

Leaf, pod and whole plant tannin contents in pigeon pea (*Cajanus cajan* (L.) Millsp)

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Introduction Tannin content is an important characteristic of leguminous crops and it has been used as a selection criterion in pigeon-pea improvement programmes (Godoy *et al.*, 1994). In south-eastern Brazil, pigeon pea is often consumed by bovines in the dry season (from April though October), after flowering occurs, and is recommended in some cases, specifically for that time of the year (Lourenço *et al.*, 1994). Since tannin content is being used as a selection criterion and the animals in the dry season preferentially eat pods and leaves, an experiment was conducted to compare whole plant, leaf and pod tannin content.

Materials and methods Tannin contents of the whole plant, leaf and pod were determined according to the Folin-Denis method (Burns, 1963). The trials were planted in December 1998 at five locations in the State of São Paulo, Brazil, with seventeen pure pigeon pea lines and three cultivars. Cuts were taken in the months shown in Table 1. Plants were cut at 40 cm and the material was dried and ground. Data for two lines, which survived less than a year, were not considered. Principal components and Pearson correlation analysis were performed as described, respectively, in the SAS princomp and corr procedures (SAS, 1999-2001), using the three tannin contents as variables. Average whole plant and leaf data from each location and time of harvest were plotted.

Results The principal components analysis showed that the tannin contents of the whole plant and leaf were responsible for 91 per cent of the observed variance and the Pearson correlation coefficient between those variables was found to be highly significant, indicating that all those data follow similar patterns. Besides, as shown in Table 1, in all locations, leaf and whole plant tannin contents follow very similar patterns, indicating that, if tannin content is used as a selection criterion, there is no need to determine it in all plant parts.

Table 1 Content of tannins in leaf, pod and whole plants when grown at five locations and cut at different dates

Locations		Itapui		Jaboticabal		Pirassununga		Pratânia		São Carlos	
Cutting time		Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE
April 1999	Plant	1.46	0.18	1.88	0.34	1.64	0.23	1.80	0.27	2.32	0.31
	Leaf										
	Pod										
August 1999	Plant	2.31	0.47	2.56	0.55	3.40	0.67	2.10	0.43	2.85	0.68
	Leaf	3.36	1.07	3.46	0.97	4.36	1.27	3.09	0.62	5.78	1.23
	Pod	2.48	0.54	2.15	0.54	3.69	1.18	2.13	0.44	2.31	0.54
Jan. 2000	Plant	1.81	0.39	2.49	0.38	2.32	0.33	2.20	0.31	1.90	0.31
	Leaf	2.83	0.94	3.01	0.45	2.71	0.41	2.62	0.41	2.45	0.32
	Pod	1.19	0.38	1.41	0.11	0.94	0.21	1.69	0.50	1.46	0.45
Mav 2000	Plant	3.15	0.43	3.29	1.16	2.80	0.41	2.10	0.35	4.93	1.31
	Leaf	4.19	1.15	3.91	1.46	3.64	0.96	3.18	0.59	7.13	1.71
	Pod	4.71	1.62	2.80	1.96	4.77	1.67	5.44	1.82	4.63	1.34
Dec. 2000	Plant					2.92	0.68			3.04	0.72
	Leaf					3.31	0.93			4.34	1.02
	Pod					0.94	0.33			1.56	0.34
June 2001	Plant					3.29	0.76			2.60	0.58
	Leaf					4.80	1.28			3.30	0.60
	Pod					3.58	1.13			2.44	0.60

Conclusions If tannin contents are used as selection criteria there is no need to separate plant parts. Samples of the whole plant can be used, saving a considerable amount of labour and laboratory work.

References

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