

Effect of Azospirillum on fodder production in the semi-arid region of South India

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Introduction Productivity of the tropical and subtropical grazing lands is generally very low. Chemical fertilizers are expensive and ecologically not desirable. Greater emphasis is now laid on the application of biofertilizers to increase the fodder production. Nitrogen fixing bacteria have the potential to reduce nitrogen fertilizer requirements in many agricultural areas. Yield increase after inoculation with Azospirillum have been recorded in many places throughout the world. *Azospirillum lipoferum* inoculation showed higher green forage yield than *Azospirillum brasilense*. In the present investigation *Azospirillum lipoferum* strain (ICM 1001) was used to increase the productivity of five fodder grasses.

Materials and methods The culture of *Azospirillum lipoferum* ICM 1001 was obtained from ICRISAT, Hyderabad, India. Root inoculation was done by immersing fodder grass tillers in the bacterial strains of semi liquid inoculums for 12 hours, later the tillers were transplanted to the field. Furrow irrigation was adapted for the application of water at every third day. Plants were harvested after 3 months and samples were dried at 80°C for 22 hours until constant weight was reached.

Results and discussion Table 1 Shows that Bajra-Napier BN3 attains the greatest maximum plant height peak when inoculated with the strain *Azospirillum lipoferum* 1001. This increased the tiller number also. Compared with the controls, biomass production was higher in *Azospirillum* inoculated clones. It effectively increased the above ground biomass production more than the below ground production. Increasing rate of plant growth and forage yield has been obtained in *Azospirillum* inoculated fodder grasses. Similar findings were also observed by Jawahar and Suresh (2007), and Saikia and Jain (2007). Bajra Napier BN2 variety with *Azospirillum lipoferum* 1001 inoculation showed higher biomass production. It is a suitable fodder species for the subtropical regions of South India.

Table 1 Effect of *A. lipoferum* inoculation on biomass production of fodder grasses.

		Height cm	No. of tillers	Shoot biomass g/plant	Root biomass g/plant	Total biomass g/plant
Brocharia mutica	Control	120	14	67.2	12.96	80.16
	AL 1001	149	16	71.4	18.52	89.92
Bajara-Napier BN2	Control	209	5	302.06	123.12	425.20
	AL 1001	282	6	459.32	164.76	624.06
Bajara-Napier CO1	Control	153	6	242.56	82.80	325.36
	AL 1001	201	8	336.52	111.96	446.48
Panicum maximum (Hamil grass)	Control	172	12	120.96	26.92	147.68
	AL 1001	222	21	156.80	29.48	186.24
Panicum maximum (guinea grass)	Control	152	12	103.20	19.16	122.36
	AL 1001	206	16	140.31	27.43	167.74

References

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