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Performance evaluation of *Kharif* and *Rabi* fodder sorghum in Namsai district of Arunachal Pradesh

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Introduction

Deficiency of feed and fodder accounts for half of the total loss in dairy farming therefore, forages are called as backbone of livestock industry. The scarcity of green forages and grazing resources in the country has made the livestock to suffer continuously with malnutrition resulting in their production potentiality at sub-optimum level as compared to many developed nations (Anonymous, 2012). Arunachal Pradesh is well known for its ever green vegetation and biodiversity under hilly ecosystem. Though, it is situated at remotest part of country but possess huge scope of livestock farming. Namsai district of Arunachal Pradesh is a bordering district of Assam and having huge potential of milk production and its marketing which may help to improve the economic condition and poverty eradication of rural people. Cow is a major dairy animal here, however, the milk production capacity is very low as compared to other parts of the country. Dairy cow are reared in century old traditional way therefore, there are several areas of dairy management which needs improvement. Scarcity of feed and fodder is one of the major bottleneck which needs to be addressed urgently. Namsai district has very limited number of fodder crop and farmers mainly depend on non-conventional, public grazing land and forest vegetation. KVK Lohit (Namsai district) has introduced fodder sorghum in rainy and winter season for the first time in the district purposefully to improve the fodder availability under organized dairy farming in Namsai district.

Materials and Methods

In the present study, performance of newly introduced fodder sorghum at Namsai district of Arunachal Pradesh was evaluated on the basis of plant height and total green fodder yield. To measure plant height at 60 days after sowing, 10 representative plants from each field of farmer were sampled and plant height measured from the base of the plant to the tip of the panicle. Total green fodder yield were observed by harvesting and weighing the plants of one square meter at ground level (Rao *et al*., 2013). Weight of harvested green plant was taken from an area of one square meter. Sample for calculation of green fodder yield were taken from four place of one field to minimise the error. Average weight of fresh biomass was converted to per hectare green fodder yield using formulae - Total green fodder yield (q/ha) = (Total fresh biomass per square meter area (kg) X 10000)/100. Sorghum seed was procured from ICAR-Indian Institute of Millets Research, Hyderabad and sown @ 10 kg/ha by broadcasting method. Using chemical fertilizer and pesticides is not a common practice under prevailing cultivation practices in Namsai district, therefore, considering the farmer practices; sorghum crop was grown under rainfed condition without fertilizer application. Rainy season variety (*Kharif*) was sown in the month of July and Rabi (winter) season variety was sown in the month of October. The soil and atmospheric parameter were adopted from the record available at Farmer training centre Kherem, Namsai District. Soil of Namsai district is characterized as sandy soil, pH range from 5.5 to 6.5. Climatic condition of Namsai district is characterized as sub-tropical with high rainfall during raining season and no foggy weather during winter season. Atmospheric temperature varied from 9 to 33^{o}C (Anonymous, 2014-15).

Results and Discussion

Observations showed that fodder variety CSH 24MF and CSV 21F grown in rainy season attained plant height of 154.33 and 162.00 cm at 60 DAS and produced a green fodder yield of 250.17 q/ha and 206.25 q/ha respectively. Winter season dual purpose variety CSV-22, CSV 26 and CSV 29 attained a plant height of 129.33, 132.33 and 130.66 cm at 60 DAS and produced green fodder yield of 208.93, 196.0 and 224.3 q/ha respectively. Dairy farmers were satisfied with growth and fodder yield from sorghum crop that was introduced first time in the area. Palatability of sorghum fodder was good for cow as well as calf. Rainy season varieties yield less than the reported yield, it might be due to no application of fertilizer and manure as reported in earlier reports (Agarwal *et al*., 2005; Verma *et al*., 2005; Chaurasia *et al*., 2006; Duhan, 2013). Duhan (2013) reported least green fodder yield in control (no fertilizer and manure) treatment and maximum fodder yield with 100% recommended dose level of N:P:K fertilizer in sorghum.

Conclusion

Fodder sorghum crop can be grown during both rainy and winter season in Namsai district of Arunachal Pradesh however, extensive study is needed to validate and standardized the time of sowing, soil management, cultivation and plant protection technology and nutrients demands to achieve highest fodder yield in the particular area.

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