Critical analysis of tropical forage breeding in Brazil

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Introduction Forage grasses account for 90% of the Brazilian forage seed market while the genera *Brachiaria*, *Panicum* and others are responsible for 85, 10 and 5% of the traded grass seeds, respectively. Most of the forage grass and legume cultivars available for sowing in Brazil were selected in germplasm banks during the last 20 years, while few of them were derived from artificial crossings, followed by selection for desirable forage traits. The selection of new genetic materials in germplasm banks (exploitation of naturally-occurring genetic variability) is still feasible but the chances of success are decreasing through time. From now on, a clear trend is becoming quite evident: the exploitation of new genetic variation, to be accomplished through artificial crossings between selected parentals, in each forage species, aiming at the synthesis, selection and releasing of new hybrids showing high field performance.

Materials and methods A comprehensive search was carried out about the forage grass and legume cultivars released in Brazil since the 80's, including their origins (germplasm banks or plant breeding programs).

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Results Out of the 19 released forage grass cultivars, only 6 (31,5%) were selected in plant breeding programs; however, only 5 of them are *Brachiaria* cultivars, which are unable to attend the seed market needs (Table 1). Recent releasings of **interspecific** *Brachiaria* hybrids (*B. ruziziensis x B. brizantha, B. ruziziensis x B. decumbens*) have been unable to succeed, mostly because of their extremely poor seed yielding potentials. Dealing with the forage legumes, only 7 cultivars were released, belonging to several species (6, selected in germplasm banks and only one as a result of a breeding program).

Table 1 Some forage cultivars released in Brazil since 1982 and their origins

Forage grass species	Cultivar	Institution[*2] Releasing Year	Origin[*1] GB	PBP
	Tobiata	IAC 1982	X	
	Aruana	IZ 1989	X	
Panicum maximum	Tanzania	EMBRAPA 1993	X	
	Atlas	MSCo. 2003		X
	Aries	MSCo. 2003		X
Brachiaria brizantha	Marandu	EMBRAPA 1983	X	
	MG-5	MSCo. 2000	X	
Brachiaria dictyoneura	Llanero	MSCo. 2000	X	
B. ruziziensis x B. brizantha	Mulato	PSCo 2003		X
P. purpureum x P. glaucum	Paraiso	MSCo. 1997		X
Macrotyloma axillare	Java	MSCo. 2003		X
Stylosanthes guianensis	Mineirao	EMBRAPA 1998	X	
S. capitata + S. macrocephala	Campo Grande	EMBRAPA 2000	X	
Arachis pintoi	Amarillo	MSCo. 1996	X	

*[*1] GB = germplasm bank; PBP = plant breeding program;[*2] IAC = Campinas Agronomic Institute; IZ = Zootechnic Institute; EMBRAPA = Brazilian Agricultural Research Corporation; MSCo. = Matsuda Seeds Co.; PSCo. = Papalotla Seeds Co.*

Conclusions Research effort and resources are needed for the synthesis and selection of new **intraspecific** *Brachiaria* hybrids, showing high forage quality, resistance/tolerance to acidic soils, pest and diseases and better ruminant acceptability. The new forage legumes hybrids should present high persistences under grazing, highest seed settings, low levels of tannins and phenols and abilities to persist in mixed pastures with forage grasses.

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