Fodder quality and its impact on animal value chains in Faisalabad, Pakistan

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Outline

1. Introduction of the problem and research aims
2. Hypothesis
3. Materials and methods
4. Statistical analysis
5. Time plan
6. Possible Outcomes
7. References
1- Introduction of the problem and research aims
Share in GDP

• 21% share of agriculture and livestock alone contributes about 12%.

• Green fodder is the most valuable and cheapest source of food for livestock.

• Total cropped area of 23.51 mha only 2.35 mha is under fodder crops.
Current situation

• Demand of milk and its products is rising

• No natural pasture suitable for grazing so dairy stock, mostly buffaloes, relies on cultivated forage

• Large numbers of dairy stock are kept in and around the cities and fodder have to be brought in from villages

• Low milk yield, less reproductive efficiency, delayed maturity and poor animal growth rate are major constraints due to imbalance nutrition.

• Provision of balance nutrition can perk up the animal productivity up to 50 per cent with the existing gene pool
Livestock production in Pakistan

- Rural household where animals are closely integrated with the rural subsistence economy.

- Large herds (mostly small ruminants) kept in rangelands where livestock feed include all vegetation grazed and browsed by animal.
Sources of forage

- Fodder Crops
- Crop residues
- Grazing of rangelands
- Wastelands
- Canal bank
- Road sides
- Crops and their by products
Effect of fodder on milk production

- 80-90% of nutrients requirements of livestock are met from the fodder crops.

- With quality nutritional fodder, milk production can be increased up to 100%.

- The area under fodder crops has reduced during the past decade.
Livestock feed Deficiency in Pakistan

- The present fodder supply is one third of the actual needs
- 21% of total dry matter (DM)
- 33% of crude protein requirements
- Green fodder is not available in sufficient quantities especially in extreme hot months.
- There are two lean periods for fodder: (June-July) extreme hot (December-January) extreme cold
- Majority of the animals thus remain under fed
Organic Farming

- Inorganic fertilizers may not replace trace mineral elements in the soil
- Organic fertilizers can improve the biodiversity and long-term productivity of soil
  
  \[(\text{Butler et al., 2008})\]

- Inorganic fertilizers and pesticides used for fodder production cause toxins in animal products
  
  \[(\text{Walters, 2008})\]
Effect of quality feed on animal products

- Quality of feed fed to animal largely affect to products of animal in terms of milk and meat
- Constituents of the fodder may affect the biochemistry of the ruminant and so develop flavors or off-flavors (Cowchie, 1953)
- Flavor of milk fat is influenced by altering the feed of the lactating animal for a few days (Urbach, 1990).
- Quality of fodder and forage depending on natural environment and agricultural practices can alter the cheese characteristic (Martin et al., 2005)
Main constraints

• Growing pressure of human population
• Shortage of irrigation water
• Less and erratic rainfalls
• Low priorities to fodder production
• Imbalance use of fertilizers
• Improper management during two lean periods i.e. June-July and December-January
Objectives

Keeping in view the constraints, major objective of the study will be:

• Improvement of production and quality of fodder, to overcome the gap between fodder production and requirement.

• Improvement of animal value chains by providing good quality fodder
2-Hypothesis

- Quality of fodder has direct effect on animal product in terms of milk and meat.
- By improving the quality of fodder we can improve the animal value chains.
3-Materials and methods

1- Base line survey

- First of all fodder markets in Faisalabad will be visited to identify the areas and farmers that provide fodder to the market. Then these farmers will be interviewed based on a structured questionnaire

- Interviews will include
  
  Socio economic aspects of the farmer  
  Crops grown by the farmer  
  Agricultural practices  
  Problems faced by the farmers
3-Materials and methods

2- Field experiment

Field experiment will be conducted in the experimental fields of the University of Agriculture, Faisalabad, Pakistan

2.1- Experimental design

Experiment will be conducted in Completely Randomized Design (CRD) with two factor factorial.

2.2- Factors

1- Fertilizer
2- Fodder type
3-Materials and methods

1- Fertilizer

i- Control

In control conditions no fertilizer will be applied.

ii- Animal dung

In this treatment N,P,K contents of dung will be determined and then this will be applied according to the N,P,K requirements of the crop.

iii- Coraling

Quantity of dung and urine excreted by one animal (buffalo) per day will be measured and N,P,K of dung and urine will be determined and then animal will be kept in field for calculated time.
3- Materials and methods

iv- Chemical fertilizer

Chemical fertilizer will be applied to the field according to standard requirements of the crop.

2- Fodder type

Two types of fodders will be used for the experiment. Fodder types will be selected from the base line survey.
3- Materials and methods (Layout)

Path = 0.76 m
Water channel = 1 m
Border

4.85 m
2.42 m
17.57 m
42.6 m
3- Materials and methods (Layout)

Design: CRD split plot design
Replication = 4 = R1, R2, R3, R4
Fertilizer = 3 = F0 = no fertilizer, F1 = Animal Manure, F2 = chemical fertilizer, F3 = coaling
Fodder = 2 = f1, f2
Vegetable = 2 = V1, V2

1- Main plot: 9.70 × 5.85m = 56.74 m²
2- Sub plot = 4.85 × 2.42m = 11.74 m²
3- Path width = 0.76 m
4- Water channel = 1 m
5- Border = 0.76 m

So total area required for the experiment is = 23.19 × 42.6m = 987.90 m²
3- Materials and methods

2.4- Data collection

1- Yield related traits
   Morphological traits
   Phenological traits

2- Chemical analysis
   Mineral analysis
   Quality traits
4-Statistical analysis

All data collected will be statistically analyzed using appropriate statistical package.
5-Time plan

- Three months for literature and secondary data collection
- Three months for baseline survey
- Two years for field research
- Six months for data evaluation and publications and thesis write up
6- Possible outcomes

Possible outcomes of this research are:

- Availability of good quality fodder throughout the year
- Ultimately improvement in animal productivity and value chains
# References


7- References


• The National Coordinated Research Programme on Fodder at NARC www.parc.gov.pk/1SubDivisions/NARCCSI/CSI/Fodder.html


7- References

Thank you for listening