Agronomic performance of cowpea cultivars in different sowing dates

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INTRODUCTION

The cowpea [*Vigna unguiculata* L. Walp.] is becoming an option for producers in different regions of Brazil, because of tolerance to water stress, short cycle and lower production cost. The area of cowpea production have increased expansion in the central region, however, there are not an information and research on cowpea for Southeast region.

OBJECTIVE

The objective of this study was to evaluate the performance of five cultivars (BRS Guariba, BRS Novaera, BRS Cauamé, BRS Xiquexique and BRS Potengi), at six seeding dates (first and second half of February, March, and April), during second season.

MATERIAL AND METHODS

Location: carried out in Botucatu/SP - Brazil (48º 23' W, 22º 51' S and 765 m asl).

Treatments: five cultivars (BRS Guariba, BRS Novaera, BRS Cauamé, BRS Xiquexique and BRS Potengi), in six sowing dates, during fall-winter (out-of-season).

Soil: Red Latosol (Oxisol). At 0-20 cm depth, presented: organic matter, 24.0 g dm^{-3}; pH ($CaCl_2$), 4.9; P(resin), 23.0 mg dm^{-3}; K, Ca, and Mg, 1.8, 24.0, and 10.0 $mmol_c$ dm^{-3}, respectively, base saturation, 45%.

Sowing date: 08 February , 23 February, 08 March, 28 March; 11 April, 26 April; 2012. **Plant emergence:** 14 February, 02 March, 15 March, 04 April, 18 April, 03 May; 2012. **Harvest:** 04 May, 07 June, 04 July, 07 August, 01 September, 23 September; 2012.

Rainfall (mm): February = 166.8; March = 58.9; April = 250.1; May = 78.1; June = 228.4; July = 25.0; August = 0; September 51.3. **Mean temperature (ºC):** February = 26.1; March = 24.6; April = 23.1; May = 18.7; June = 17.9; July = 18.0; August 20.1.

RESULTS

Cultivars of Cowpea	Dry matter (g $plant^{-1}$)						Mean
	1ª Sowing date	2ª Sowing date	3ª Sowing date	4ª Sowing date	5ª Sowing date	6ª Sowing date	
BRS Novaera	7.27bC	9.54bB	12.84cA	3.81bD	4.28bD	2.85cD	6.77
BRS Itain	11.23aC	11.50abB	19.06aA	8.07aC	7.90aCD	5.86abD	10.60
BRS Guariba	7.11bC	11.30abB	15.46bA	8.01aC	6.22abC	4.09bcD	8.70
BRS Tumucumaque	9.69aC	12.09aB	18.77aA	7.48aD	7.49aD	6.51aD	10.33
BRS Cauamé	10.72aB	11.28abB	19.05aA	6.90aC	6.06abC	3.79cD	9.63
Mean	9.20	11.14	17.03	6.85	6.39	4.62	
VC_{Plot}(%)				11.4			
$VC_{Subplot}$(%)				10.9			

Cultivars of Cowpea	Main branch length (cm)						Mean
	1ª Sowing date	2ª Sowing date	3ª Sowing date	4ª Sowing date	5ª Sowing date	6ª Sowing date	
BRS Novaera	23.4cCD	32.9cBC	58.7bA	37.9cB	41.4cB	19.3cD	35.6
BRS Itain	38.8bCD	46.1bC	99.8aA	73.2bB	49.4bcC	32.7bE	56.7
BRS Guariba	34.4bE	68.8aC	109.3aA	88.0aB	67.2aC	46.7aD	69.1
BRS Tumucumaque	50.1aDE	67.4aC	104.0aA	84.9aB	56.2bCD	43.0abE	67.6
BRS Cauamé	40.9abE	69.1aB	103.6aA	79.4abB	56.8abC	38.7abE	64.8
Mean	37.5	56.9	95.1	72.7	54.2	36.1	
VC_{Plot}(%)				11.6			
$VC_{Subplot}$(%)				10.0			

Cultivars of Cowpea	Number of pods per plant						Mean
	1ª Sowing date	2ª Sowing date	3ª Sowing date	4ª Sowing date	5ª Sowing date	6ª Sowing date	
BRS Novaera	4.0abA	4.3abcA	2.5bB	0.0bC	0.0cC	0.0bC	3.6
BRS Itain	4.5aA	4.0bcA	4.5aA	2.3aB	2.3bB	1.3aB	3.1
BRS Guariba	4.0abA	4.8abA	4.3aA	2.3aB	2.3bB	1.8aB	3.2
BRS Tumucumaque	3.3bAB	3.8cA	3.8aA	2.5aBC	3.5aAB	1.5aC	3.0
BRS Cauamé	4.5aA	5.0aA	4.5aA	3.0aB	2.5bBC	1.8aC	3.5
Mean	4.1	4.4	3.9	2.0	2.1	1.3	
VC_{Plot}(%)				15.8			
$VC_{Subplot}$(%)				16.8			

Cultivars of Cowpea	Grain yield (kg ha^{-1})						Mean
	1ª Sowing date	2ª Sowing date	3ª Sowing date	4ª Sowing date	5ª Sowing date	6ª Sowing date	
BRS Novaera	753.3bcA	434.5cB	251.5cC	0.0cD	0.0aD	0.0aD	239.9
BRS Itain	1023.8aA	644.8abB	494.8bB	149.5bcC	113.5aC	55.5aC	413.6
BRS Guariba	875.5abA	750.5aA	749.5aA	167.5abB	120.5aB	91.3aB	459.2
BRS Tumucumaque	659.8cA	513.3bcAB	454.0bBC	319.3aC	134.0aD	87.3aD	361.3
BRS Cauamé	881.0abA	751.5aA	539.8bB	101.8bcC	100.8aC	75.5aC	408.4
Mean	838.7	618.7	498.1	140.4	101.0	61.9	
VC_{Plot}(%)				15.3			
$VC_{Subplot}$(%)				20.6			

Values followed by same lower case letter in the columns and upper case letter differ statistically by Tukey test at 5% probability.

CONCLUSION

The best time for cowpea sowing in the second season is the first half of February until the first half of March and the highest yield of grain were observed in BRS Novaera, BRS Cauamé and BRS Potengi cultivars. The delayed sowing can retard in flowering and prolonging of the cycle, besides, can promote the lower development of plants and reduce yield in all cultivars of cowpea.