

Improvements in yield and quality components of Argentinian okra-leaf cotton germplasm

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ABSTRACT

After the release of cultivar "OROBLANCO INTA", INTA's cotton breeding program continued by crossing okra-leaf germplasm with better yielding and fiber quality lines, aiming at improving these traits and keeping the advantageous okra-leaf shape trait. The breeder's line "SP 34633 HO" has progressed through the selection program and is outstanding enough and superseding the control cultivars "GUAZUNCHO 2 INTA" and "CHACO 520 INTA" in many years trials for those traits. It was derived from the cross of two lines, one okra-leaf shaped, "SP 97806 HO", and the other normal leaf shape with outstanding fiber quality properties, "SP 8334-5". In the averages taken over 34 trials through the crop seasons 1996/97 to 2000/2001 "SP 34633 HO" yielded 1113 kg/ha of lint compared to 1082 of "GUAZUNCHO 2 INTA" and 999 of "CHACO 520 INTA". It also superseded "GUAZUNCHO 2 INTA" in fiber resistance with a performance of 30.5 gram/tex compared to 28.7 of the former control cultivar. It even had a higher lint percentage of 40.8 compared to 40.0 of "GUAZUNCHO 2". Therefore, given these general good features over the control cultivars, and given its okra-leaf shape, the breeder's line "SP 34633 HO" will replace "OROBLANCO INTA" and it will be registered as a new variety.

Introduction

Okra-leaf germplasm has many advantages, among which is hindering boll weevil population outburst (Jones, 1986), a pest already present in Argentina though not yet spread in its main cotton growing region. After the release of cultivar "OROBLANCO INTA", first okra-leaf cultivar grown in Argentina (Poisson 2002), INTA's cotton breeding program continued by crossing okra-leaf germplasm with better yielding and fiber quality lines, aiming at improving these traits and keeping the advantageous okra-leaf shape trait.

In addition, Royo (1998) included leaf morphology as a descriptor for the cotton germplasm collection, given the interest of breeders in okra-leaf shaped materials and the ease of identification of the trait for description purposes.

Experimental procedure

The breeder's line "SP 34633 HO" has progressed through the selection and evaluation program

of a classical pedigree method. It was derived from the cross of two lines, one okra-leaf shaped, "SP 97806 HO", and the other normal leaf shaped with outstanding fiber quality properties, "SP 8334-5".

Results and Discussion

In the averages taken over 23 localities through the crop seasons 1996/97 to 2001/2002 "SP 34633 HO" yielded 1180 kg/ha of lint compared to 1111 of "GUAZUNCHO 2 INTA" and 1050 of "CHACO 520 INTA". It also superseded "GUAZUNCHO 2 INTA" in fiber strength with a performance of 30.3 gram/tex compared to 28.5 of the former control cultivar. It even had a higher lint percentage of 41.0 compared to 40.0 of "GUAZUNCHO 2". Averages comparing "SP 34633 HO" against the control varieties are shown in Tables 1 and 2 incorporates okra-leaf cultivar OROBLANCO to the comparison after crop season 98/99. In both analysis "SP 34633 HO" yielded more lint/ha than the controls, and it had the highest boll weight, reaching 6 g/boll. As "OROBLANCO INTA", it is immune to "bacterial blight" (*Xanthomonas campestris* pv. *malvacearum*), resistant to "blue disease", tolerant to "marchitamiento rojizo" (red wilt) and susceptible to "Fusarium wilt". A schematic representation of the pedigree is shown in Figure 1.

Given these general good features over the control cultivars, and given its okra-leaf shape, the breeder's line "SP 34633 HO" will replace "OROBLANCO INTA" and it will be sent for registration as a new variety in Argentina.

References

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Table 1. Variety characteristics averages over 23 localities through cropping seasons from 96/97 to 2001/2002.

Variety	1 st harvest Lint (kg/ha)	Relative earliness (%)	Total lint (kg/ha)	Boll weight (gram)	Lint (%)	Seed index	Length 2.5% span (mm)	Uniformity (%)	Strength T (1/8") (g/tex)	Elongation E (1/8") (%)	Micronaire (Index)
SP 34633	801	68	1180	5.9	41.0	10.0	29.2	85	30.3	6.4	4.2
Guazuncho 2 NTA	709	64	1111	5.5	40.0	9.9	29.2	84	28.5	6.1	4.4
Chaco 520 INTA	762	73	1050	5.7	38.4	10.4	30.6	85	31.4	6.2	4.0

Table 2. Variety characteristics averages over 10 localities through cropping seasons from 98/99 to 2001/2002.

Variety	Total Lint (kg/ha)	Boll weight (gram)	Lint (%)	Seed index	Length 2.5% span (mm)	Uniformity (%)	Strength T (1/8") (g/tex)	Elongation E (1/8") (%)	Micronaire (Index)
SP 34633	1255	6.0	41.5	10.3	29.0	84	30.3	6.6	4.1
Guazuncho 2 INTA	1237	5.6	40.2	10.4	29.0	83	28.3	6.3	4.3
Chaco 520 INTA	1164	5.8	38.9	10.8	30.3	85	31.0	6.4	3.9
Oroblanco INTA	1060	5.2	40.3	9.6	28.7	84	28.8	6.7	4.2

Figure 1.
SP 34633's
pedigree.

