



University of Kentucky
UKnowledge

International Grassland Congress Proceedings

22nd International Grassland Congress

BRS Mandobi: A New Forage Peanut Cultivar Propagated by Seeds for the Tropics

Giselle M. L. de Assis
EMBRAPA, Brazil

Judson F. Valentim
EMBRAPA, Brazil

Carlos M. S. de Andrade
EMBRAPA, Brazil

Follow this and additional works at: <https://uknowledge.uky.edu/igc>

 Part of the [Plant Sciences Commons](#), and the [Soil Science Commons](#)

This document is available at <https://uknowledge.uky.edu/igc/22/1-2/18>

The 22nd International Grassland Congress (Revitalising Grasslands to Sustain Our Communities) took place in Sydney, Australia from September 15 through September 19, 2013.

Proceedings Editors: David L. Michalk, Geoffrey D. Millar, Warwick B. Badgery, and Kim M. Broadfoot

Publisher: New South Wales Department of Primary Industry, Kite St., Orange New South Wales, Australia

This Event is brought to you for free and open access by the Plant and Soil Sciences at UKnowledge. It has been accepted for inclusion in International Grassland Congress Proceedings by an authorized administrator of UKnowledge. For more information, please contact UKnowledge@lsv.uky.edu.

BRS Mandobi: a new forage peanut cultivar propagated by seeds for the tropics

Giselle Mariano L de Assis, Judson F Valentim and Carlos Mauricio S de Andrade

Brazilian Agricultural Research Corporation, Embrapa www.embrapa.br

Contact email: giselle.assis@embrapa.br

Keywords: *Arachis pintoi*, forage breeding, forage legume, mixed pastures.

Introduction

Forage peanut (*Arachis pintoi*) is a forage legume of relatively recent use in beef and dairy cattle feeding. Although it is native exclusively to Brazil, the first cultivar, Amarillo, was released in Australia in 1987. Forage peanut has a great number of favourable attributes for establishing grass-legume mixtures, which guarantee the persistence and high yields of high quality forage in cultivated pastures. Therefore, studies with this species have intensified in many tropical regions of the world (Assis and Valentim 2009). In the state of Acre, western Brazilian Amazon, 137,000 ha are cultivated with forage peanut, cv. Belmonte, benefiting thousands of producers, with annual economic impact of USD \$46 M (Embrapa 2012). Social and environmental impacts resulting from the use of this legume are also highly positive. However, despite the success achieved in mixed pastures with forage peanut, expansion of the area sown has been relatively slow because vegetative propagation using stolons is labour intensive and requires large quantities of limited vegetative material. In Brazil, Embrapa has co-ordinated the development of new forage peanut cultivars and their evaluation in different biomes.

The objective of this paper is to present a new cultivar of seed propagated forage peanut, developed for use in tropical regions, by Embrapa in partnership with Unipasto (Association for Promotion of Breeding Research in Tropical Forage).

Methods

The Brazilian Forage Peanut Evaluation Network started in 1999 and included experiments in the states of Acre, Bahia and Distrito Federal. Development of the new cultivar was based on mass selection over 5 years, followed by evaluation of environmental adaptation in pure stands and in mixed pastures in the western Brazilian Amazon. During the evaluation process, selection was performed to improve speed of establishment, dry matter yield, nutritive value and seed production. Evaluations also occurred under rotational grazing in mixed pastures with *Cynodon nlemfuensis*, *Brachiaria brizantha* and *B. humidicola*, in intensive systems. The new cultivar was registered with the Ministry of Agriculture, Livestock and Food Supply of Brazil in 2008 and its protection process was finalised in 2011, after conducting tests for distinctness, homogeneity and stability. While developing the cultivar, the semi-mechanised seed

production system of forage peanut was also established (Assis *et al.* 2011).

Results and discussion

The new forage peanut cultivar, named BRS Mandobi, presents long and wide leaflets, with high intensity of bristles on the abaxial face of basal leaflets. The basal leaflet apex is acute, whereas the predominant form of the apical leaflet apex is obtuse and its format is obovate. Flowers are yellow and the hypanthium is long. Mandobi presents large stipules in its free portion, not welded to the petiole. Its fruits are also large, compared with cvv. Amarillo and Alqueire 1 (Assis *et al.* 2011).

Mandobi is adapted to tropical and equatorial regions over a rainfall range of 1,200 to 3,500 mm/year. It has high vigour, good leaf:stem ratio and a high degree of tolerance to soil waterlogging. The new cultivar shows good establishment, high dry matter yield and high seed yield (Table 1). It is estimated that in one kilogram there are 6,500 seeds. In the environmental conditions of Acre, a mixed pasture with marandugrass (*B. brizantha* cv. Marandu), *Pueraria phaseoloides* and Mandobi reached an annual carrying capacity of 2.5 AU/ha without irrigation or nitrogen fertilisation. Mandobi has persisted for more than 10 years in mixed pastures with *Cynodon nlemfuensis*, *Brachiaria brizantha* and *Brachiaria humidicola* under intensive rotational grazing. Its use in regions with prolonged drought (above 4 months) is the subject of further research.

Five diseases caused by fungi have been observed in Mandobi, without serious consequences (Gonçalves 2011): forage peanut rust (*Puccinia arachidis*), anthracnose (*Glomerella cingulata*; anamorph: *Colletotrichum gloeosporioides*), *Mycosphaerella* leaf spot (*Mycosphaerella berkeleyi*), stem rot and *Athelia* leaf blight (*Athelia rolfsii*) and *Rhizoctonia* leaf blight (*Thanatephorus cucumeris*).

In Brazil, Amarillo is the only cultivar whose seeds are available in the market, imported from Bolivia and Peru. Amarillo seeds are sold at a very high price, which prevents wide adoption of forage peanut in mixed pastures (Embrapa 2012). In January 2013, the price was around USD \$45/kg. Moreover, the cost of local production of Mandobi seeds, based on the production system developed by Embrapa, was around USD \$8/kg in 2011 (Assis *et al.* 2011), showing that national production of seeds using appropriate technologies can significantly reduce the price of seed, enabling its wider adoption by producers.

Table 1. Main traits of *Arachis pintoi* cv. BRS Mandobi, the new forage peanut cultivar developed by Embrapa for use in tropical regions.

| Trait | Value | Observation | Reference |
|--------------------------|------------|---|----------------------|
| Ground cover | 90% | 16 weeks after planting, spacing of 0.5 x 0.5 m | Assis et al. 2008 |
| Forage yield | 9-15 t/ha | 10 months after planting | Balzon et al. 2005 |
| Pure seed yield | 3000 kg/ha | 18-21 months after planting | Valentim et al. 2009 |
| Annual carrying capacity | 2.5 AU/ha | mixed Marandu grass-Mandobi pastures | Andrade et al. 2012 |
| Crude protein | 22.8% | average of rainy and dry seasons | Santos 2012 |
| Neutral detergent fibre | 53.8% | average of rainy and dry seasons | Santos 2012 |
| Acid detergent fibre | 27.6% | average of rainy and dry seasons | Santos 2012 |
| Dry matter digestibility | 65.8% | annual average | Oliveira et al. 2011 |

Conclusion

The development of cv. Mandobi, combined with an efficient seed production and distribution system, should increase the supply of forage peanut seeds at reduced cost. This presents a new option for producers wishing to introduce a persistent, high-yielding forage legume of high quality into their production systems in the tropics by planting seeds. Mandobi is also an excellent option for recovery of degraded pastures in the Amazon, especially in regions with impermeable soils, where marandu grass is dying.

References

- Andrade CMS, Garcia R, Valentim JF, Pereira OG (2012). Productivity, utilization efficiency and sward targets for mixed pastures of marandugrass, forage peanut and tropical kudzu. *Revista Brasileira de Zootecnia* **41**, 512-520.
- Assis GML, Valentim JF, Carneiro Jr JM, Azevedo JMA, Ferreira AS (2008). Selection of forage peanut genotypes for ground cover and aerial biomass production during establishment period using mixed model methodology. *Revista Brasileira de Zootecnia* **37**, 1905-1911.
- Assis GML, Valentim JF (2009). Forage peanut breeding program in Brazil. Proceedings of the 2nd International Symposium of Forage Breeding, Campo Grande, MS, Brazil, Brazilian Agricultural Research Corporation, 1 CD-ROM.
- Assis GML, Valentim JF, Andrade CMS (Eds) (2011). Produção de sementes de *Arachis pintoi* cv. BRS Mandobi no Acre. <http://sistemasdeproducao.cnptia.embrapa.br>. Accessed 23 Jan 2013.
- Balzon TA, Valentim JF, Andrade CMS, Ferreira AS (2005). Efeito do material propagativo e de métodos de plantio na produção de biomassa e de sementes do *Arachis pintoi* AP 65. Proceedings of the 42nd Reunião Anual da Sociedade Brasileira de Zootecnia, Goiânia, GO, 1 CD ROM.
- Embrapa - Brazilian Agricultural Research Corporation (2012). Social balance: 2011. www.embrapa.br. Accessed 05 Feb 2013.
- Gonçalves RC (2011). Doenças em *Arachis pintoi* cv. BRS Mandobi. <http://sistemasdeproducao.cnptia.embrapa.br>. Accessed 23 Jan 2013.
- Oliveira PPA, Assis GML, Campana M (2011). Yield and forage quality of cultivars and accessions of perennial peanuts. Proceedings of the 3rd International Symposium of Forage Breeding, Bonito, MS, Brazil, Brazilian Agricultural Research Corporation, 1 CD-ROM.
- Santos EC (2012). Características agrônomicas e bromatológicas de amendoim forrageiro em diferentes intervalos de corte. Dissertação (Mestrado em Agronomia) – Programa de Pós-graduação em Agronomia. Universidade Federal do Acre, Rio Branco. 96p.
- Valentim JF, Assis GML, Sá CP (2009). Seed production of forage peanut (*Arachis pintoi*) in Acre. *Amazônia: Ciência & Desenvolvimento* **8**, 189-205.