

2. Lax central spike, primarily distichous arrangement of spikelets  
Durango 1,7,9  
Florida 4+  
Nobogame 4A  
Bolivia  
Argentina  
Paraguay
3. Absence of central spike in some individuals of the  $F_1$  population  
Nicaragua

S. M. Sehgal

7. Immunological studies of corn kernel proteins.

The double diffusion agar method (Ouchterlony) has been used to study precipitin reactions of salt-soluble proteins extracted from germs of mature corn kernels. Several precipitin lines, each presumably representing a different protein or group of proteins, have been identified. Two of these lines are most easily produced and have been studied intensively. They are labeled "A" and "B". Most inbred lines contain antigen necessary to produce both lines. However, a few inbred lines (all tracing back to one source) lack the antigen necessary to produce precipitin line "A". One other inbred lacks the antigen necessary to produce precipitin line "B". Single kernel analyses of  $F_2$  and  $BC_1$  populations, and of  $P_1$ ,  $P_2$  and reciprocal  $F_1$  crosses show that each antigen is inherited as a dominant, single gene character. The fit to a two-factor ratio was good when a small  $F_2$  population segregating for both "A" and "B" was tested, indicating that they are probably not linked. Variations in intensity of reaction indicate that modifiers probably affect the amount of each antigen produced in a kernel. It is also possible that homozygous recessive individuals do not really lack the antigen, but merely have it in concentrations so low that the test, as employed, does not detect it. Further studies will, it is hoped, answer some of these questions.

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1. Heritability of radiation induced alterations of paramutation.

Last year experiments were described in which the radiosensitivity of  $\underline{R}^r$  and the  $\underline{R}^{st}$ ,  $\underline{R}^{mb}$  components of paramutation was investigated (MNL 37:133-134). When  $\underline{R}^r$  is irradiated prior to crossing, about 50% of the time the paramutation expression was altered. The classification can be summarized into two categories: no paramutation and segregating for paramutation. When the  $\underline{R}^{st}$  and  $\underline{R}^r$  components were irradiated, about 25% of the time paramutation expression was altered. An additional category of increased paramutation alteration after  $\underline{R}^{mb}$  irradiation occurred along with the no paramutation and segregating for paramutation classes.

A second testcross of the  $R^r:mb$   $r^g$  or  $R^r:st$   $r^g$  genotypes to  $r^g$   $r^g$  was made of representatives in each of the groups and each of the categories within groups. Seeds were selected to represent the variability of intensity within ears and planted in sequence of intensity within rows. Plants were numbered so the harvested ears could be arranged in the same sequence as the intensity of seeds. Two samples were taken for the segregating for paramutation category: one from seeds similar to normal paramutation; one from seeds similar to no paramutation.

The sequence of increasing intensity between ears within a row does not follow too closely the order in which they were planted. In general the variability within a category is not transmitted. The no paramutation classes (dark purple) gave rise to rows in which all ears were segregating 50% dark purple and indicated there was no paramutagenic change in  $R^r$ . The segregating for paramutation categories gave rise to two distinct groups: one very similar to the "normal" paramutation class and one similar to "no" paramutation. There was no overlap in these classes although they come from the same testcross ear. There is a segregation of the effect within the ears. The "increased" paramutation category was reflected by groups of ears distinctly lighter than "normal" paramutation in the second testcross. They were as light as and probably lighter than the degree of alteration induced by  $R^{st}$ . The radiation induced alterations in paramutation expression have all been carried a second generation and they maintained their identity.

Duane B. Linden

## 2. On growing Corn Belt inbreds in Puerto Rico.

Experimental plots of corn have been planted on thirty-three different dates in the past two years. The majority of the material consists of genetic stocks used in the paramutation program and are in W22 background. They were originally obtained from Brink and had been backcrossed to W22 by him for several generations. The remaining materials are South American races and crosses of the races with W22 stocks.

As a general rule (with W22 material) pollinations are made 60 days after planting and ears harvested 30 days after pollination throughout the entire year. Plantings have been made in every month (except March by chance) and there may be a slight shortening of the cycle in plantings May-August but the difference is less than one week. Some of the South American races have longer growth periods with a few taking 110 days from planting to harvest. Some hybrids between South American races and W22 stocks were harvested 79 days after planting.

There have been two instances of crop failure. The very first planting was not harvested as insects got the material first. One planting in summer 1963 suffered from winds of the hurricane. There are several perils associated with genetic maize culture in Puerto Rico but each can be either controlled or tolerated. Insects are the major problem, but by routinely dusting with DDT we no longer have losses from them.