

Effect of supplementing whole roasted soyabean on milk production in cross bred cattle

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Abstract

Milk production response to feeding of proteins that are relatively resistant to degradation in the rumen has been inconsistent. Soyabean is a source of protein and is being used in animal feed. The rumen degradability of soyabean is very high around 65% crude protein. Heat treatment of whole soybean is an alternative for reducing protein degradability (ABDI et al., 2013). Studies have shown that roasted soybean (ROS) is responsible for increasing milk production. Thus a study was conducted to assess the impact of feeding of roasted soya bean on milk production in cross bred cattle. This trial was conducted under farmer management practices and a total 20 lactating cross bred cattle (Holstein Friesian) of nearly at the same lactation stage, milk yield and parity were selected of 10 farmers for the experiment. To maintain similarity in feeding and management practices, two cows of each farmer were selected and one cow was kept as control and another was supplemented with 300gm whole roasted soyabean and considered as treatment group. Thus a total 10 cows kept in treatment group and 10 kept under control group. The daily milk yield was recorded in morning and evening by the farmers in a diary provided by the institute and at weekly interval by the researcher for fair degree of precision. The experiment was carried out for a period of 60 days. Analysis of data indicate that supplementation of roasted soyabean increased in milk yield 1.47 liter/day (9.68%) in treated group as compare to control group (15.29 liter/day). Additional expenditure for feeding of roasted soya bean ¹ 15/day and B: C ratio 2.74. Farmers are suggested to include roasted soya bean in animal feed for economic milk production and higher income from dairy farming.

Key words: Cattle, Milk yield, Roasted Soya bean,

Introduction

Punjab is one of the smallest states of India, covering an area of 50362 km², representing 1.53% of country's total geographical area and is popularly called as India's bread-basket state. The Punjab State contributes 7.3% of milk to the National grid, from about 3% of the total milch population of the country (BAHS 2014, GOI). The average milk production of indigenous cow, cross bred cow and buffalo is 6.5 kg, 11.0 kg and 8.6 kg/day, respectively and which is highest average among all the state in the country. It

implies that dairy farmers adopting better management practice for their animals and have higher genetic potential animals. Milk production capacity of an individual animal is depending on its genetic makeup, feeding and management practices. High milk producing cows require extra energy and protein for high milk production in early lactation. The capacity rumen is limited, which are unable to meet nutrients requirement for high milk producing animals, thereby inclusion of good quality feed ingredients in concentrate is vital important. Mustard cake is major source of protein used by the farmers in animal concentrate. Protein in mustard cake is highly degradable in Rumen which is less beneficial as

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compare to protected protein. Research has demonstrated the importance of bypass (undegradable) intake protein for high-producing cows. Bypass protein is that protein that escapes rumen fermentation and is available for absorption in the small intestine. As milk production increases, a substantial amount of dietary protein must escape rumen fermentation to meet the animal's requirement for protein. Heat treatment of whole soyabean enhance the its palatability and heat also destroy the anti-nutritional factors contained in raw beans. Among the most notable of these factor is protease which bind the digestive enzymes trypsin and chymotrypsin rendering unavailable to the host animal Kumar *et al.* (2015). In general, it has been calculated that about 35%-40% of the total protein should be bypass protein. Keeping this view in mind whole soya bean was heat treated to make undegradable in rumen and a trial was conducted to analyze the effect of whole roasted soyabean on milk production in high yielding cross bred cows.

Materials and Methods

Present study was conducted to assess the impact of feeding of whole roasted soya bean on milk production in cross bred cattle (Holstein Friesian). This trial was conducted under farmer management practices during 2017-18 and a total 20 lactating cross bred cattle of nearly at the same lactation stage, milk yield and parity were selected of 10 farmers for the experiment. To maintain similarity in feeding and management practices, two cows of each farmer were

selected and one cow was kept as control and another was supplemented with 300gm whole roasted soyabean per day additional and considered as treatment group. Thus a total 10 cows kept in treatment group and 10 kept under control group. The composition of concentrate fed to both the cow was similar. The main source of Protein was Mustard cake in the concentrate. Concentrate fed @1 kg for every 3lit of milk to both the group. The daily milk yield was recorded in morning and evening by the farmers in a diary provided by the institute and at weekly interval by the researcher for fair degree of precision. The experiment was carried out for a period of 60 days. First week of trail was considered as adjustment period. The data were tabulated and analyze for conclusion. A training programme was conducted for the farmers before starting the experiment to educate them for correct method of data recording on different parameters. The data were tabulated and analyzed as per (Snedecor and Cochran 1989) and t- test was applied to test the significance level between both the groups.

Results and Discussion

Effect of feeding whole roasted soyabean on milk production is dipcted in table 1. Average milk production in treatment group was recorded 16.77±1.24 lit. as compare to 15.29±1.29 per day in control group. The milk production increased 1.47 lit/ day (9.68%) in cross bred cattle supplemented with whole roasted soyabean in comparison to control group. These

Table 1: Effect on milk yield and economics analysis of feeding of Roasted soyabean

S. No	Para meters	Control group(T-1)	Treated Group(T-2)
1	Initial milk yield(L/day)	15.17	15.29
2	Average Milk yield (L/day)	15.29±1.29	16.77±1.24
3	Feeding cost/day/animal (¹)	268.50	280.75
4	Average feed cost per liter of milk production	17.56	16.74
5	Return from sale of Milk (¹ 28/lit.)	428.12	469.56
6	Net profit per day(¹)	159.62	188.81
7	Net profit per liter of milk(¹)	10.44	11.26
8	B:C	1.61	1.67
9	Additional milk yield by supplementing whole Roasted Soyabean (L)	-	1.47
10	Milk yield increase over control (%)	-	9.68
11	Value of additional milk(¹)	-	41.16
12	Cost of roasted soyabean supplementation (¹ /day)	-	15.0
13	B:C ratio for supplementing whole Roasted Soyabean	-	2.74

findings comparable with earlier researcher, Block *et al.* (1981), Ruegsegger, *et al.* (1985) and Mielke *et al.* (1981) also reported significant increase in milk yield of high yielding cow. Fathinasir, *et al.* (2007) found that milk and milk fat is significantly higher in roasted soyabean. Feeding cost of per litre of milk was higher (Rs. 17.56) in control than treatment group (Rs. 16.74). The net profit per lit of milk was Rs. 11.26 in treatment group than control (Rs. 10.44). BC ratio was 1.61 and 1.67 in control and treatment group, respectively. BC ratio of inclusion of roasted soyabean was observed 2.74. It could be concluded that supplementing of roasted soyabean in early stage of lactation in higher yielding cross bred cattle is beneficial and enhance the net profit of farmers from dairy farming.

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