Poster design

some guidelines

What is a poster?

- Displayed on A0 size sheet of paper, portray
- Provides a clear outline of a topic with no further explanation required
- Poster viewers want to see as much as possible and read as little as necessary
- Any text should be legible to the naked eye from a distance of 2-3 m (Font size min. 20 Pts)

A poster tells a story

- Simplicity is key.
- Viewers only have few minutes to look at your poster
  → capture and hold the reader's attention.
- Put informative statements and meaningful graphics.
- Sentence fragments are easier to comprehend than full sentences.
- Bulleted lists are effective.
- Conclusions should be brief, and should leave the reader with a clear message to take away.

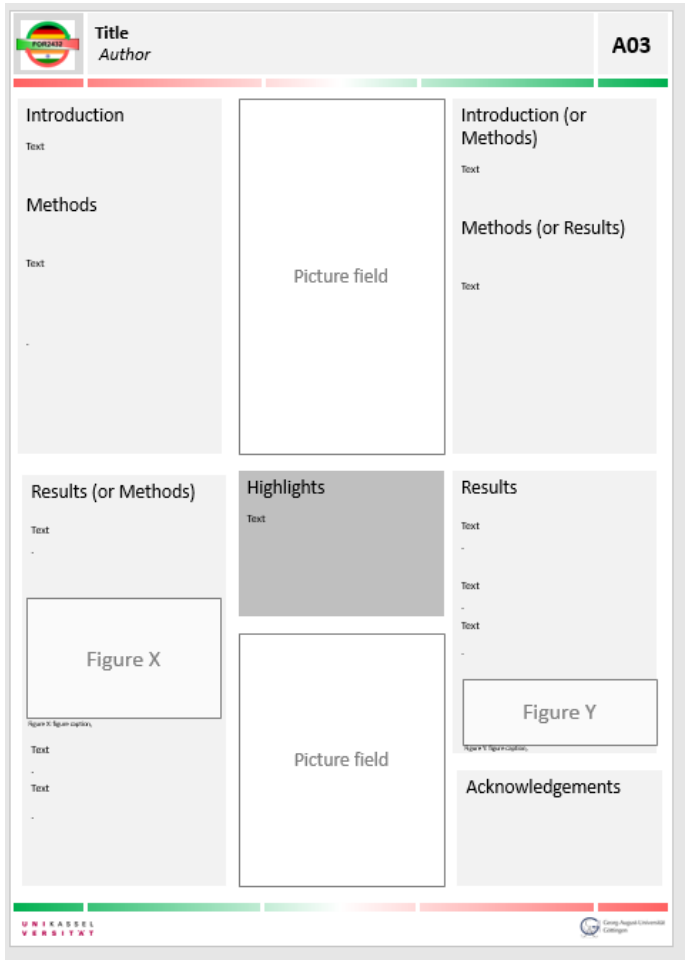
Fig. 3 Rectal temperature of cows on rural and urban farms

Methods

- Field research Aug. 2017 - March 2018
- Household survey of milk producers who have sold milk in the last year.
- Sample *(Fig. 2)* included members of dairy cooperatives, livestock breeders cooperatives or independent farmers.

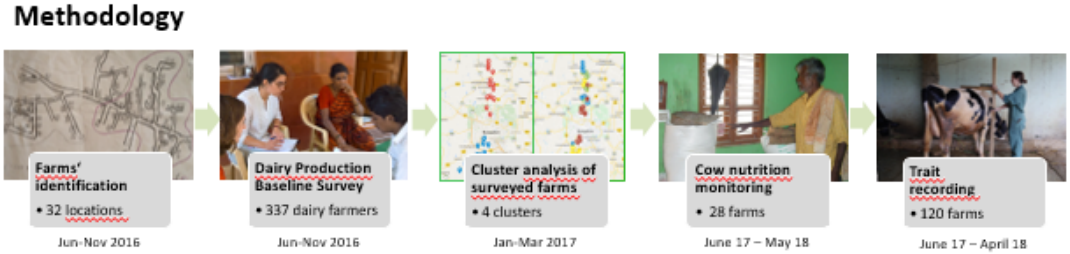
General poster sections

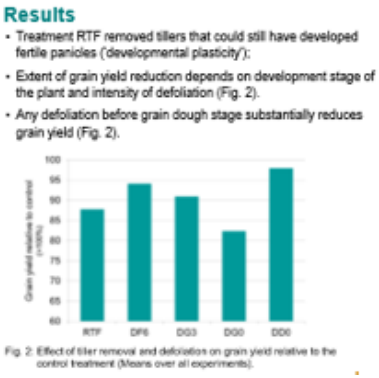
- Title, authors, affiliation
- Statement of the problem / introduction
- Brief materials and methods
- Results
- Conclusion of the work / highlights



Poster sections

- **Title:** Needs to be catchy; max: 2 lines.
- **Introduction:** Use absolute minimum of background information and definitions.
- **Materials and methods:** Briefly describe site and study methods. You may use flow charts to summarize steps, photograph or labeled drawings.
- **Results:** briefly describe qualitative and descriptive results, combine this with presentation of the data by charts/tables.
- **Conclusions:** point out the relevance of results to the reader.

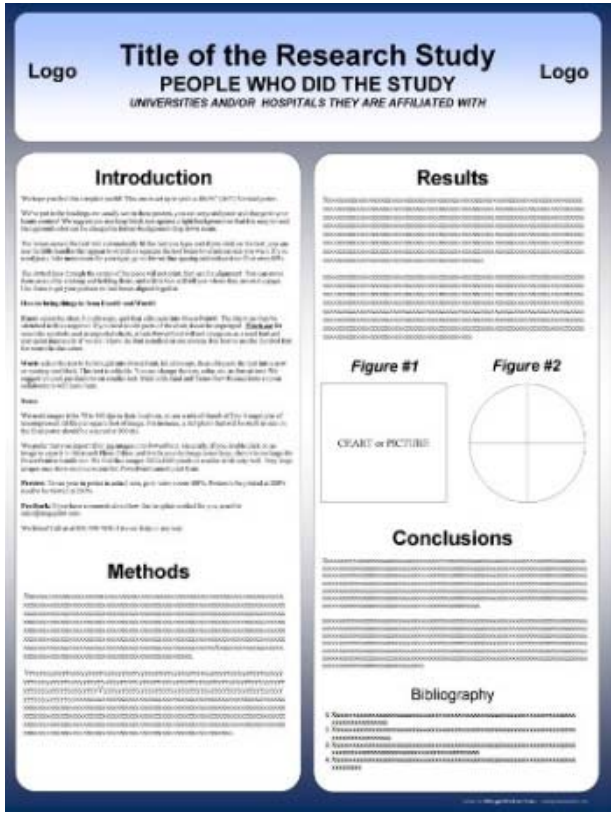




Layout

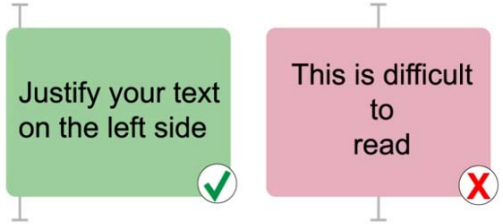
- Vertical (reading down the columns)

- If there is doubt about the order in which your poster should be read, give numbers to the sections or link them with arrows.



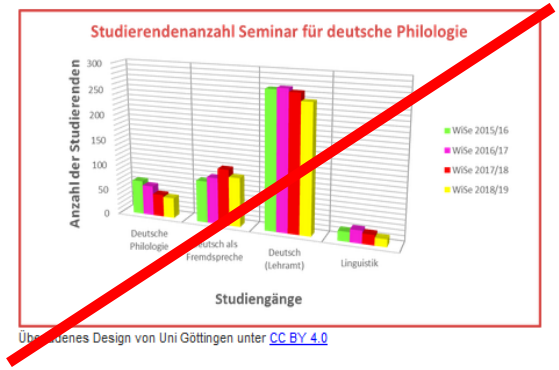
Avoid common mistakes

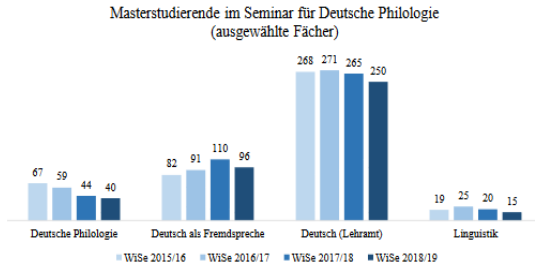
- Do not make your poster too wordy
- Use a non-serif font (e.g., Helvetica)
- Justify your text on the left side.
- Do not "bullet" headers: larger font size + simple “bolded” format is sufficient
- The width of text boxes should be approx. 40 characters (11 words/line)
- Avoid text blocks longer than 10 sentences
- Whenever possible, use bullet point sentences rather than flow text
- Avoid underlining
- Abbreviations should be avoided, or require a legend / full explanation



Avoid common mistakes

- All graphs should have axis labels formatted in “Sentence case“ (not in "Title Case" and not in "ALL CAPS")
- Same is true for the main text
- Avoid using red and green together
- Graph titles should be short & informative
- Never give your graphs a colored backgrounds or grid lines
- 2D graphs instead of 3D

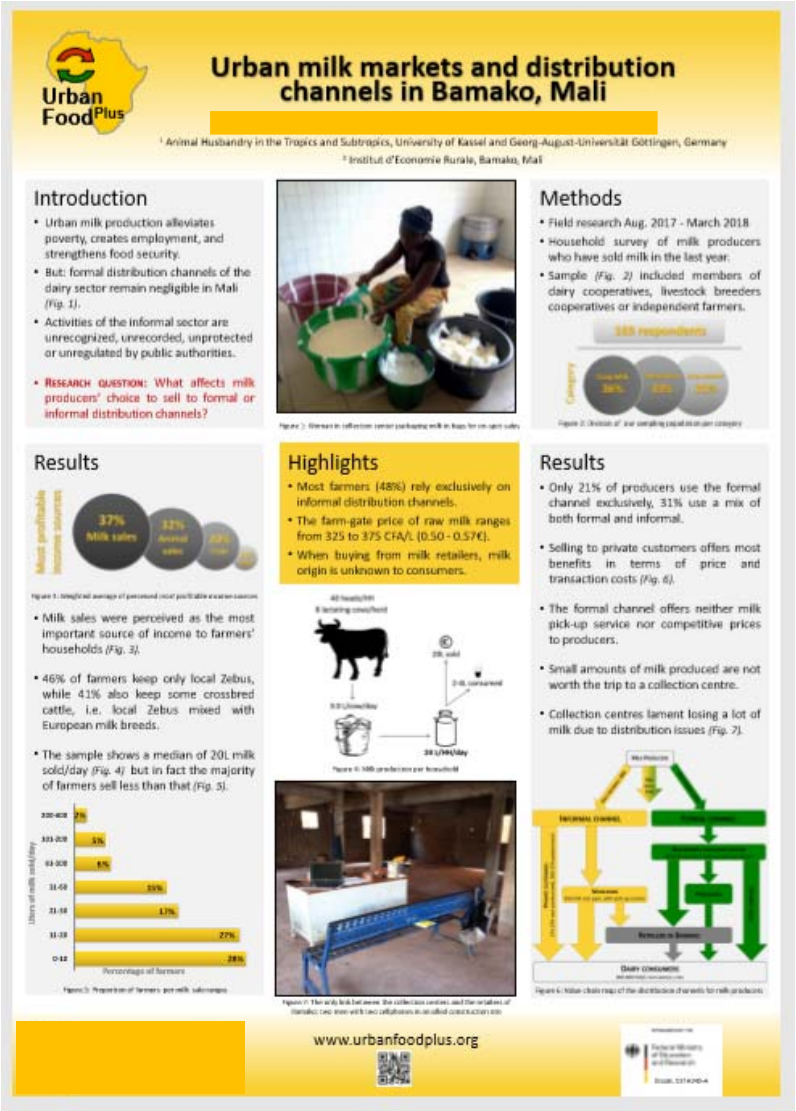




Avoid common mistakes

- Let your poster “breathe”
- Details on graphs and photographs should be viewed from 2m away (axis numbers, labels, figure legend, etc.). Most viewers will read *only* your figures!
- In photographs, add a thin gray or black border to make it more visually appealing

Some examples for your inspiration and to avoid mistake (Author names are hidden)



Urban Food Plus

Urban milk markets and distribution channels in Bamako, Mali

[1] Animal Husbandry in the Tropics and Subtropics, University of Kassel and Georg-August-Universität Göttingen, Germany
[2] Institut d'Economie Rurale, Bamako, Mali

Introduction

- Urban milk production alleviates poverty, creates employment, and strengthens food security.
- But: formal distribution channels of the dairy sector remain negligible in Mali (Fig. 1).
- Activities of the informal sector are unrecognized, unrecorded, unprotected or unregulated by public authorities.
- RESEARCH QUESTION: What affects milk producers' choice to sell to formal or informal distribution channels?

Methods

- Field research Aug. 2017 - March 2018
- Household survey of milk producers who have sold milk in the last year.
- Sample (Fig. 2) included members of dairy cooperatives, livestock breeders cooperatives or independent farmers.

Results

- Milk sales were perceived as the most important source of income to farmers' households (Fig. 3).
- 46% of farmers keep only local Zebus, while 41% also keep some crossbred cattle, i.e. local Zebus mixed with European milk breeds.
- The sample shows a median of 20L milk sold/day (Fig. 4) but in fact the majority of farmers sell less than that (Fig. 5).

Highlights

- Most farmers (48%) rely exclusively on informal distribution channels.
- The farm-gate price of raw milk ranges from 325 to 375 CFA/L (0.50 - 0.57€).
- When buying from milk retailers, milk origin is unknown to consumers.

Results

- Only 21% of producers use the formal channel exclusively, 31% use a mix of both formal and informal.
- Selling to private customers offers most benefits in terms of price and transaction costs (Fig. 6).
- The formal channel offers neither milk pick-up service nor competitive prices to producers.
- Small amounts of milk produced are not worth the trip to a collection centre.
- Collection centres lament losing a lot of milk due to distribution issues (Fig. 7).

www.urbanfoodplus.org

Nutritional Evaluation of Cassava By-products and Shrimp Waste Meal in Diets for Growing Pigs

[1]University of Agriculture, Department of Animal Production of Health, Nigeria
[2]Olabisi Onabanjo University, Department of Animal Production, Nigeria
[3]University of Kiel, Institute of Animal Nutrition & Physiology, Germany
[4]University of Kassel / University of Göttingen, Animal Husbandry in the Tropics and Subtropics, Germany

Introduction

Shrimp waste, cassava peel and cassava leaf among others are agro-industrial byproduct available in Nigeria. However, these byproducts constitute environmental nuisance as due to the problem of disposing them, especially for the food processing industries and local factories. Appropriate processing of these by-products coupled with the knowledge of their nutritive values; and their inclusion in practical diets will add flexibility to feed formulation and drastically reduce cost of animal feeding.

Materials and Methods

Cassava peel was divided into two portions; one portion was subjected to aerobic fermentation for a period of 6 days, and then sun-dried. The cassava leaves were wilted for 3 days before sun-drying. The shrimp waste and other portion of cassava peel were sun-dried. The test ingredients- Shrimp waste meal (SWM), Fermented Cassava peel (FCP), Unfermented cassava peel (UCP), and Cassava leaf meal (CLM) were analysed for their proximate compositions.

Sixteen male pigs with initial body weight 30-35kg. Pigs were housed individually in confinement-type metabolism crates, allowing separate collection of urine and faeces, with 14 days adaptation period. The Basal diet(BD) (79% maize, 18% soya bean meal and 3% vitamin & mineral premix). 300g dry matter (DM) of each of the test ingredients SWM, CLM, FCP and UCP were added to 1000 g/ DM of BD, mixed and fed in wet mash form (water : feed = 2:1) in two equal meals at 08:00 and 16:00h. Water was supplied *ad libitum*. The enzyme **Rovabio®** was used. Faeces and urine were collected quantitatively daily and stored in a freezer. Faeces and urine were analyses for DM, DNF, ADF, Energy, N, Ash, and Fat.

Figure 1: Cassava leaf un-harvested (Top left), Shrimp waste during sun-drying(Top right), Cassava peel during sun-drying(Down left) and Pigs in metabolic crate during Digestible trial(Down right)

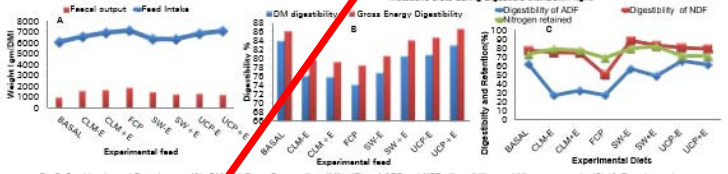


Fig 2: Feed intake and Fecal output(A), DM and Gross Energy digestibility (B) and ADF and NDF digestibility, and Nitrogen retention(C) of Experimental Feed

Results

- Feed intake and Fecal output is Higher ($P<0.05$) in FCP than other diets. UCP±E followed FCP in intake but with relatively low fecal output than most diets, except BD (A)
- Dry matter (DMD) and energy digestibility (ED) for UCP±E (85.01%, 80.86%) and BD (83.29%) were higher ($p<0.05$) than for CLM±E (75.86%, 76.12%), FCP (74.14%) and SWM-E (76.82%), among which there were no significant differences.
- ADF digestibility followed the same trends as DM and ED digestibility.
- However, NDF digestibility of UCP±E and BD were not different ($p > 0.05$) from those of SWM±E and CLM±E but higher ($p < 0.05$) than those of FCP.
- Nitrogen retention (NR) for UCP-E and UCP+E (71.3 %, 71.6 %) was similar to that of BD (73.6 %).
- NR was higher for SWM-E and SWM+E (79.8 %, 82.1%), CLM-E and CLM+E (79.18 %, 77.38%) and lowest for FCP (69.2 %).
- Fermentation, enzyme supplementation and Period of trial and did not significantly affect the results.

Conclusions

- High feed intake indicate low energy value of FCP diet and the higher fecal output is indicative of its low digestibility
- UCP and the BD had similar and higher digestibility, despite the difference in quality, except in Nitrogen retention; and also had lowest fecal output.
- Natural fermentation and enzyme supplementation should be carried sparingly in order not to unnecessary increase cost without corresponding increase in animal response.
- From the result UCP and to a lesser extent SWM and CLM possess potentials which can be explored in order to augment conventional feedstuffs (maize and SBM) in formulations for growing pigs with expectations of reduction in feed cost.

Acknowledgements

We thank Alexander von Humboldt-foundation for financing this project.

too wordy

Some examples for your inspiration and to avoid mistake (Author names are hidden)

UrbanFood^Plus

Performance and Management of Dairy Cows, Beef Cattle and Pigs in Peri-/Urban Agriculture in Ouagadougou, Burkina Faso

[author block]

Introduction

- The multidisciplinary research project UrbanFood^Plus aims at developing site-specific, farmer-tailored innovations for improved agricultural production, food safety, and value chains in four major West African cities.
- As an integral part, long-term field data were collected in animal husbandry systems.

→ Feeding practices and animal performances were monitored on farm to identify options to improve current cattle and pig husbandry practices in Ouagadougou.

Fig. 1: Cattle (a) and pig (b) weighing, roughage for cattle (c) and feed ration for pigs (d), hamcatced feeding (e, f).

Methods

- After a baseline study of 181 farms conducted in 2014, 21 farms were selected that represent the livestock farm diversity across Ouagadougou.
- On farm monitoring took place every 6-10 weeks over a period of 16 months.
- Measurements included animal weighing, quantification of feed offered to groups and individuals (Fig.1), feed sampling and qualitative analysis.
- Metabolizable energy (ME) offered was compared to the animals' requirements using estimation formulas and literature values.

Results

Tab. 1: Average weight gains (g/day) of beef and dairy cattle as well as pigs during early dry season (EDS), late dry season (LDS) and rainy season (RS).

Animal Type	Breed	n	EDS	LDS	RS	SEM
Beef Cattle	Local Zebu	593	189	75	374	13.3
	Sahelian Zebu	62	387	603	599	46.7
Dairy Cattle	Exotic Crossbred	390	287	83	70	17.5
	Local Zebu	1477	59	-78	204	6.3
	Sahelian Zebu	669	190	111	234	12
Pigs	Crossbred Pig	667	103	109	78	4.4
	Local Pig	730	81	54	52	3.2

Colors highlight particularly high (green) and low (red) values.
SEM: Standard error of the mean.

- Depending on animal and breed type, seasonal patterns of weight change were apparent (Tab. 1), along with carry over effects to the subsequent season.
- For pigs, average weight gain was lowest during rainy season when most piglets were born (Tab. 1).
- Adequately fed crossbred pigs and local zebu cattle showed the highest growth potential (data not shown).

Conclusions

- Growth potential of the animals by far not exhausted
- High variability in feed offered across farms, animal types and seasons.
- Optimization potential regarding the adjustment of feed offer to the requirements of individuals or homogenous groups.

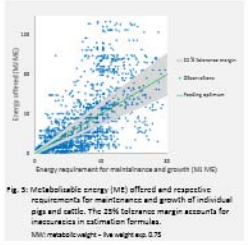


Fig. 3: Metabolisable energy (ME) offered and respective requirements for maintenance and growth of individual pigs and cattle. The 25% tolerance margin accounts for inaccuracies in estimation formulas.
MM: metabolic weight - live weight exp. 0.75

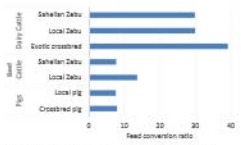


Fig. 2: Conversion ratio of home-based feeding (kg feed/kg weight change) of different animal types and breeds. Especially cattle are also grazing in addition.

- In all pigs and crossbred beef cattle, feed conversion varied from 1 to 8, while values of 13 were reached in local beef zebus. In dairy cattle, feed conversion ratio was very poor (Fig. 2).
- Across systems, feed offered at the farm supplied about 1.2 times the required amount of ME, even when animals had access to pasture (Fig. 3).
- In 37% of the observed cases (Fig. 3), the animal's energy requirement was not met.
- Only in 23% of the observed cases, the animal was adequately fed as far as energy supply was concerned (Fig. 3).

Acknowledgement:
This study was funded by the German Federal Ministry of Education and Research (BMBF) and the Federal Ministry for Economic Cooperation and Development (BMZ) within the framework of the UrbanFoodPlus project as part of the Global initiative (BMBF, FKZ 031A242A).

Presented at Tropentag 2017 in Bonn

www.urbanfoodplus.org

Federal Ministry of Education and Research

GEORG-AUGUST-UNIVERSITÄT GÖTTINGEN · Tropentag 2010, Zurich · MAHASARAKHAM UNIVERSITY

Characteristics of beef buffalo and beef cattle farming and its benefits to farm households in northeastern Thailand

[author block]

Aim of the study

..... was to examine the characteristics of beef buffalo and beef cattle production systems and its roles and benefits to household livelihood in northeastern Thailand (Nakhon Ratchasima Province). Therefore 121 randomly selected farmers with small (< 6 cows), medium (6 – 20 cows) and large (> 20 cows) scale herds were interviewed using a semi-structured questionnaire.

Results

Farming practices

Herds were mainly managed by male farmers with an average age of 56 and an average experience with livestock of 22.7 years. 86% were only 4 to 6 years at primary school. The animals were mainly integrated in mixed crop systems to cover household needs (Fig. 1).

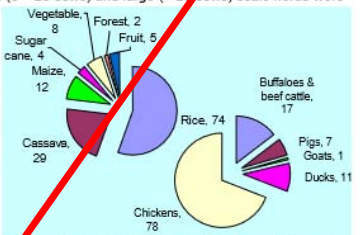


Fig. 1. Cropping (left) and livestock (right) activities of 121 farms, % of households

Fig. 2. Reasons for keeping beef buffaloes and cattle, % of responses

Reasons for keeping animals

Income earnings (80%) including saving role, expected and unexpected expense covering as well as main and additional sources of income were the main reasons for keeping animals. Social aspects (18%) were mentioned, such as high priority to get loan and the sign of wealth. Only 2% of reasons concerned draft power, manure source, inherited asset and traditional activities (Fig. 2).

Farming benefits

Socioeconomic status including dwelling (Fig. 3), household assets and commercial health insurances (Tab. 1) were better in large-scale farms.

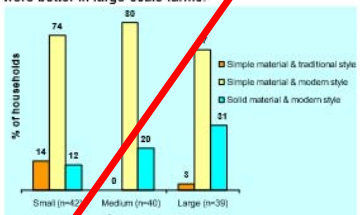


Fig. 3. Housing materials and styles of 121 households

Table 1. Average number of household assets and the access to commercial health insurance of 121 farm households

Farm household livelihoods	Herd sizes: Small (n=42)	Medium (n=40)	Large (n=35)
Household assets, number [a]			
Televisions	1.26	1.20	1.41
Computers	0.02 [b]	0.13 [b]	0.33 [a]
Washing machines	0.26 [b]	0.45 [ab]	0.59 [a]
Refrigerators	0.74 [b]	0.93 [b]	1.23 [a]
Tractors	0.02	0.05	0.15
Two-wheeled tractors	0.62	0.48	0.79
Motorbikes	0.95 [b]	1.15 [b]	1.61 [a]
Cars	0.05 [b]	0.15 [b]	0.54 [a]
Trucks	0.00 [b]	0.03 [b]	0.13 [a]
Agricultural truck	0.24	0.28	0.36
Commercial health insurance access, % [b]	28.6	47.5	56.4

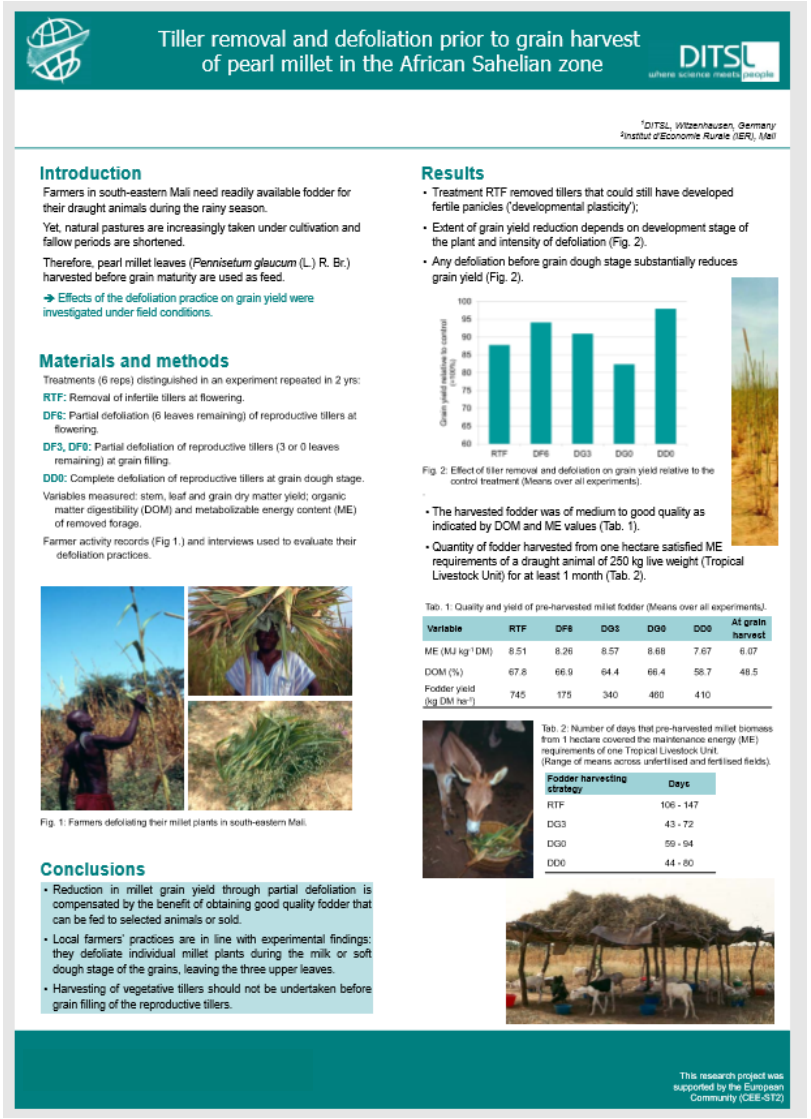
[a] Different letter superscripts are significant different with ANOVA test ($p<0.05$)
[b] Significant difference with χ^2 test ($p<0.05$)

Conclusions

Beef buffaloes and beef cattle in northeastern Thailand are kept in a traditional mixed farming system, playing many important roles for rural farm households in terms of income earning, household expenses covering and social status improving. The more animals farmers keep, the better farm household wealth and livelihood.

unbalanced, table shows too many numbers

Some examples for your inspiration and to avoid mistake (Author names are hidden)



Tiller removal and defoliation prior to grain harvest of pearl millet in the African Sahelian zone

DITSL where science meets people

[1]DITSL, Witzenhausen, Germany
[2]Institut d'Economie Rurale (IER), Mali

Introduction

Farmers in south-eastern Mali need readily available fodder for their draught animals during the rainy season.

Yet, natural pastures are increasingly taken under cultivation and fallow periods are shortened.

Therefore, pearl millet leaves (*Pennisetum glaucum* (L.) R. Br.) harvested before grain maturity are used as feed.

➔ Effects of the defoliation practice on grain yield were investigated under field conditions.

Materials and methods

Treatments (6 reps) distinguished in an experiment repeated in 2 yrs:

RTF: Removal of infertile tillers at flowering.

DF6: Partial defoliation (6 leaves remaining) of reproductive tillers at flowering.

DF3, DF0: Partial defoliation of reproductive tillers (3 or 0 leaves remaining) at grain filling.

DD0: Complete defoliation of reproductive tillers at grain dough stage.

Variables measured: stem, leaf and grain dry matter yield; organic matter digestibility (DOM) and metabolizable energy content (ME) of removed forage.

Farmer activity records (Fig 1.) and interviews used to evaluate their defoliation practices.

Fig. 1: Farmers defoliating their millet plants in south-eastern Mali.

Conclusions

- Reduction in millet grain yield through partial defoliation is compensated by the benefit of obtaining good quality fodder that can be fed to selected animals or sold.
- Local farmers' practices are in line with experimental findings: they defoliate individual millet plants during the milk or soft dough stage of the grains, leaving the three upper leaves.
- Harvesting of vegetative tillers should not be undertaken before grain filling of the reproductive tillers.

Results

- Treatment RTF removed tillers that could still have developed fertile panicles ('developmental plasticity');
- Extent of grain yield reduction depends on development stage of the plant and intensity of defoliation (Fig. 2).
- Any defoliation before grain dough stage substantially reduces grain yield (Fig. 2).

Fig. 2: Effect of tiller removal and defoliation on grain yield relative to the control treatment (Means over all experiments).

- The harvested fodder was of medium to good quality as indicated by DOM and ME values (Tab. 1).
- Quantity of fodder harvested from one hectare satisfied ME requirements of a draught animal of 250 kg live weight (Tropical Livestock Unit) for at least 1 month (Tab. 2).

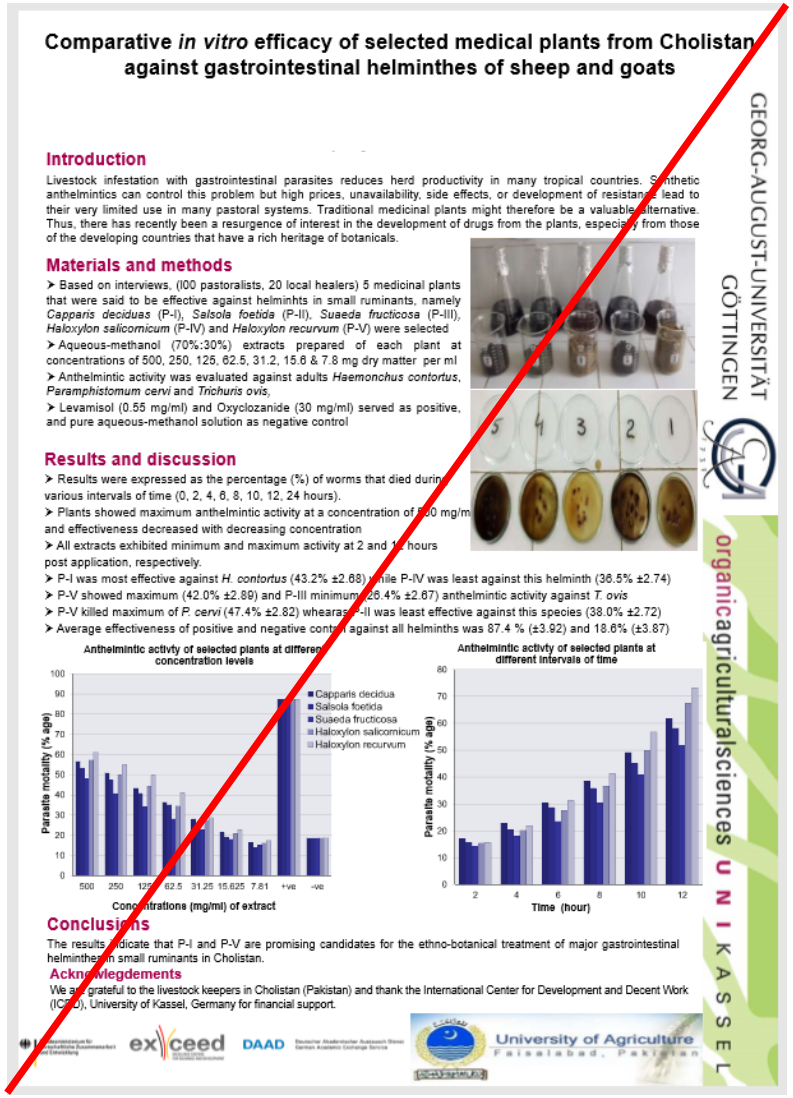
Tab. 1: Quality and yield of pre-harvested millet fodder (Means over all experiments).

Variable	RTF	DF6	DG3	DG0	DD0	At grain harvest
ME (MJ kg^{-1} DM)	8.51	8.26	8.57	8.68	7.67	6.07
DOM (%)	67.8	66.9	64.4	66.4	58.7	48.5
Fodder yield (kg DM ha^{-1})	745	175	340	460	410	

Tab. 2: Number of days that pre-harvested millet biomass from 1 hectare covered the maintenance energy (ME) requirements of one Tropical Livestock Unit. (Range of means across unfertilised and fertilised fields).

Fodder harvesting strategy	Days
RTF	106 - 147
DG3	43 - 72
DG0	59 - 94
DD0	44 - 80

This research project was supported by the European Community (CEE-ST2)



Comparative *in vitro* efficacy of selected medical plants from Cholistan against gastrointestinal helminthes of sheep and goats

GEORG-AUGUST-UNIVERSITÄT GÖTTINGEN

organicagriculturalsciences UNIKASSEL

Introduction

Livestock infestation with gastrointestinal parasites reduces herd productivity in many tropical countries. Synthetic anthelmintics can control this problem but high prices, unavailability, side effects, or development of resistance lead to their very limited use in many pastoral systems. Traditional medicinal plants might therefore be a valuable alternative. Thus, there has recently been a resurgence of interest in the development of drugs from the plants, especially from those of the developing countries that have a rich heritage of botanicals.

Materials and methods

➤ Based on interviews, (100 pastoralists, 20 local healers) 5 medicinal plants that were said to be effective against helminhts in small ruminants, namely *Capparis decidua* (P-I), *Salsola foetida* (P-II), *Suaeda fructicosa* (P-III), *Haloxylon salicornicum* (P-IV) and *Haloxylon recurvum* (P-V) were selected
➤ Aqueous-methanol (70%:30%) extracts prepared of each plant at concentrations of 500, 250, 125, 62.5, 31.2, 15.6 & 7.8 mg dry matter per ml
➤ Anthelmintic activity was evaluated against adults *Haemonchus contortus*, *Paramphistomum cervi* and *Trichuris ovis*,
➤ Levamisol (0.55 mg/ml) and Oxyclozanide (30 mg/ml) served as positive, and pure aqueous-methanol solution as negative control

Results and discussion

➤ Results were expressed as the percentage (%) of worms that died during various intervals of time (0, 2, 4, 6, 8, 10, 12, 24 hours).
➤ Plants showed maximum anthelmintic activity at a concentration of 500 mg/ml and effectiveness decreased with decreasing concentration
➤ All extracts exhibited minimum and maximum activity at 2 and 12 hours post application, respectively.
➤ P-I was most effective against *H. contortus* (43.2% ±2.68) while P-IV was least against this helminth (36.5% ±2.74)
➤ P-V showed maximum (42.0% ±2.89) and P-III minimum (26.4% ±2.67) anthelmintic activity against *T. ovis*
➤ P-V killed maximum of *P. cervi* (47.4% ±2.82) whearas P-II was least effective against this species (38.0% ±2.72)
➤ Average effectiveness of positive and negative control against all helminths was 87.4 % (±3.92) and 18.6% (±3.87)

Conclusions

The results indicate that P-I and P-V are promising candidates for the ethno-botanical treatment of major gastrointestinal helminthes in small ruminants in Cholistan.

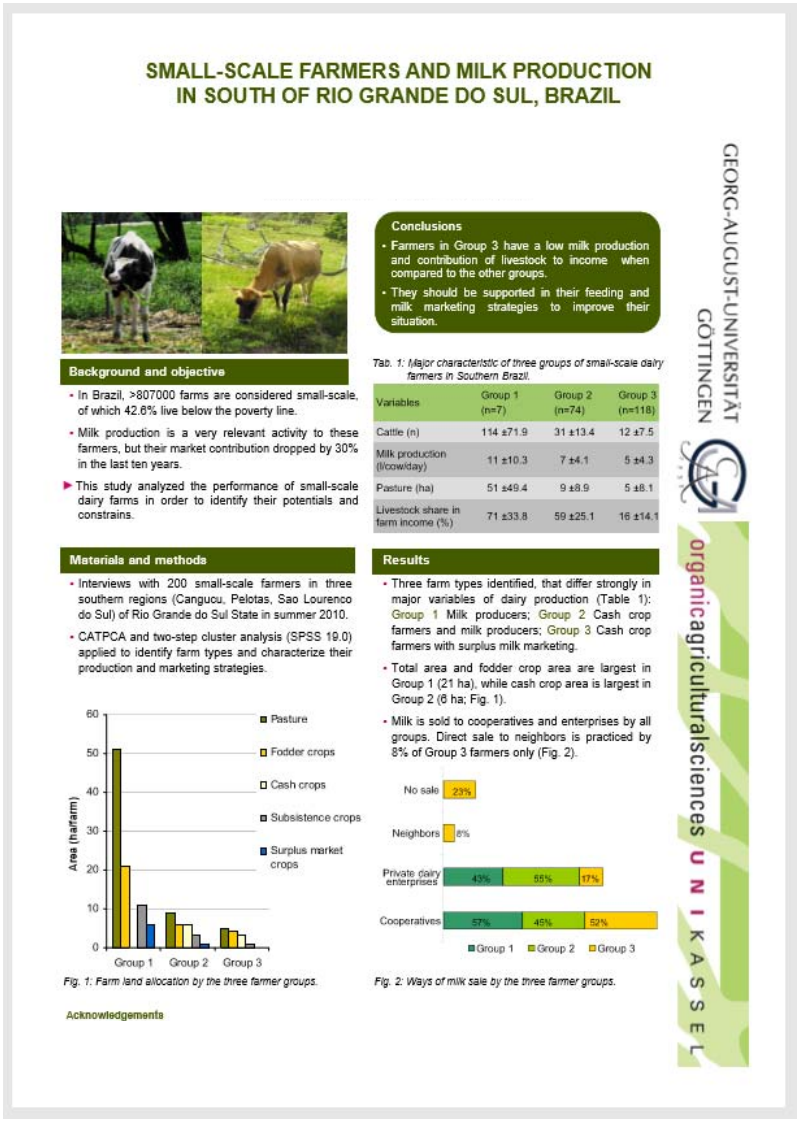
Acknowledgements

We are grateful to the livestock keepers in Cholistan (Pakistan) and thank the International Center for Development and Decent Work (ICDD), University of Kassel, Germany for financial support.

exceed DAAD University of Agriculture Faisalabad, Pakistan

Wordy, colors not matching, pictures distorted

Some examples for your inspiration and to avoid mistake (Author names are hidden)



SMALL-SCALE FARMERS AND MILK PRODUCTION IN SOUTH OF RIO GRANDE DO SUL, BRAZIL

GEORG-AUGUST-UNIVERSITÄT GÖTTINGEN

organicagriculturalsciences UNIKASSEL

Background and objective

- In Brazil, >807000 farms are considered small-scale, of which 42.6% live below the poverty line.
- Milk production is a very relevant activity to these farmers, but their market contribution dropped by 30% in the last ten years.
- This study analyzed the performance of small-scale dairy farms in order to identify their potentials and constrains.

Materials and methods

- Interviews with 200 small-scale farmers in three southern regions (Canguçu, Pelotas, Sao Lourenco do Sul) of Rio Grande do Sul State in summer 2010.
- CATPCA and two-step cluster analysis (SPSS 19.0) applied to identify farm types and characterize their production and marketing strategies.

Fig. 1: Farm land allocation by the three farmer groups.

Acknowledgements

Conclusions

- Farmers in Group 3 have a low milk production and contribution of livestock to income when compared to the other groups.
- They should be supported in their feeding and milk marketing strategies to improve their situation.

Tab. 1: Major characteristic of three groups of small-scale dairy farmers in Southern Brazil.

Variables	Group 1 (n=7)	Group 2 (n=74)	Group 3 (n=118)
Cattle (n)	114 ±71.9	31 ±13.4	12 ±7.5
Milk production (l/cow/day)	11 ±10.3	7 ±4.1	5 ±4.3
Pasture (ha)	51 ±49.4	9 ±8.9	5 ±8.1
Livestock share in farm income (%)	71 ±33.8	59 ±25.1	16 ±14.1

Results

- Three farm types identified, that differ strongly in major variables of dairy production (Table 1): Group 1 Milk producers; Group 2 Cash crop farmers and milk producers; Group 3 Cash crop farmers with surplus milk marketing.
- Total area and fodder crop area are largest in Group 1 (21 ha), while cash crop area is largest in Group 2 (6 ha; Fig. 1).
- Milk is sold to cooperatives and enterprises by all groups. Direct sale to neighbors is practiced by 8% of Group 3 farmers only (Fig. 2).

Fig. 2: Ways of milk sale by the three farmer groups.