# Demonstration of maize and noug cake mixture supplementation for women-focused small scale sheep fattening in Yilmana Densa woreda

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#### Abstract

The study was conducted in 2009 at Adet zuria kebele of Yilamana Densa woreda, Amhara Regional State. The fattening project was conducted with six women participants. Each participant bought three yearling Washera sheep from Adet market. The sheep were maintained on grazing for five hours a day and supplemented with 400 g concentrate head<sup>-1</sup> day<sup>-1</sup> before and after grazing for a fattening period of three months. The concentrate mixture was composed of 24.75% maize grain, 74.25% noug cake and 1% salt. Supplementation with 400 g concentrate increased the average weight of the sheep from 26.88 kg to 33.56 kg. The average daily weight gain was 80.5 g, ranging from 21.7 g to 125.3 g. A simple financial analysis indicated that fattening of sheep using 400 g noug cake and maize mixture was economical with a gross profit of ETB 96.74 per sheep. The fattening technology was demonstrated to invited farmers and experts from the woreda office of agriculture. It is recommended that the technology should be scaled out for wider use by farmers targeting festival markets.

Key words: Fattening, maize, noug cake, Washera sheep.

#### Introduction

Women in developing countries have greater role in agriculture production activities. However, the roles of women in agriculture have not been appreciably recognized by the society. Research findings indicated that women's role in agriculture account for more than 50% of the agricultural activities, particularly in developing countries (African Farmer, 1993). Empowering women in sheep fattening can develop their self-esteem in decision making and can increase their livelihood income.

In most parts of the Amhara region, the available feed resources during the dry season are degraded natural pasture and low quality crop residues which cannot meet the maintenance requirement of the animals, let alone their fattening requirements. As a result, farmers

commonly market animals that are in poor body condition. This results in low income to farmers from animal sales and supply of low quality and quantity of meat to consumers. Hence, introducing and demonstrating promising fattening practices using alternative available feed resources can improve body condition of marketed animals, thereby increasing meat yield and consequently income of the farmers, particularly for the women.

Previous studies on fattening of a similar sheep breed (Horro sheep) indicated that concentrate supplementation of yearling Horro rams with 400 g head<sup>-1</sup> day<sup>-1</sup> and grazing for about three months was economical. Solomon *et al.* (2005) reported that supplementation of 400 g head<sup>-1</sup> day<sup>-1</sup> maize and noug cake mixture resulted in good and economical growth response in Horo sheep. The objectives of the current study were, therefore, to demonstrate maize and noug cake mixture supplementation for washera sheep fattening and to empower women in sheep fattening practice and its marketing system.

# Materials and methods

#### The study area

The study was conducted at Adet Hana (Zuria) Kebele, Yilamana Densa woreda in the Amhara Regional State. The kebele was selected based on accessibility to market and participant women interest by development agents and researchers.

# Participating farmers and experimental animal management

The study was conducted between February and April, 2009 with women participants. Six women were selected and trained together with the kebele development agent on sheep production, marketing, management, fattening and health management and prevention methods. Following training and discussion, farmers agreed to avail sheep for the study and to fatten the animals individually in their own farm.

Each participant bought three yearling Washera sheep from Adet market with the assistance of experts during season of low market price. Before starting the fattening, the animals were dewormed against internal parasites and vaccinated against sheep pox and pasteurellosis. Feeding was done using troughs. Supplemental feed and medicaments were provided by Andassa Livestock Research Center. The sheep were maintained on grazing for five hours a day and supplemented with 400 g concentrate head<sup>-1</sup> day<sup>-1</sup>. The concentrate mixture was composed of 24.75% maize grain, 74.25% noug cake and 1% salt. Provision of the concentrate supplement was split into two feeding time, 200 g before grazing and 200 g after grazing. The fattening period lasted for three months. The fattened animals were sold for Easter at Adet market.

# Data collection and analysis

Data collected included initial body weight, final body weight, cost of fattening (feed cost, animal purchasing and medicament cost), and animal sale prices. Farmers' and experts' opinions were gathered during field day organized to demonstrate results of the fattening study. The body weight data was analyzed using GLM model using SPSS software virsion16. The economic benefit of the fattening practice was estimated using a simple financial analysis.

# **Results and discussion**

# Body weight change

Results showed that grazing sheep supplemented with 400 g concentrate increased the average final body weight from 26.88 kg to 33.56 kg (Table 1). The average daily weight gain was 80.5 g day<sup>-1</sup>, ranging from 21.7 g to 125.3 g. The weight gain achieved in the current on-farm demonstration was close to but lower than reported by Solomon *et al.* (this proceeding) for Washera sheep fattening under on-station condition which resulted in average daily weight gain of 101 g with a range of 38 to 126 g head<sup>-1</sup> day<sup>-1</sup>. The difference could be due to differences in the supplement feed used in the on-station study, which was a mix of grass pea (*Lathyrus sativus*) and maize grain (*Zea mays*) at the ratio of 4:1, and a more controlled feeding under on-station conditions.

		Mean body	Standard
Parameters	No of animals	weight	Error
Initial body weight (kg)	18	26.88	0.67604
Final body weight (kg)	18	33.56	0.56152
Daily body weight gain (g)	18	80.52	6.72512

Table 1. Washera sheep body weight change in a feeding trial at Adet.

#### Farmers and experts perception

At the end of the fattening period, field day was organized to demonstrate the results to non-participating farmers and woreda agricultural experts. The feedback from the participants of the field day was positive. Participants appreciated the fattening technology and commented that the new technology is superior to the traditional fattening practice in terms of reducing cost, time of fattening, and labor. They also commented that future research should focus on fattening castrated sheep which are highly preferred by the market.

# Financial benefits

Results of the financial analysis showed that the gross profit per sheep fattened was ETB 96.74 (Table 2). The marginal revenue indicated that one ETB investment on inputs for fattening sheep provided gross profit of ETB 1.30. This result is in agreement with the results of the Horro sheep fattening study (Solomon *et al.*, 2005).

In order to test the profitability of the current fattening package in the future, a sensitivity analysis was conducted varying the cost of inputs and outputs. Profitability was assessed assuming a rise in input costs and a decline in output prices 10%. The result of sensitivity analysis indicated that fattening of sheep with 400 g noug cake and maize mixed supplementation was still profitable with gross profit of ETB 23.30 and marginal revenue of ETB 1.07.

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Items	Amount in ETB per sheep
1. Benefits from sheep fattening	
• Sheep sale	415.56
Total gross benefit (A)	415.56
2. Input Cost	
Sheep purchase	239.44
• Feed cost	62.37
Medication cost	17.00
Total Input cost (B)	318.81
3. Gross Profit (A-B)	96.74
4. Marginal Revenue( <b>A</b> / <b>B</b> )	1.30
5. Sensitivity Analysis (10%)	
Total Gross Benefit	374.00
• Total Cost of Fattening	350.70
Gross Profit	23.30
Marginal Revenue	1.07

Table 2. Financial benefits per fattened sheep.

#### **Conclusion and Recommendations**

The study indicated that fattening of yearling Washera sheep with supplementation of 400 g concentrate composed of 74.25% noug cake, 24.75% maize grain and 1% salt is profitable with an average gross profit of ETB 96.74. According to farmers' opinions, the Ethiopian traditional market prefers castrated fattened rams related to social customs and values. Therefore, future research should focus on castrated ram fattening technologies. It is recommended that the current technology can be adopted by the extension department and scaled up to other similar woredas targeting festival markets.

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