

3. New sources of cytoplasmic pollen sterility.

Two new sources of cytoplasmic pollen sterility have been isolated from the race Perla, being identified in breeding plots, and checked by testcrosses, with known restorer and non-restorer lines. These 2 sources have been named EM-3000 and EM-320, and their behavior is as follows:

- EM-3000: (a) completely restored by FF(MS) 14-2
 (b) not restored by either Cuba M11-20##-9 or Cuba M11-3##
 (c) restored 3:1 by HLM-24## -3 and by MSx (T-115xKy-122)
- EM-320: (a) completely restored by FF(MS) 14-7-2 and PD(MS) 9 - 32
 (b) not restored by PD(MS) 9-48 derived lines.
 (c) restored 3:1 by FF(MS) 14-2-## - derived lines.

Both sources behave with these lines identically as does the Texas source of cytoplasmic pollen sterility.

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4. Inheritance of Cap.

The simple dominant gene hypothesis has been confirmed to operate in the character starchy cap vs. no cap in crosses of Cuban dent lines x Peruvian Perla flint lines.

In the cross PC-79-## x Cuba 23-25## (no cap vs cap) a 1:1 phenotypic ratio was obtained in the F₂, while in the F₂ of three families of the cross PD(MS)9-48##x CC-94## (cap vs. no cap) a 33:4 phenotypic ratio that approaches a hypothetical 7:1 was obtained. Both ratios point to a single gene segregation with two modes of xenia operation: completely dominant xenia (7:1) and incomplete dominant xenia (1:1) in the endosperm.

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5. Study of chromosome morphology of races of maize in Peru.

Advances have been made in the study of the number, position, size and shape of chromosome knobs of the races of maize in Peru, trying to determine patterns for differentiating races (see first report in Maize News Letter 32:25).

Differentiating features have been obtained, and are being studied further for ample confirmation, in the frequency of appearance of knobs in certain chromosome arms, the shape and size of such knobs, the frequency of presence of the abnormal -10 chromosome, and the frequency of high number of B-chromosomes. The highest number of B's per plant, found