Canavalia brasiliensis and Vigna unguiculata at different growth stages

Siriwan Martens, Patricia Avila, Luis H. Franco, Michael Peters
Centro Internacional de Agricultura Tropical (CIAT), A.A. 6713, Cali, Colombia
s.martens@cgiar.org

1. INTRODUCTION

• The weak perennial legume Canavalia brasiliensis (Fig. 2) can be grown on a wide range of soil pH (4.3–8.0) on low fertile soils up to a height of 1800 masl and has a good regrowth up to the second year.
• The annual Vigna unguiculata (Fig. 1) shows even a wider range of environmental adaptation.
• The crops were investigated for the assumed high level of crude protein which suggests a good suitability as feed supplement for ruminants and possibly even for swine.

2. MATERIALS & METHODS

Canavalia brasiliensis CIAT17009 and Vigna unguiculata 9611 were established in September 2007 at Palmira station, Colombia, in quadruplicate.
• Each plot had a size of 5 m × 3 m.
• Row-spacing was 70 cm and within rows 30 cm or 20 cm respectively for Canavalia and Vigna at a sowing rate of 20 kg/ha.
• Canavalia forage was harvested at 8, 12, 16 and 20 weeks of growth, Vigna at 6, 8, 10 and 12 weeks.
• Yield and feed value of the total above-ground plant were determined.

3. RESULTS

• The dry matter (DM) yield of Canavalia developed slowly from 1.1 t/ha after 8 weeks of growth to 3.6 t/ha after 12 weeks, then to 6.1 t/ha at 16 weeks and doubling 12.3 t/ha DM after 20 weeks (Fig. 3).
• The DM content rose from 21 to 24% from 8 to 16 weeks, and to 39% at 20 weeks old (Fig. 2).
• The fast growing Vigna started with a DM yield of 1.7 t/ha (6 weeks), and increased to 3.5, 5.1 and 8.5 t/ha with 8, 10 and 12 weeks.

4. SUMMARY & CONCLUSIONS

• Vigna had a high water content in the stems, resulting in a total DM of 11–13% until 10 weeks. Only in the final stage of pod ripening the DM content rose to 21%.
• In terms of feed value Canavalia had a markedly lower digestibility compared to Vigna and generally a higher fibre content (Fig. 4).
• Throughout the weeks 6 to 10 Vigna had a high in-vitro DM digestibility (IVDMD) for ruminants of > 74% and a crude protein (CP) content of 20–17% in DM in comparison to 59–65% IVDMD and around 12% CP of Canavalia from 8–20 weeks (Fig. 5).

Vigna unguiculata and Canavalia brasiliensis at different growth stages

Yield of Vigna unguiculata and Canavalia brasiliensis at different growth stages

In-vitro dry matter digestibility (Tilley & Terry) at different growth stages

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