Crop Breeding and Applied Biotechnology 8: 245-247, 2008
Brazilian Society of Plant Breeding. Printed in Brazil

BRS 217 Flora: Early-maturing soybean cultivar

Plínio Itamar de Mello de Souza[1], Claudete Teixeira Moreira[1], Austeclinio Lopes de Farias Neto[1*]; Sérgio Abud da Silva[1], Nelson dos Santos e Silva[1], Maurício da Silva Assunção[1], Neylson Eustáquio Arantes[2], Leones Alves de Almeida[2]; Romeu Afonso de Souza Kiihl[2], João Flávio Veloso da Silva[2], José Tadashi Yorinori[2], and Waldir Pereira Dias[2]

Received 18 February 2008

Accepted 02 July 2008

ABSTRACT – *The soybean (*Glycine max *L. Merr.) cultivar BRS 217 Flora was developed by Embrapa and released for production in the states of Goiás, Minas Gerais, Bahia, Mato Grosso and the Distrito Federal, Brazil. It is resistant to stem canker, frog-eye leaf spot, bacterial pustule, and partially resistant to powdery mildew.*

Key words: *Glycine max,* Cerrado, breeding

INTRODUCTION

The development of soybean (*Glycine max* L. Merr.) cultivars adapted to different environments across the Cerrado region is the main objective of the Embrapa Cerrados Soybean breeding program. The use of soybean types with different maturation periods is a recommended and usual practice in the Cerrado region to optimize sowing and harvest (Spehar 1994, Souza et al. 1993). Nowadays there is a high demand for early-maturing cultivars in the Cerrado region for cultivation in intercrop systems and as a control against Asian soybean rust (*Phakopsora pachyrhizi Syd. & P. Syd*). BRS 217 Flora was released by Embrapa Cerrados in cooperation with Embrapa Soybean as an early-maturing cultivar for soybean production in the states of Goiás, Minas Gerais, Bahia and Mato Grosso and in the Distrito Federal.

The cultivar is shattering and lodging-resistant, high-yielding, field-resistant to stem canker caused by *Diaporthe phaseolorum* f. sp. *meridionalis*, and resistant to frog-eye leaf spot caused by *Cercospora sojina*, to bacterial pustule caused by *Xantomonas axonopodis* pv. glycines and partially resistant to powdery mildew caused by *Erysiphe diffusa*.

PEDIGREE AND BREEDING METHODS

The soybean cultivar BRS 217 Flora was originated from an individual F_5 plant selection from the cross Centennial x [BR 80-68892 x Davis]. The cross was made at Embrapa Soybean, in Londrina, state of Paraná, Brazil. The F_2 and subsequent generations were advanced by a modified single seed descent (Toledo et al. 1994). The F_5 line designated BR 89-10744 was sent to Embrapa

[1] Embrapa Cerrados, C.P. 08223. 73310-970, Planaltina, DF, Brasil. E-mail: auster@cpac.embrapa.br
[2] Embrapa Soja, Londrina, PR, Brasil

Cerrados, in Planaltina- DF, where it was selected as a progeny in 1994. Flora was tested from 1995/1996 to 1997/1998 in preliminary trials in Planaltina, DF and in the state of Goiás, and selected for testing in the Cerrado final regional trials.

PERFORMANCE

The soybean cultivar Flora was tested in the final regional trials in the growing seasons 1998/1999 and 1999/2000 for disease resistance, agronomic performance and seed yield in 52 environments in the states of Goiás, Minas Gerais, Bahia, Mato Grosso and the Distrito Federal, Brazil.

In the regional tests in Goiás and the Distrito Federal (Table 1), Flora was tested in 18 environments. It yielded 3111 kg ha^{-1}, which was 1% more than FT 2000 (3079 kg ha^{-1}), and 8% more than EMGOPA 316 (2875 kg ha^{-1}). The cultivars matured 115 days after emergence, which was 1 day later than FT 2000 and 3 days later than EMGOPA 316.

In Minas Gerais (Table 2), Flora and FT 2000 reached maturity 119 days after emergence, while EMGOPA 316 and EMGOPA 302 matured 2 and 10 days earlier, respectively. The average seed yield was 3159 kg ha^{-1}, which was greater than the check cultivars.

The lowest seed yield average of all trials was observed in the state of Bahia (Table 3), due to a severe drought during the reproductive stages, which drastically affected the seed yield. Flora yielded on average 1710 kg ha^{-1} - more than the check cultivars. When compared to results of trials in other states, Flora was apparently not affected by the drought in terms of cycle and plant height, unlike the check cultivars, where Days to maturity and plant height were reduced.

In 10 environments in the state of Mato Grosso (Table 4), cultivar Flora yielded on average 3056 kg ha^{-1}, which exceeded EMGOPA 316 and EMGOPA 302 by 5% and 17%, respectively. Due to the high latitudes associated with high temperatures, maturing was reached earlier (107 days after emergence) than in the other states where it was tested, similarly to FT 2000, and 4 and 8 days later than EMGOPA 316 and EMGOPA 302, respectively.

In summary, the mean seed yield of soybean cultivar BRS 217 Flora was good and consistently greater than the seed yield of the check cultivars. It is classified as an early-maturing cultivar and has a suitable plant height for mechanical harvesting.

OTHER TRAITS

Flora soybean cultivar has a determinate growth habit, yellow seeds, purple flowers, black hila, brown pubescence and brown pod walls. It is shattering and lodging- resistant and a high-yielding cultivar. It is susceptible to the root-knot nematodes (*Meloidogyne incognita and Meloidogyne javanica*) and soybean cyst nematode (*Heterodora glycines* Ichinohe).

Table 1. Agronomic traits of soybean cultivar BRS 217 Flora and check cultivars in the growing seasons 1998/1999 and 1999/2000 in 18 environments in the state of Goiás and the Distrito Federal

Cultivar	Plant height (cm)	Days to maturity	Seed yield (kg ha^{-1})	Relative yield (%)
BRS 217 Flora	73	115	3111	108
FT 2000 (check)	87	114	3079	107
EMGOPA 316 (check)	88	112	2875	100

Table 2. Agronomic traits of soybean cultivar BRS 217 Flora and check cultivars in the growing seasons 1998/1999 and 1999/2000 in 12 environments in the state of Minas Gerais

Cultivar	Plant height (cm)	Days to maturity	Seed yield (kg ha^{-1})	Relative yield (%)
BRS 217 Flora	69	119	3159	121
FT 2000 (check)	81	119	2965	114
EMGOPA 316 (check)	80	117	2857	110
EMGOPA 302 (check)	78	109	2603	100

Table 3. Agronomic traits of soybean cultivar BRS 217 Flora and check cultivars in the growing seasons 1998/1999 and 1999/2000 in 12 environments in the state of Bahia

Cultivar	Plant height (cm)	Days to maturity	Seed yield (kg ha^{-1})	Relative yield (%)
BRS 217 Flora	71	116	1710	119
FT 2000 (check)	68	105	1640	114
EMGOPA 302 (check)	65	96	1573	109
EMGOPA 316 (check)	66	102	1438	100

Table 4. Agronomic traits of soybean cultivar BRS 217 Flora and check cultivars in the growing seasons 1998/1999 and 1999/2000 in 10 environments in the state of Mato Grosso

Cultivar	Plant height (cm)	Days to maturity	Seed yield (kg ha^{-1})	Relative yield (%)
BRS 217 Flora	67	107	3018	117
EMGOPA 316 (check)	79	103	2872	112
EMGOPA 302 (check)	73	99	2571	100

SEED MAINTENANCE AND DISTRIBUTION

Foundation seed is maintained by Embrapa Cerrados and the cultivar was registered by the Ministry of Agriculture (no. 08609). Small amounts of seeds are available for research purposes. Commercial seeds are distributed by Fundação Cerrados (Quadra 06 AR 04 salas 502/503 – Edifício Lions, CEP: 73.025-060, Sobradinho-DF, Brazil).

REFERENCES

Souza PIM, Spehar CA, Urben Filho G and Moreira CT (1993) BR 40 (Itiquira): uma soja mais precoce para os cerrados. **Pesquisa Agropecuária Brasileira 28**: 641-644.

Spehar CA (1994) Breeding soybeans for the low latitudes of Brazilian Cerrados (savannahs) **Pesquisa Agropecuária Brasileira 29**: 1167-1180.

Toledo JFF, Almeida LA, Kiihl RAS, Panizzi MCC, Kaster M, Miranda LC and Menosso OG (1994) Genetics and Breeding. In: **Tropical soybean: improvement and production**. Rome: Food and Agriculture Organization of the United Nations, p. 19-36.