

TABLE 4.1. Relative yields, days to flowering (50% of tassels showing), and lodging percentages of selected maize varieties and hybrids studied in the area of the Puebla Project.

Material	Number of experiments	Number of Repts.	Relative Yield *	Days to Flowering	Lodging %
H-28	84	228	100.0	95	4
Colorado Salvatori	26	88	97.5	91	10
Rojo Salvatori	45	96	85.4	87	7
Pinto Salvatori	84	228	103.2	97	13
H-129	82	224	102.6	106	7
H-129 (before Apr. 21)	30	78	106.9	—	—
H-129 (after Apr. 20)	52	146	100.0	—	—
H-127	27	92	93.1	101	4
H-125	23	84	102.2	102	4
H-131	19	56	119.5	106	7
CDC 358	14	40	112.7	102	12
CDC 275	14	40	108.7	100	13
CDC 246	14	40	110.6	95	9
CDC 205	14	40	101.7	101	17
CDC 113	14	40	114.1	97	9
Comp A x Comp B	28	86	102.4	100	13
H-28 x Pue gpo 44-309	15	44	105.0	97	5
H-28 x Colorado - 292	15	44	102.2	89	6
H-28 x Colorado - 257	15	44	107.2	92	6
H-28 x Colorado - 276	15	44	102.2	91	3
H-28 x Pue gpo 44 - 333	15	44	105.1	90	3
Comp 1T SMP	12	36	103.2	100	13
Comp 1500	35	92	97.2	100	15
Local variety	24	64	90.3	92	12

\* Average yield expressed as a percentage of H-28 (average yield of H-28 at 84 sites = 5.47 ton/ha of grain with 14% moisture).

Mass selection with the opaque-2 composite was realized at one location in each of the years from 1968 to 1971. Mass selection with the late composite was carried out at 22 sites during the years 1968-1972, an average of 4.4 sites/year. CIMMYT decided in 1972 to discontinue the mass selection work, as well as other breeding activities. This decision was based on the assumption that maize breeding activities could not be conducted successfully on farmers' fields.

The late composite was included in varietal trials in 1970, 1971, and 1972; average yields of the late composite in 1972 before mass selection and after the fourth cycle were 6.14 and 6.38 tons/ha, respectively. Apparently, four cycles of selection produced little or no improvement in the late composite. Also, as seen in Table 4.1, the late composite, Comp 1T SMP, yields the same as Pinto Salvatori, is slightly later, and has the same tendency to lodge.

In 1972, the opaque-2 composite, after four cycles of selection, was compared with seven INIA opaques, three

CIMMYT opaques, and three normal hybrids. The opaque-2 composite of the Project produced 4 percent more opaque grain than the best INIA material and 16 percent more than the best CIMMYT material. However, it still yielded well below the hybrids with normal grain (85 percent of H-129 and 70 percent of H-131).

## Evaluation of Materials

A total of 163 varietal trials was done in the Project area during the period 1967-1972. These trials included farmers' varieties from the Puebla area and similar regions; improved varieties and hybrids; and experimental materials from CIMMYT, INIA, the Graduate College at Chapingo, and the breeding program of the Puebla Project. Separate trials were conducted for late materials, early materials, and opaques. These trials were conducted at population and fertilization levels similar to the unlimited capital recommendations of the Project.

The relative yields of 21 of the most outstanding materials are shown in Table 4.1, along with days to flowering and lodging percentages. Pinto Salvatori is an outstanding native variety and should be used more widely in the area. In yielding ability it compares favorably with H-129 and H-125 and is superior to H-28 and H-127. A recently released INIA hybrid, H-131, is the highest-yielding material studied, outyielding Pinto Salvatori and H-129 by about 16 percent. It should be recommended for March and April plantings in the Project area.

The varietal evaluations summarized in Table 4.1 include a small sample of local varieties (only the eight collected in the spring of 1967). A second collection of native varieties was made in the winter of 1970-1971, including 216 from Puebla, 20 from Tlaxcala, 9 from Hidalgo, and 4 from Veracruz. These were divided into early and late materials and included in evaluation trials in 1971 and 1972.

In Table 4.2, the average yields and days to flowering of 20 of the best late native varieties are compared with Pinto Salvatori, H-129, and H-131. Pinto Salvatori and H-131 outyielded all the native varieties. On the other hand, the native varieties outyielded H-129. These findings indicate that many of the native varieties in Puebla compare favorably in yielding ability to the best improved materials presently available. (It should be remembered that when a local variety and a hybrid yield almost equally and are similar in other respects, the local variety is preferred because of the expense and other problems associated with the production and distribution of hybrid seed.)

In Table 4.3, the average yields and days to flowering of 18 of the best early native varieties are compared with the hybrids H-35E, H-30, and H-28. The materials are arranged in order of earliness to facilitate the comparison of varieties with similar growing seasons. Both H-30 and the experimental hybrid, H-35E, outyielded all native varieties that had a similar number of days to flowering. H-30 flowered five days earlier than H-28 and should be useful for May and early June plantings. H-35E flowered a week before H-30 and might be suitable for mid-June plantings.