Potential of Tropical Forages for Feeding Pigs

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1.INTRODUCTION

- In many tropical countries, the market demand for pork is higher than the current production.
- Limiting factors in increasing productivity for the smallholders are feed availability and cost.
- Alternatives to purchasing protein concentrates are consequently needed.
- Tropical forages with an expected high protein content and with suitability to different ecological niches could be an alternative.


Canavalia brasiliensis *Flemingia macrophylla* *Cratylia argentea*

Fig. 1: Examples of tropical forages investigated in this trial

2. MATERIALS & METHODS

- The herbaceous legumes *Vigna unguiculata, Stylosanthes guianensis, Centrosema brasilianum* and *Canavalia brasiliensis*, the shrub legumes *Cratylia argentea*, *Flemingia macrophylla*, *Desmodium velutinum* and *Leucaena diversifolia* as well as the *Brachiaria* hybrid Mulato II were grown in different locations in Southwest Colombia.
- Samples were taken before flowering stage, chopped, lyophilized and ground for analysis.
- From the shrub and tree legumes *Cratylia, Flemingia, Desmodium* and *Leucaena* the most lignified part was removed before chopping.
- NDF, ADF, crude protein (CP), protein bound to fiber (N-NDF), and tannic acids (photometric determination, folin reagent, and PVPP) were determined, being relevant aspects in animal nutrition, especially for monogastrics.


Canavalia brasiliensis, harvested

Chopping forages

Lyophilized and ground samples

Fig.2: Harvest and processing

3. RESULTS

- *Flemingia* had highest values in NDF and ADF, while *Vigna* was best, since remaining at the bottom line.
- Crude Protein (CP) ranged from 14-26 %.

Table 1.: Results of forage analysis [% of DM]

Forage specie	NDF	ADF	CP	% N-NDF of Total N	Available CP in DM	Tannic acid
Cratylia argentea	62.7	31.4	25.7	42.9	14.7	0.8
Desmodium velutinum	63.4	40.3	16.0	24.5	12.1	0.8
Flemingia macrophylla	82.9	48.2	13.7	71.3	3.9	5.2
Canavalia brasiliensis	58.1	37.1	18.2	21.2	14.3	0.8
Mulato II	76.4	41.5	5.2	21.3	4.1	0.5
Vigna unguiculata	39.3	24.3	24.3	25.8	18.0	0.2
Stylosanthes guianensins	59.0	44.6	14.1	26.5	10.4	1.6
Centrosema brasilianum	61.8	45.8	15.7	17.9	12.9	1.3
Leucaena diversifolia	53.4	21.7	23.7	51.1	11.6	4.9

- In some legumes, however, a high percentage of CP was bound to fiber, in *Flemingia* it was 71%, followed by *Leucaena* with 51% and *Cratylia* with 42 %.
- Highest value in non-fiber bound CP was 18% in *Vigna*, which had a value of 24% total CP, second being *Cratylia* with 15% available CP, having 26% total CP .

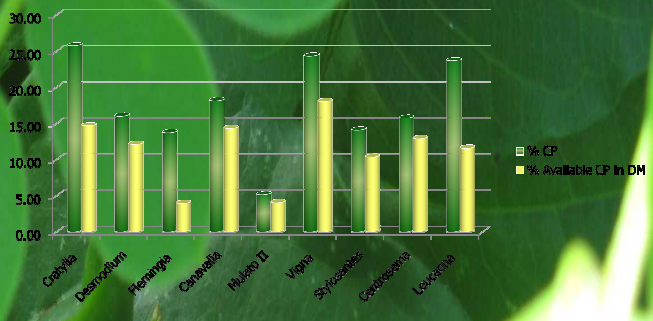

Fig. 3: Total CP vs. available protein

- Tannic acid, as one anti-nutritional factor (ANF), was led by *Flemingia*, 5.2%, and *Leucaena*, 4.9 %, next being *Stylosanthes* and *Centrosema*, the latter clearly lower with 1.6 and 1.3%.

4. CONCLUSIONS & OUTLOOK

- Because of a low content in fiber and tannic acid, beside the highest rate in available protein, *Vigna* seems to be most suitable to be used as fresh forage meal for pigs.
- Further investigations will be done on the trypsin inhibitory activity and oligosaccharides as potential ANF of these tropical forages.

ACKNOWLEDGEMENT

This study is part of the project "More chicken and pork in the pot and money in pocket" financed by BMZ.