

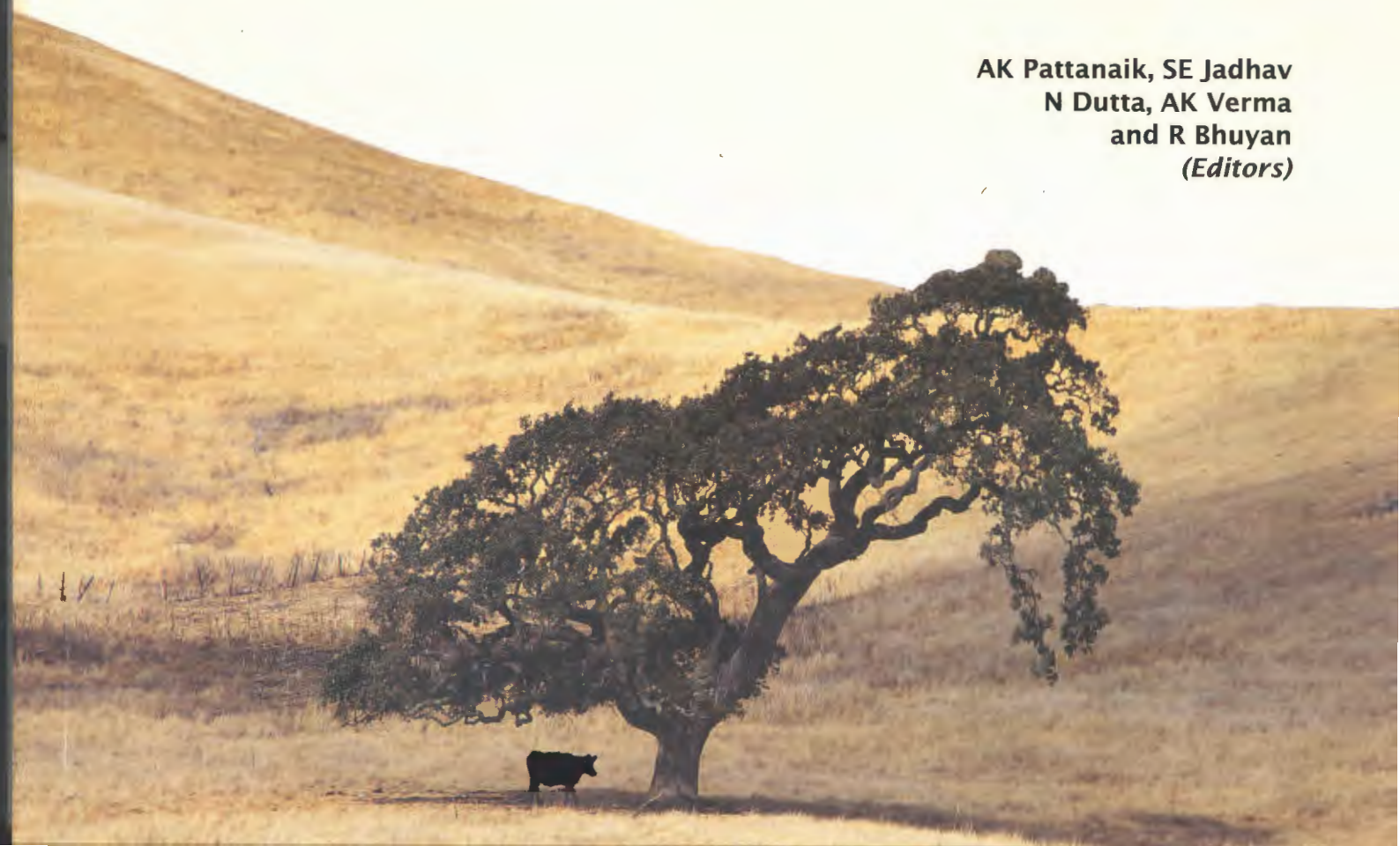
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# **ECO-RESPONSIVE FEEDING AND NUTRITION**

**LINKING LIVESTOCK AND LIVELIHOOD**

**ABSTRACT PAPERS**

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## Comparison of Total Mixed Rations based on Stover of a Superior Dual Purpose Sorghum and Maize Cultivar in Nellore Sheep

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**SUMMARY:** Total mixed ration (TMR) consisting to 60% of stover from superior dual maize hybrid NK 6240 and superior dual purpose sorghum variety BJV 44 were compared for intake, digestibility and apparent weight gains in Nellore rams. Average daily gain (g), OM and DOM intake (g/d or g/kg LW/d) were similar between rams fed sorghum and maize stover based TMR but OM digestibility was significantly ( $P < 0.0001$ ) higher for maize stover based than sorghum stover based TMR. The quality of a superior maize hybrid stover is not inferior to stover from dual purpose sorghum and maize stover can effectively replace sorghum stover which is the main fodder source for feeding urban and peri-urban dairy animals without affecting their performance.

**Keywords:** Dual purpose maize, Dual purpose sorghum stover, Intake, Performance, Total mixed rations.

### BACKGROUND

The area under maize is increasing at the expense of sorghum, which provides a major fodder resource to urban and peri-urban dairies (Blümmel and Rao, 2006) in peninsular India. There is a wide spread perception among dairy producers and fodder traders that maize stover is inferior to sorghum stover and that the latter cannot be substituted for by the former (Biradar, 2004). Laboratory fodder quality analysis of a wide range of maize and sorghum stover does not support these perceptions, since high digestible maize and sorghum stover can be found alongside low digestible maize and sorghum stover. Clearly a high digestible sorghum stover will perform better than a low digestible maize stover, but the reverse is true as well! However, laboratory fodder quality traits do not capture variations for example in palatability of stover which might distinguish a sorghum stover from a maize stover. The present work therefore tested *in vivo* a superior maize and a superior sorghum stover identified from multidimensional crop improvement, with superior here defined as having *in vitro* digestibility of >52% which indicates premium quality in sorghum stover trading. The stover contributed 60% to a total mixed ration and the rations were fed *ad libitum* to sheep.

### METHODOLOGY

Sixteen Nellore rams ( $37.8 \pm 2.01$  kg) were randomly divided into two groups of eight sheep each. The two groups were offered total mixed ration (TMR) blocks prepared with roughage to concentrate ratio of 60: 40 from dual purpose sorghum (BJV 44) and superior maize hybrid (NK 6240) stovers *ad libitum* for 45 days. A metabolic trial was conducted during the last 12 days of the study. Daily feed offered and refused as well as feces voided were recorded during the collection period. Feed offered and refused were analyzed using NIRS. Anova was done using the General Linear Model procedure of SAS (2008).

### RESULTS

Average daily gain (g), organic matter (OM) and digestible organic matter (DOM) intake (g/d or g/kg LW/d) were not significantly ( $P > 0.05$ ) different between sheep offered superior maize hybrid (NK 6240) and dual purpose sorghum (BJV 44) TMR but OM intake was higher in sheep fed sorghum stover TMR whereas daily gain was more in sheep fed maize stover TMR block. OM digestibility was significantly ( $P < 0.0001$ ) higher in sheep fed maize stover than sorghum stover TMR block.

**Table 1.** Effect of feeding sorghum and maize stover based total mixed ration on intake digestibility and daily gain in Nellore sheep

| Parameter   | Total mixed ration      |                        | SEM  | P       |
|-------------|-------------------------|------------------------|------|---------|
|             | Sorghum stover (BJV 44) | Maize stover (NK 6240) |      |         |
| <i>OMI</i>  |                         |                        |      |         |
| g/d         | 1213                    | 1097                   | 57.4 | 0.18    |
| g/kg LW/d   | 30.4                    | 27.9                   | 1.09 | 0.12    |
| OMD (%)     | 58.8                    | 62.3                   | 0.44 | <0.0001 |
| <i>DOMI</i> |                         |                        |      |         |
| g/kg LW/d   | 17.9                    | 17.4                   | 0.61 | 0.54    |
| ADG (g/d)   | 43.4                    | 58.2                   | 16.0 | 0.52    |

### CONCLUSION

Superior maize hybrid (NK 6240) stover quality is similar to that of dual purpose sorghum stover (BJV 44). Maize stover can therefore replace sorghum stover, which is the main fodder source for feeding dairy animals in urban and peri-urban dairies, without affecting their performance given that high quality maize stover are used.

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