sandal is mainly responsible for the decrease in the total mineral content in it.

Another noteworthy point is that the C.E.C. of *Cassia siamea*, which is known to be a good host for sandal, is almost equal to that of sandal. It is, therefore, to be seen whether the proximity of the C.E.C. of a plant to that of sandal is one of the criteria to serve as a good host.

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OCCURRENCE OF THE ALLIGATOR WEED IN SOUTH INDIA*

THE alligator weed *Alternanthera philoxeroides* (Mart.) Griseb, a native of South America, was first reported in India from Bihar and West Bengal (Maheshwari, 1965). This emergent aquatic weed which thrives in waters up to a depth of 2·5 m has been gradually spreading in north-east India in recent years and is now found also in parts of Assam. Early in July, 1970 the weed was collected in the lake at the Lal Bagh Gardens, Bangalore. It is still limited to isolated small patches along the northern shore of this lake, which is heavily infested by *Eichhornia crassipes* as the dominant weed. A few erect shoots of *A. philoxeroides* and *Ludwigia adscendens* were seen amidst dense stands of *Eichhornia*. There has apparently been no previous published record of the alligator weed from South India. The weed is likely to invade other areas in peninsular India as well as North India if timely measures are not taken up to control it in the limited areas of its present distribution. Although the weed produces flowers, seed-setting is rare and the weed propagates almost entirely by vigorous vegetative growth and regeneration of detached and dispersed clumps. The weed is very aggressive and like the water hyacinth it may become a menace to cultivation and inland water transportation. No satisfactory herbicidal controls against the alligator weed are known (Sculthorpe, 1967).

Elsewhere in the south-east Asia *A. philoxeroides* has been recorded only from Burma and Indonesia (throughout western Java), having been first found near Djakarta as far back as in 1875. Most probably it has spread to India from Burma.

In the U.S.A. the alligator weed grows in dense mats over thousands of acres, clogging recreational and flood-control waterways, disturbing wild life habitats and threatening rice cultivation. It is also believed to provide favourable breeding sites for mosquitoes. A leaf-feeding beetle, *Agasicles* sp., which is highly specific to *A. philoxeroides*, has been introduced there from South America and it is reported to be exerting satisfactory control of the weed in some of the infested areas where releases have been made. This biocontrol agent is worth introducing for trials in India. Three species of native insects, *Cassida* sp. nr. *enervis* Boh., *Psara basalis* Wkr. and *P. stultalis* Wkr., are known to attack the alligator weed in India but these have little control value.

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A NOTE ON THE EFFECT OF SIMAZINE ON THE FODDER PRODUCTION OF M.P. CHARI (*SORGHUM BICOLOR*)

SIMAZINE is widely used as a herbicide. However, when it is used in smaller doses, it enhances the crop growth and crude protein yield (Ries, 1968). A trial was laid out at Indian Grassland and Fodder Research Institute,

Jhansi, to find out the extent of such benefit on fodder sorghum M.P. Chari. Pre-emergence application of simazine was done to M.P. Chari at the rate of 0, 100, 200, 300, 400 and 500 g a.i./ha over a basal application of 60 kg N and 30 kg P_2O_5 per hectare. The effect of simazine treatments was also compared with 30 kg N/ha soil application given as top dressing at boot stage and the same dose as foliar spray in two equal splits at boot stage and at 5 days interval. The crop was harvested for fodder at 50% heading (77 days growth).

The results indicated that application of 100 g a.i. simazine per hectare increased significantly the green fodder and dry matter yield by 118 q/ha (53·1%) and 31·8 q/ha (60·6%) respectively over the control yields (222 q/ha green fodder and 52·4 q/ha D.M.) without simazine. The effect of 100 and 200 g a.i. simazine per hectare application was statistically at par. Further increases in the simazine level did not benefit the crop. Crude protein yield was also increased by 158 kg/ha (61·4%) due to 100 g a.i. simazine per hectare over control value of 257 kg/ha.

Application of 100 g a.i. simazine per hectare was statistically superior to top dressing of 30 kg N ha (soil application) giving an increase of 47 q/ha (16·0%) of green fodder and 11·5 q/ha (15·8%) dry matter over 293 q/ha green fodder and 72·7 q/ha of dry matter obtained with top dressed treatment. The effect of 100 g a.i. simazine per hectare was also statistically at par with 30 kg N/ha applied as foliar spray.

Thus, these results indicate the promise of lower doses of simazine to enhance the fodder production and also economise the use of nitrogenous fertilizers.

Indian Grassland and Fodder Research Institute, Jhansi, *August*, 14, 1971.

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EFFECT OF FERTILIZER ON THE PROTEIN CONTENT OF RICE

THE effect of NPK fertilizer at two different doses applied to rice plant grown at two different levels of altitude on the protein content and cooking quality was studied.

Five varieties of rice mentioned below were grown at two different doses of fertilizer $N_{40}P_{20}K_{20}$ and $N_{80}P_{40}K_{40}$ kg/ha. Karjat-184, Kosbhat-71 and Taichung Native-1 were grown both on upland and lowland at the Agricultural Institute of Kosbad in wet season 1970–71. Jaya was tested under lowland condition only while Padma was tested under upland condition only. The protein content at the time of harvest was determined by macro-Kjeldhal method and the cooking quality was estimated by iodine coloration[1].

TABLE I

Variety	Level	Fertilizer treatment	Protein percentage	Cooking quality
Jaya	Lowland	Low dose*	7·127	Poor
		High dose†	7·501	
Karjat–184	Upland	Low dose	6·170	Poor
		High dose	6·657	
	Lowland	Low dose	6·539	
		High dose	6·832	
Padma	Upland	Low dose	6·479	Poor
		High dose	6·902	
Kosbhat-71	Upland	Low dose	6·904	Good
		High dose	7·482	
	Lowland	Low dose	7·049	
		High dose	7·492	
Taichung	Upland	Low dose	6·107	Poor
		High dose	6·678	
	Lowland	Low dose	6·314	
		High dose	6·653	

* $N_{40}P_{20}K_{20}$ kg/ha, † $N_{80}P_{40}K_{40}$ kg/ha.

It might be seen from Table I that as the dose of NPK fertilizer increased the protein content of all the varieties of rice grown at two different levels increased. Jaya, Karjat-184, Padma and Taichung Native-1 had poor cooking quality. However, Kosbhat-71 had good cooking quality.

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