Description of cultivar

V562: new variety of corn from the V-526

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Abstract

Few corn producers can purchase certified seed of hybrids, so the other option for low-income farmers is to acquire certified seed of free-pollinated varieties. In Chiapas, the variety V-526 was released in 1983 and was very appreciated by the producers reaching up to 50 000 ha in its first year with certified seed. In 2000, a scheme of combined selection of families of complete siblings was started on V-526 in order to renew it, increasing its yield potential, but without changing its phenotypic characteristics of plant and cob. After three cycles of selection the experimental varieties formed were evaluated and one of them was detected as outstanding, which was called V562. This new variety can produce up to 1.4 t more than the V-526, with a potential yield of 7.8 t ha^{-1}, under good weather conditions. Its grain characteristics are excellent for making white tortillas and good quality.

Keywords: *Zea mays* L., combined selection, new variety, V562.

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Improved varieties of free pollination have some advantages compared to hybrids, such as the lower cost of their certified seed and a simpler and less expensive multiplication, producers can seed advanced generations for several years without their production decreasing so much like the hybrids, as long as the varieties do not cross with other neighbors and the selection of cobs takes place in the center of their plots, the phenotypic variability of their plants can cushion the adverse effects of climate change.

In 1983, the Valley of Yaqui Experimental Field (today Norman Bourlog) of the National Institute of Forestry, Agriculture and Livestock Research (INIFAP, for its acronym in Spanish) released a variety of corn called V-526, from the 43 population The Posta of the International Center for the Improvement of Corn and Wheat (CIMMYT, for its acronym in Spanish), to be cultivated in the warm regions from Chiapas to Baja California and from Yucatan to Tamaulipas, with altitudes of 0 to 1 000 m (Cota *et al*., 1983). This variety was cultivated by producers in several states of the country, and Chiapas produced certified seed by several companies, including the former National Seed Producer, Producers of San Pedro Buenavista, Proseso, among others.

According to the Federal Law of Plant Varieties, the exclusivity of a new variety that grants the breeder's title is for 15 years and then it becomes public domain, so taking into account the good acceptance that the V-526 had Among corn producers, as well as their age, the Maize Genetic Improvement Program of the Experimental Center of Chiapas Center of INIFAP, carried out a method of genetic improvement to renew this variety and increase its yield potential, without changing its main characteristics. plant, cob and grain. The method began in 2001, starting from a batch of seed production, where 155 pairs of matching plants were selected in their male and female flowering, both plants were crossed directly and reciprocally to form families of complete siblings, for have a better parental control in the selection of the superior families of the whole evaluated group (Hallauer and Miranda, 1981), the obtained seed was used to evaluate the 155 families, select the best ones for their plant phenotype, flowering period, type of cob, health and grain weight, among other characteristics.

The selected families were genetically improved for three years by the modified cob method for complete siblings (Lonnquist, 1964; Compton and Comstock, 1976; Marquez, 1985), the 155 complete sibling families, plus the original population (V-526). were evaluated during the agricultural cycle of rainfed and the genetic recombinations of the superior families were made in the agricultural cycle of irrigation, during the years 2003 to 2005. The test experiments were established in plots of cooperating producers of the municipalities of Ocozocoautla, Villaflores, Venustiano Carranza and Jiquipilas, in the Central State region and in the municipalities of Frontera Hidalgo and Tuxtla Chico in the Soconusco region, Chiapas.

With the data obtained from the agronomic evaluation, the best 10 families of each locality and of the whole region, of each year were recombined genetically making crosses in chain, to form new varieties. At the end of the whole selection process, the 14 experimental varieties formed during the three selection cycles, plus the original variety V-526, were evaluated in four locations during 2006. Significant differences ($p< 0.05$) were found in the yield of grain of the

varieties, standing out 9 of the 15 evaluated, the best of them was 'V-526 Villaflores C3' with an average yield of 6.363 t ha^{-1} and 0.713 t ha^{-1} more grain (12.6%) than the V -526 original (Coutiño *et al*., 2008). In march 2015, it was registered in the National Catalog of Plant Varieties of the National Seed Inspection and Certification Service (SNICS, for its acronym in Spanish) of the SAGARPA, under the name of V562 and with the definitive registration number MAZ-1612-050315 (Figure 1).

Figure 1. Appcobance of plant and cob of the variety V562.

The plants of the V562 are very similar to those of the V-526, grow 2.6 m and the cob is inserted at a height of 1 m, flow between 60 to 65 days in rainy season and between 70 to 75 days in sowing of irrigation. Its average yield in temporary is 6.4 t ha^{-1}, but it can yield 7.8 in good weather and in irrigation it can produce 10 to 16% more. The 395 kg of grain are produced per ton of stubble and cob. The cobs are conical cylindrical, 20 cm long and 5 cm in diameter, have 14 to 16 rows of grain semidetached and each row can have 40 to 45 grains. According to the tests carried out in the quality laboratory of corn, the grain of the V562 has 11.27% protein, a hectoliter weight of 78.92 kg hL^{-1}, whose grains make an excellent quality tortilla, produces 1.64 kg of dough and 1.44 kg of tortilla per kg of nixtamalized grain. The tortillas are soft and have ideal characteristics for the nixtamalized flour industry.

Conclusions

Due to its late cycle, this variety can be planted in rainy and irrigated crops, in the municipalities of the Central, Frailesca, Costa and Soconusco regions of the state of Chiapas and other similar regions of subhumid warm climate of the country, at altitudes of 0 at 1 100 m.

Currently, the Experimental Center of Chiapas has registered seed available for seed companies that are interested in the production and marketing of their certified seed. For the production of seed of this category, it is suggested to plant at population densities of 50 000 plants ha^{-1}, following the recommendations of the SNICS for isolation by space or time and making the appropriate demixes (Coutiño, 1993).

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