

Effects of supplementing waste soybeans or palm kernel cake in usual diet combinations on the utilization of dry-season forages by growing cavies in Kabare territoire of Sud-Kivu province, DR Congo

SB Bacigale, RBB Ayagirwe,
UL Mulemangabo, CA Puchu & BL Maass



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Background information

- Sud-Kivu province located in the eastern part of DR Congo, where farmers' livelihoods depend on agriculture and livestock keeping
- Domestic cavy is among most preferred animals by farmers in Sud-Kivu because of
 - easy management and robustness,
 - short production cycle, and
 - multiple benefits, including good quality manure and use to treat anaemia



Background cont'd

However:

- Feed shortage exists especially during the dry season
- There are plenty of agricultural and industrial by-products available such as waste soybean and Palm Kernel Cake (PKC)
- No information exists on the potential of supplementing cavies with these by-products to enhance the utilization of available forages in the dry season
- Little is known on feeding cavies with locally available ingredients



Problem statement and justification

Despite the increased interest of farmers in cavies

- ✓ Animals show low performance during dry season
- ✓ Possibly due to poor nutritive value of available forages (weeds) during that period

Hence, needs to assess:

- ✓ Typical diet of cavies during dry season,
- ✓ Locally available agricultural and industrial by-products in Kabare, and
- ✓ Effect of their supplementation in usual diet combinations to improve daily voluntary intake, growth performance and the FCR

Rapid survey on cavy dry-season feeding

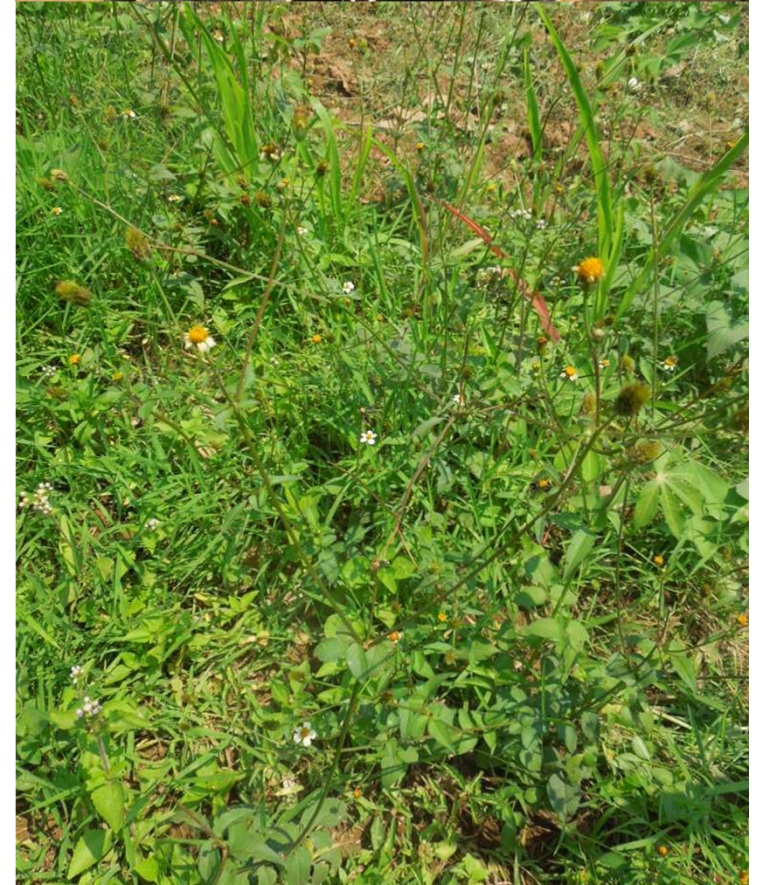
- Survey conducted with 90 cavy keepers randomly selected from 3 villages in Mudusa groupement.
- **Results**
 - 68% of farmers harvest soybean in the beginning of dry season (June-July) in that area,
 - 33% of respondents witnessed to purchase PKC for their pigs,
 - but only 8% reported to give agricultural by-products such as wastes of soybean, sweet potato, maize and cassava to their cavies.
 - 67% of respondents reported to offer combinations of *Digitaria-Crassocephalum* and *Digitaria-Bidens* as usual diets for cavies.

Materials and methods

Study area

- Mudusa groupement, Kabare territoire
- FPD's pilot farm,
 - about 15 km S-W of Bukavu town (latitude 02°33'11.9"S, longitude 28°50'55.9"E, elevation 1964 m asl.)

FPD = *Fondation pour la Promotion du Développement*



Methodology

Feeding trials

B1S0 : 50% *Digitaria* +
50% *Bidens*

B1S1: 50% *Digitaria*,
35% *Bidens* 15%
soybean

B2P0 50% *Digitaria* +
50% *Crassocephalum*

B2P1: 50% *Digitaria*,
35% *Crassocephalum*
+ 15% PKC

1. Daily voluntary intake (DVI)
2. Daily weight gain (DWG)
3. Feed conversion ratio (FCR)

Experimental design and data collection

- 60 weaned cavies of about 20-30 days
- Mean starting weight of 324.5 ± 15.6 g
- Animals were housed in cages of 1 m x 1 m x 0.5 m (length x width x height) in a hut with a thatched roof
- Per one cage, there were 4 females and 1 male
- 3 replications per treatment
- Basic feeding with grass and herbs (Asteraceae)

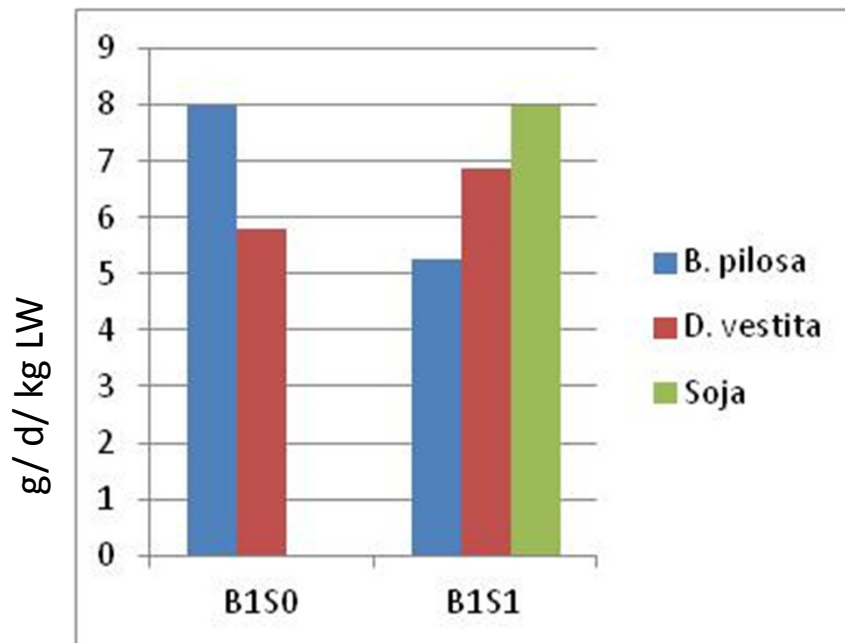


Results

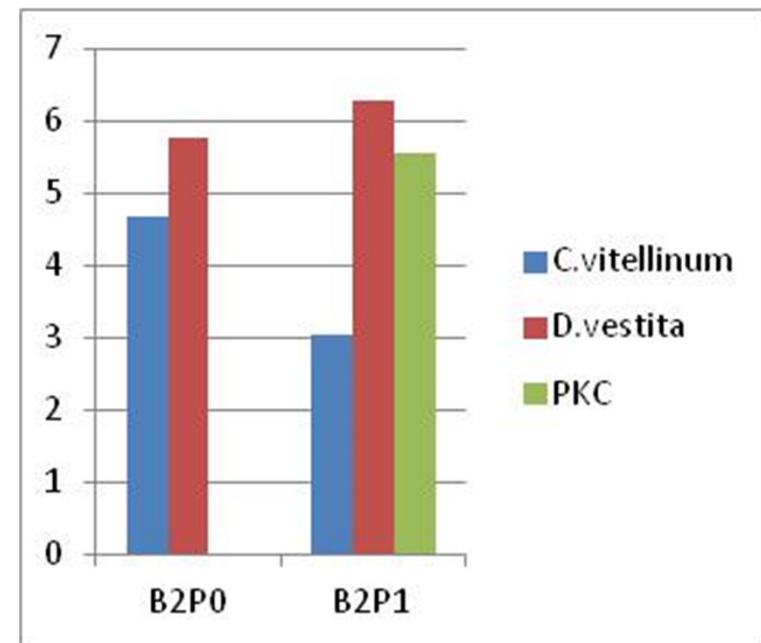
Parameters	Study 1: <i>Digitaria</i> + <i>Bidens</i> / Soybean			Study 2: <i>Digitaria</i> + <i>Crassocephalum</i> / PKC		
	B1S0	B1S1	Signifi- cance	B2P0	B2P1	Signifi- cance
Feed conversion ratio (FCR)	7.71±0.52	4.28±0.52	***	22.0±1.47	15.2±1.47	**
Daily voluntary intake (DVI)	6.88±0.11	6.70±0.11	***	5.22±0.08	4.95±0.08	***
Daily weight gain (DWG)	4.14±0.39	6.78±0.39	***	3.94±0.56	4.71±0.56	n.s.

- FCR and DWG substantially better with *Bidens* than with *Crassocephalum*
- There may be a confusion of effects

Utilization of ingredients: Daily voluntary intake



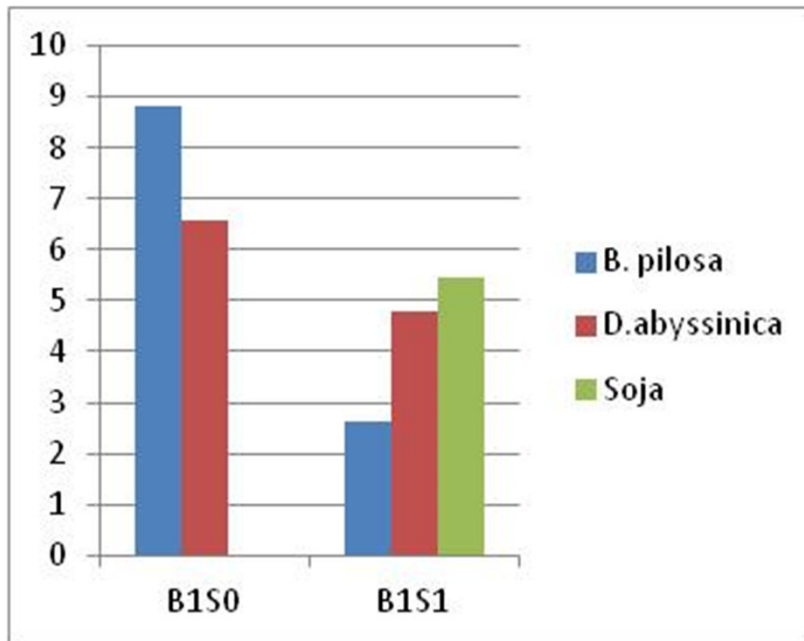
Diet supplemented with waste soybean



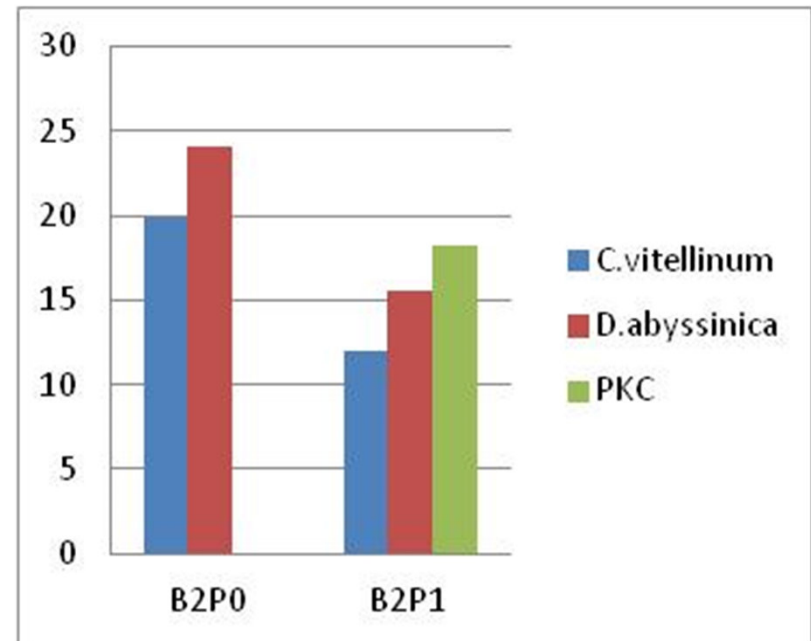
Diet supplemented with Palm Kernel Cake (PKC)

- Both waste soybean and PKC improved DVI of the grass more than of the herb
- Supplement and herb seem to complement each other

Utilization of ingredients: Feed conversion ratio



Diet supplemented with waste soybean



Diet supplemented with Palm Kernel Cake (PKC)

- FCR was improved by supplementing waste soybean or PKC, but soybean was more effective
- No significant effects on feed components

Conclusion

- Waste soybeans can improve feed efficiency, daily voluntary intake, and daily weight gain of locally available dry-season forages in Kabare territoire, eastern DRC, whereas PKC that needs to be purchased can only contribute little in cavy feeding
- Observed differences in feed value between the distinct local herbs from Asteraceae require further investigation of their nutritional quality for cavies

Asanteni sana!

Experimental feeds

- The daily voluntary intake (g g⁻¹ liveweight x 100) of each forage species (i) was calculated daily for each group of animals (a) as follows:

$$\text{Intake}_i^a = \frac{\text{Offered DM}_i^a - \text{Leftover DM}_i^a}{\text{Liveweight}_a} \times 100$$

$$DWG = \frac{\text{Final weight} - \text{Initial weight}}{\text{Number of days}}$$

- Feed conversion ratio was calculated as g DM intake/g of weight gain

Objectives

General objective

- to identify the most abundant agricultural and industrial by-products the most easily accessible to cavy keepers in Mudusa groupement of Kabare territoire so that to assess their interest in feeding cavies fed on forages available in dry season.

Specific objectives

- To assess the usual diet combinations for cavies during the dry season in Mudusa groupement of Kabare territoire, Sud-Kivu province.
- To determine the effect of including available agricultural and industrial by-products in diet combinations on daily voluntary intake, growth performance and feed conversion ratio in cavies.