experimental hybrids in a class having 22.0 to 22.9% grain moisture at harvest. Yields of these hybrids were plotted in a scattergram against number of days from planting to 50% silk. The scattergram was subsequently partitioned into quadrants, dividing the yields into equal high and low halves and the number of days from planting to 50% silk into "early" and "late" halves. This arrangement of the data showed that there were 10 more hybrids in the low yield, early flowering quadrant plus the high yield, late flowering quadrant than in the sum of the other two quadrants. Chi-square test provided a value of $x^2 = 2.38$, indicating that the distribution obtained was not likely to occur strictly by chance.

In a subsequent test, a larger mass of performance data was utilized to examine the same relation. These data were first processed statistically through regression analysis to show the relation of grain moisture at harvest to yield on both a linear and curvilinear basis. The yield of each experimental group studied were then adjusted, linearly or curvilinearly as most appropriate, so that comparisons could be made on a common moisture basis. In tests where such adjustments had been made, for which flowering data were also available, a secondary regression analysis of the adjusted yield values on number of days from planting to 50% silk was carried out.

The linear regression coefficients and F values for four 49-entry experiments sensitive enough to yield useful information were as follows:

<table>
<thead>
<tr>
<th>Experiment</th>
<th>Regr. coeff</th>
<th>F values</th>
</tr>
</thead>
<tbody>
<tr>
<td>62-7-82</td>
<td>1.125825</td>
<td>4.76</td>
</tr>
<tr>
<td>62-7-162</td>
<td>1.445236</td>
<td>13.35</td>
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<tr>
<td>62-7-171</td>
<td>0.637774</td>
<td>3.37</td>
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<tr>
<td>62-7-252</td>
<td>1.345501</td>
<td>8.07</td>
</tr>
</tbody>
</table>

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2 Received for publication August 16, 1963.
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5 Alfalfa genotype W-4 furnished by R. L. Davis, Purdue University.
6 Sherret S. Chase.