

Nutritive value of four tropical forage legume hays fed to pigs in the Democratic Republic of Congo

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Communication plan

- ❑ Context
- ❑ Aim of the research
- ❑ Research strategy
- ❑ Methods
- ❑ Results
- ❑ Conclusion

1. Context

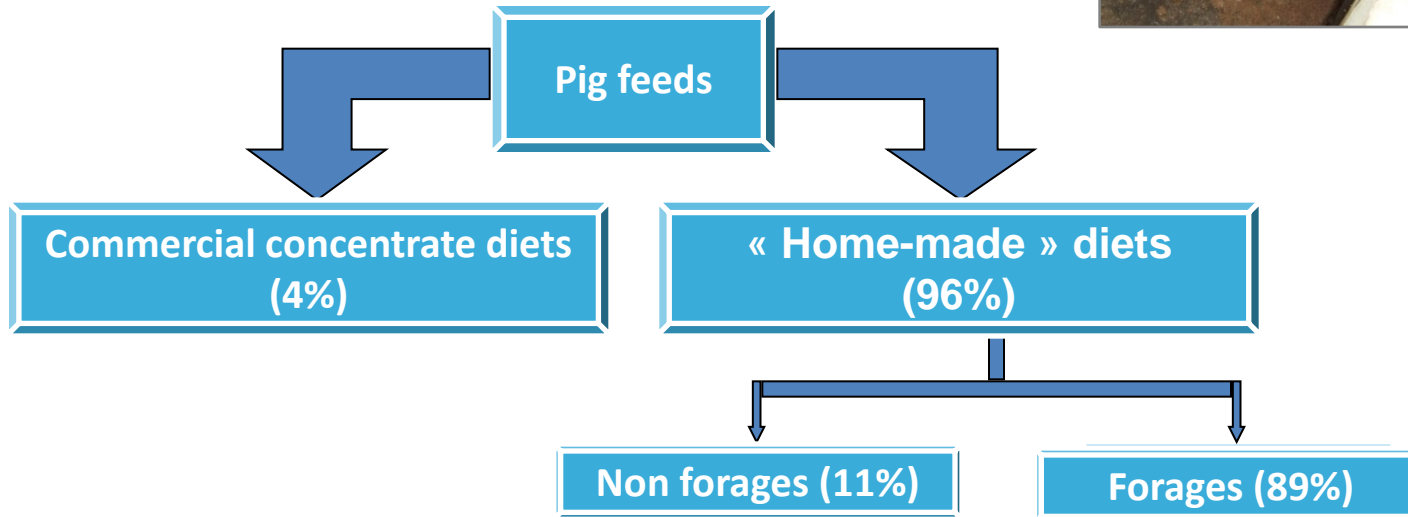


□ Pigs in DRC:

- Pigs are raised by smallholders (96%)
- Semi-intensive system
- Small herd size (3 to 5 sows)
- Pig breeding is :
 - ✓ main source of cash
 - ✓ improving livelihood
 - ✓ saving strategy



How pigs are fed?



Concentrate (> 30 ingredients)

- Wheat bran 80%
- Palm kernel meal 73%
- Brewers grain 50%
- Corn 38%
- ...

Forages (> 40 plants)

- *Manihot esculenta* leaves 32%
- *Ipomoea batatas* leaves 29%
- Leafy vegetables 25%
- *Eichornia crassipes* 23%
- *Psophocarpus scandens* 22%
- ...

Forages used

❑ Forage plant material

- Leaves (e.g. *Musa* spp.)
- Leaves and stems (e.g. *Ipomoea batatas*)
- Whole plant (e.g. *Eichornia crassipes*)

❑ Origin

- Non-edible or unsold edible fruits and vegetables
- Weeds (in the forests, banks of rivers)
- Fields fallow (weeds or previous cropping plants)
- Aquatic plants.



Usefulness?

□ Advantages of forages

- Low cost
- Non-competitive with human food
- High levels of protein, minerals and vitamins
- Integrated in crop-animal production systems
- Nutrient cycles at the farm level and improved sustainability

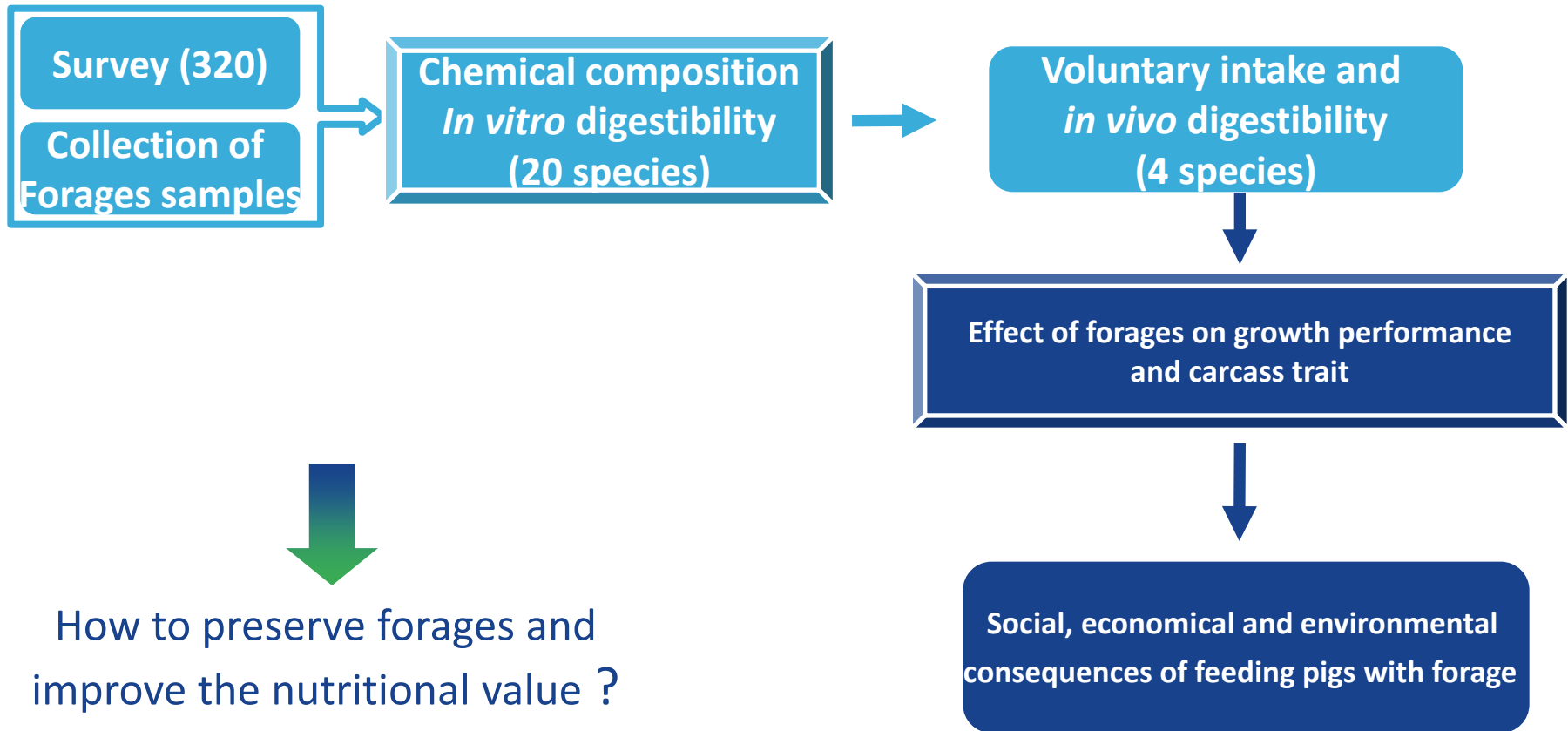
□ Drawbacks of forages

- Low digestibility owing to their fibre content
- Anti-nutritive compounds
- Lack of preservation methods

2. Aim of the research

- ❑ Help smallholders in better selecting the forage plants to feed their pigs
- ❑ Identification of interesting forages
 - High protein content
 - High nutritive value
- ❑ Determine the right inclusion rate of these forages in pig diets
- ❑ Assess the performance of pigs fed these forages

3. Research strategy



4. Methods

Digestibility trial

- ❑ Cross-over with 36 Large White barrows
- ❑ Diet
 - Tropical forage meals (whole-plant hays)
 - ✓ *Vigna unguiculata*
 - ✓ *Psophocarpus scandens*
 - ✓ *Pueraria phaseoloides*
 - ✓ *Stylosanthes guianensis*
 - Commercial diet used as basal diet (corn-soybean meal)
 - **125** or **250g/kg DM** of the **basal diet** were replaced by one of the tropical forage meals (TFM)

5. Results

□ Digestibility

Item	Basal diet	Psopho		Pueraria		Stylo		Vigna	
		125	250	125	250	125	250	125	250
Dry matter	0.76	0.71 ^a	0.65 ^b	0.70 ^a	0.61 ^c	0.70 ^a	0.65 ^b	0.73 ^a	0.66 ^b
Crude protein	0.80	0.76 ^a	0.70 ^{cd}	0.75 ^{ab}	0.68 ^d	0.76 ^{ab}	0.71 ^{cd}	0.77 ^a	0.72 ^{bc}
NDF	0.54	0.49 ^{abc}	0.43 ^d	0.47 ^{bcd}	0.41 ^d	0.51 ^{ab}	0.44 ^{cd}	0.55 ^a	0.44 ^{cd}
Energy	0.75	0.70 ^a	0.64 ^{bc}	0.69 ^a	0.61 ^c	0.69 ^a	0.64 ^{bc}	0.72 ^a	0.65 ^b
Nitrogen Retained	0.58	0.49 ^{ab}	0.33 ^c	0.41 ^{bc}	0.31 ^c	0.50 ^a	0.44 ^{ab}	0.50 ^a	0.36 ^c
DE(Kcal/kg DM)	3303	3250 ^a	2810 ^b	2941 ^{ab}	2727 ^b	3254 ^a	2830 ^b	3278 ^a	2827 ^b

- All 4 forage species decreased linearly the total tract apparent digestibility (TTAD)
- Protein digestibility seems less affected than energy by forage inclusion
- But N-retention was higher for *Stylosanthes guianensis* hay
- Low digestibility for *Pueraria phaseoloides*

6. Conclusion

- ❑ Under smallholder condition, TFM can potentially be used as protein source for pig
- ❑ Due to low digestibility, the inclusion rate of TFM in the diet should **not exceed 25 %**.
- ❑ The use of *Pueraria phaseoloides* should be discouraged in pig
- ❑ Further work is required to :
 - confirm and understand the superior N value of stylo hays
 - asses the long term impact of anti-nutrient compounds on performances



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We like eating forages



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