

Nutritive Value of Soybean Straw in Osmanabadi Kids

R.S.Mule, R.P.Barbind, S.V. Baswade, D.T.Samale and S. B. Adangale

Department of Animal Husbandry and Dairying,
College of Agriculture, Marathwada Agricultural University, Parbhani-431 402 , India

Abstract

Eighteen weaned kids with similar age (3 months) and body weights were selected for the experiment and distributed to different 3 groups, each consists of six kids viz. (T0) with recommended feeding including available green (Lucerne) and dry fodder (jowar kadbi) plus required concentrate (Home mode) on DM basis as per requirement; (T1) with 50% soybean straw on DM basis and remaining 50% DM from available green (Lucerne) and dry fodder (jowar kadbi) and concentrate (Home made). While (T2) with 100% DM from soybean straw plus concentrate (Home made). As such two feeding trials were conducted, first trial was preceded by seven days as pre-experimental period. From the result of the present study, the inclusion of soybean straw on DM basis in growing kids was found palatable and superior. Similarly, it was found to be most economical for growing kids instead of Jowar straw.

Keywords: Nutritive Value, Soybean Straw, Osmanabadi kids, feeding, Dry matter.

Introduction

Soybean is equally important as fodder as well as oil seed crop. In India soybean considered as one of the best crop. Its green yield is however, slightly less than other kharif pulses. Further, it occupies as an important place in grazing cycle for milch animals, as it remains green in the month of November. Further more soybean hay, which is high in DCP, makes an excellent ration in winter for the cattle. Experiments have shown that feeding value of soybean hay is equal to clover, Alfa Alfa and cowpea for milk and fat production.

Being a leguminous crop, the straw is obviously superior in its quality over any other cereal straws. The soybean hay and other green fodder are available for livestock in rainy and winter season. But the soybean straw can be fed throughout the year. By products consisting of soybean pods, soybean flakes and crushed bits of soya straw produced under country threshing conditions are termed as 'soybean straw'.

Recently this crop is replacing cotton, sugarcane and other pulse crop. Therefore, sufficient quality of soybean fodder is expected for feeding to the livestock. So far very little research has been directed in India towards determining the nutritive value of soybean

straw and towards developing means for its utilization by livestock. Lower palatability as a result of coarseness and ignorance about the nutritive value of this straw, farmers many times do not include it in the diet of animals.

No work done till today, feeding of soybean straw for growing (weaned) kids is undertaken. Hence, to see the efficiency of feeding of soybean straw for growing kids, with this purpose the present work is planned under to see the nutritive role of soybean straw for the growing kids.

Materials and Methods

Eighteen weaned kids with similar age (3 months) and body weights were selected for the experiment and distributed to different 3 groups, each consists of six kids viz. (T0) with Recommended feeding including available green (Lucerne) and dry fodder (jowar kadbi) plus required concentrate (Home mode) on DM basis as per requirement; (T1) with 50% soybean straw on DM basis and remaining 50% DM from available green (Lucerne) and dry fodder (jowar kadbi) and concentrate (Home made). While (T2) with 100% DM from soybean straw plus concentrate (Home made). Experimental period was of 28 days including last 7 days as collection period. As such two feeding

trials were conducted, first trial was preceded by seven days as pre-experimental period.

Feed intake observations were recorded during the experimental period for individual kid of each treatment, so as to investigate the treatment effect. Digestion trial was conducted during last seven days of each feeding trial. The faeces voided were collected for individual kid and weighed every day. The representative samples of faeces and feedstuff were analyzed for their proximate principles (A.O.A.C., 1984).

All the observations of the treatments, recorded during the experimental period were subjected to statistical analysis in Complete Randomised Design (CRD) (Federer, 1967).

Results and Discussion

It is observed from Table 1 that nutritional picture of soybean straw in per cent was as 88.45 DM, 7.88 CP, 1.25 EE, 38.10 CF, 38.99 NFE and 13.78 total ash on DM basis.

The present value of DM of soybean straw is in agreement with those reported by Kumar and Garg (1995); Mahakhode (1997) and Rajmane (1999), who reported the DM value of Soybean straw ranging from 88.00 to 93.08 per cent, which appears very nearer to present value i.e. 88.45 per cent.

Table 1. Chemical composition of different feed stuff on (per cent) DM basis.

Particulars	Jowar	Soybean straw	Lucerne straw	Concentrate (Home Made)
DM	90.11	88.45	19.85	89.25
CP	1.55	7.88	18.29	19.30
CF	31.75	38.10	20.13	9.05
EE	1.59	1.25	2.03	4.33
NFE	50.66	38.99	46.60	54.73
Total ash	14.45	13.78	12.95	12.59

The present values of CP and CF of soybean straw are in agreement with those reported by Pachuri and Negi (1976); Kumar and Garg (1995); *Gawai, et. al.* (1997) and Mahakhode (1997). However, the values for EE and NFE of soybean straw are in agreement with those reported by Pachuri and Negi (1976); Kumar and Garg (1950); *Gawai, et. al.* (1997); Mahakhode (1997) and Rajmane (1999).

Jowar straw was containing 90.11, 1.55, 31.75, 1.59, 50.66 and 14.45 per cent DM, CP, CF, EE, NFE and ash, respectively, while lucerne was containing 19.85, 18.29, 20.13, 2.03, 46.60 and 12.95 per cent DM, CP, CF, EE, NFE and ash, respectively. The contents of nutrients in homemade concentrate were 89.25, 19.30, 9.05, 4.33, 54.73 and 12.59 pr cent DM, CP, CF, EE, NFE and ash, respectively.

Table 2. Treatment effect on DM intake (in kg/100 kg body weight)

Treatment	DM intake (in kg/100 kg body weight)
T0	2.863
T1	2.906
T2	3.038
SE ±	0.0736
CD at 5%	NS

It is observed from Table 2 that the daily DM intake (in kg/100 kg body weight) was 2.863, 2.906 and 3.038 kg in treatments T0, T1 and T2, respectively. The differences among the treatments were statistically non-significant.

The present value of DMI is in agreement with those reported by Mahakhode (1997); Talokar (1993) and Kumar and Garg (1995).

Table 3. Treatment effect on digestibility coefficients.

Treatment	DM	CP	CF	EE	NFE
T0	49.50b	43.48b	42.62b	50.09b	51.66
T1	50.65b	43.91b	44.37b	52.47b	52.07
T2	54.66a	48.38a	45.33a	53.84a	53.60
SE ±	0.262	0.645	0.681	0.516	0.729
CD at 5%	1.571	1.914	2.020	1.533	NS

(Similar superscripts did not differ from each other)

The digestibility of different nutrients for the different rations presented in Table 3. The mean digestibility of nutrients for T0, T1 and T2 were 49.50, 50.65 and 54.66% for DM; 43.48, 43.91 and 48.38% for CP; 42.62, 44.37 and 45.33% for CF; 50.09, 52.47 and 53.84% for EE and 51.66, 52.07 and 53.60% for NFE per cent, respectively. The digestibility of all nutrients were significant among the treatments except NFE.

The present values of digestibility of different nutrients are in agreement with those reported by Kumar and Garg (1995); Talokar (1993); Rajmane and Deshmukh (2000); Pachuri and Negi (1976) and Mahakhode and Karanjkar (2000).

Table 4. Economics of feeding

Particulars	T0	T1	T2
Total amount of lucern fed (kg)	12.6	6.3	--
Total amount of jowar straw fed (kg)	6.3	3.15	--
Total amount of soybean straw fed (kg)	--	6.3	12.6
Total amount of concentrate fed (kg)	6.3	3.15	6.3
Cost of feeding lucern (Rs)	44.1	22.05	--
Cost of feeding jowar straw (Rs)	12.6	6.3	--
Cost of feeding soybean straw (Rs)	--	15.75	31.5
Cost of feeding concentrate (Rs)	31.15	15.75	1.50
Total cost of feeding (Rs.)	88.2	59.85	3.00
Mean total gain in body weight (kg)	2.0	2.10	3.03
Cost of feeding/kg body wt. gain (Rs)	44.1	28.5	0.79

The cost of feeding was Rs.88.20, 59.85 and 63.00 in T0, T1 and T2 treatments, respectively. Cost of feeding per kg body weight gain in T0, T1 and T2 treatments was 44.10, 28.50 and 20.79, respectively (Table 4).

However, cost of feeding per kg gain of body weight was lowest to substantial increase in level of soybean straw in T2 (20.79) and T1 (28.50) and highest cost in T0 (44.10) treatment.

The similar trends was observed by Talokar (1993) on feeding of soybean straw and jowar straw with concentrate in buffalo heifers.

Conclusion

It can be concluded that the inclusion of soybean straw on DM basis in growing kids was found palatable and superior. Similarly, it was found to be most economical for growing kids instead of Jowar straw.

Acknowledgement

Authors are thankful to The Head, Department of Animal Husbandry and Dairying, College of Agriculture, Marathwada Agricultural University, Parbhani - 431 402, for the facilities provided to conduct research.

References

1. A.O.A.C. (1984): Official methods of analysis. Association of official Agricultural chemists, 12th Edn., Washington D.C.
2. Federer, W.T. (1967): Experimental design. Theory and Practice. Oxford and IBH Publishing Co., Calcutta.
3. Gawai, S.M. et al. (1997): *Indian Vet. J.*, 74 : 721-722.
4. Kumar Sanjiv and Garg M.C. (1995): *Indian J. Anim. Nutri.*, 12 (6) : 117-118.
5. Mahakhode, A.G. (1997): M.Sc. (Agri.) Thesis, MAU., Parbhani.
6. Mahakhode, A.G. and Karanjkar L.M. (2000): *Indian J. Anim. Sci.*, 70 (10) : 1085-1086.
7. Pachuri, V.C. and Negi S.S. (1976): *Indian J. Anim. Sci.*, 46(3) : 118-121.
8. Rajmane, S.M. (1999): M.V.Sc. Thesis, MAU., Parbhani.
9. Rajmane, S.M. and Deshmukh S.V. (2000): *Indian J. Anim. Nutri.*, 17 (3) : 246-248.
10. Talokar, R.J. (1993): M.Sc. (Agri.) Thesis submitted to Dr. P.D.K.V., Akola.

* * * * *

Subscribers who do not receive the journal regularly or find it at wrong address are required to communicate at editorial office with correct address alongwith pincode.