

ADOPTION OF 'PINTO SALTILLO' BEAN CULTIVAR IN DURANGO, MÉXICO

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INTRODUCTION

Dry beans (*Phaseolus vulgaris* L.) are grown under rainfed conditions in 272 000 hectares in Durango State—northern México—where specialization was observed for pinto market class production. The increment in total area planted with pinto class was caused by the higher yields obtained with Pinto Villa and preferred prices observed for Pinto Saltillo and Pinto Mestizo bred cultivars. However, a reduction in grain prices was observed for Pinto Villa cultivar during high production years, due to seed coat darkening. Therefore, Pinto Saltillo was developed using high yield and seed coat darkening tolerance as selection criteria. In 2006, a massive seed distribution program was implemented by the state government promoting cultivar conversion and grain quality improvement for marketing purposes (Pajarito and Rosales, 2007). A significant increment was observed for Pinto Saltillo planted area due to market acceptance and preferred prices. The aim of the study was to estimate the adoption level under rainfed conditions for Pinto Saltillo bred cultivar in Durango, México.

MATERIALS AND METHODS

A survey was conducted for data collection using a questionnaire completed in a face-to-face interview. Sample size was determined with the equation: $n=Z^2pq/E^2$ (Rojas, 2005), where: n= sample size; Z= confidence interval (1.96 for 95 %); pq=variability (p=q=0.5); and E=precision level (0.08). Estimated sample size was $n=150$ [$n=(1.96)^2 (0.5)(0.5)/(0.08)^2 =150$]. A random sample was drawn from the government register of farmers planting beans in 2008 (SAGARPA, 2008) and the field work was carried out from October to November 2008. The most important counties producing dry beans in Durango were included for the study, such as: Guadalupe Victoria, Cuencamé, Pánuco de Coronado, and Poanas. In Guadalupe Victoria selected localities were Guadalupe Victoria, Ignacio Allende, Antonio Amaro, Calixto Contreras, Felipe Carrillo Puerto, and Ignacio Ramírez. In Cuencamé: Cuauhtémoc, Emiliano Zapata, and Ramón Corona. In Pánuco de Coronado: Francisco I. Madero and Pánuco de Coronado. In Poanas: Cieneguilla, La Joya, Plutarco Elías Calles, Villa Unión, and Villita de San Aténogenes.

RESULTS AND DISCUSSION

Pinto Saltillo was planted by 92 % of the farmers along with other dry bean bred cultivars such as: Pinto Villa (20 %) and other cultivars (4 %) (Table 1). Farmers also planted landraces such as Negro San Luis or Negro Bola (10 %), Canario (small yellow seeds) (8 %), Pinto Nacional (5 %), and Flor de Mayo (3 %). These bred cultivars and landraces are the most well known by farmers and they also have been planted in previous years, including Pinto Mestizo. A significant reduction was observed for the area planted with Pinto Villa cultivar, in spite of its adaptation and drought tolerance, mainly due to rapid seed coat darkening. Currently, Pinto Saltillo represents a productive and commercial success in Durango and Chihuahua, where menonites described it as “The Champion” based on its high seed yield and market acceptance. However, most of the farmers recommended to develop cultivars with larger seed size, early maturity and grain similar traits to those observed in Pinto Saltillo (seed coat darkening tolerance and short cooking time), in order to improve productivity and market seed quality.

The main reason for adopting Pinto Saltillo, for 46 % of the farmers was a better price, for 28 % it was a high seed yield, and for 26 % it was market preference. The source of the seed was the previous harvest for 83 % of the farmers and 17 % got it from the government seed distribution program. Only 3 % of the farmers planted certified seed, 4 % received direct technical assistance, 5% received a short-term loan, and 9 % belonged to an organization.

The yields expected by farmers with Pinto Saltillo on commercial plots were: 270 kg ha⁻¹ in bad years (less than 350 mm of rain from July-October, with bad distribution), 606 kg ha⁻¹ in typical years (350-450 mm of rain, with irregular distribution), and 1 086 kg ha⁻¹ in good years (350-450 mm of rain, with good distribution).

Farmers stated that their bean production was distributed according to the following percentages: 86 % for sale in the market (mainly to intermediaries), 8 % for self-consumption, and 6 % is stored as seed for the next planting season. On average, the wholesale prices by market class, were: Pinto Saltillo MXN \$8.00 per kilo, Pinto Villa MXN \$5.00 per kilo, Negro MXN \$5.50 per kilo, Canario MXN \$6.00 per kilo, Flor de Mayo MXN \$8.00 per kilo, and Querétaro (cream) MXN \$5.00 per kilo.

Increasing average for farmer age (55.7 years) has been observed in dry bean production areas (Table 2), due to young people migration to USA and Mexican big cities in search of employment and better standard of living (Talamantes, 2006). Remittances of migrants from the USA are frequently used to cover the production costs for dry bean in México. The schooling for the individuals in the sample was 6.5 years on average, showing a low education level. The average plot area was 44.2 ha from which 82 % was planted with dry beans. The most frequent kind of tenure among farmers was the 'ejido' or common land (87 %), followed by private property (26 %), shared land (19 %) and rented land (2 %).

CONCLUSIONS

Pinto Saltillo has been successfully adopted among farmers in Durango and currently represents a productive and marketable option. Pinto Saltillo adoption has been influenced mainly by the government seed distribution program, higher seed yields, better grain prices and slow seed coat darkening.

Table 1. Cultivars planted under rainfed conditions in Durango, México, 2008. (percentage of farmers)*

| Improved cultivars (%) | | | Landraces (%) | | | |
|------------------------|-------------|-------|---------------|---------|----------------|--------------|
| Pinto Saltillo | Pinto Villa | Other | Negro | Canario | Pinto Nacional | Flor de Mayo |
| 92 | 20 | 4 | 10 | 8 | 5 | 3 |

*Sum can be more than 100 % given that some farmers planted more than one cultivar.

Table 2. Characteristics of farmers and land tenure observed in Durango, México, 2008.

| Age (years) | Schooling (years) | Agricultural area (ha) | Bean area (ha) | Land tenure (% of farmers)* | | | |
|-------------|-------------------|------------------------|----------------|-----------------------------|------------------|--------|--------|
| | | | | Ejido | Private property | Shared | Rented |
| 55.7 | 6.5 | 44.2 | 36.5 | 87 | 26 | 19 | 2 |

*Sum can be more than 100 %, given that some farmers are under more than one kind of tenure.

LITERATURE CITED

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