Gujarat. In 1986, a severe epidemic of sugarcane wilt disease was noticed in Madhi, Bardoli and Chalthan areas of South Gujarat.

Soil samples (46 from Madhi, 26 from Bardoli and 34 from Chalthan) were collected from wilt-infected fields. Examination of the soil samples revealed the presence of 2880 nematodes from soil around severely-infected plants and 105 from soil around apparently healthy plants from the same field. The nematodes were identified by CAB International Institute of Parasitology, CABI, UK, as *Tylenchorhynchus microcephalus* n.sp.; *Pratylenchus zeae* Graham, 1951; *Hoplolaimus seinhorsti* Sher, 1963; *Helicotylenchus retusus* Siddiqi & Brown, 1964 and *Hemicriconemoides mehdii* Suryawanshi, 1971.

This is the first report of the occurrence of plant parasitic nematodes on sugarcane crop in Gujarat. The study indicates that these nematodes play a role in predisposing sugarcane to infection by wilt fungus. Similar observations on association of plant parasitic nematodes, viz., *Hoplolaimus indicus*, *Tylenchorhynchus nudus* and *Helicotylenchus dihystera* with two species of fungi, *Fusarium moniliformae* and *Cephalosporium sacchari*, causative agents of wilt disease in sugarcane, have been reported from Bihar[1]. In the Bihar study it was also shown that simultaneous occurrence of the nematode *H. indicus* and the fungus *F. moniliformae* significantly increased wilt disease incidence than occurrence of fungus alone. It is possible that upon infection of the roots by the nematodes, the wilt pathogens gain entry into the roots more easily. Experiments have been initiated to evolve suitable methods for the management of the nematodes and thereby the control of sugarcane wilt disease.

The authors are grateful to the managements of sugarcane factories at Madhi, Bardoli and Chalthan for their kind help and co-operation in collecting soil samples and to Dr M. R. Siddiqi, Taxonomist, CAB International Institute of Parasitology, UK, for identification of nematodes.

10 October 1987; Revised 20 February 1988

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A NOTE ON THE EXTRA FLORAL NECTARIES OF *BALIOSPERMUM RAZIANA* KESHAV ET YOG. (EUPHORBIACEAE) WITH A NEW DISTRIBUTIONAL RECORD

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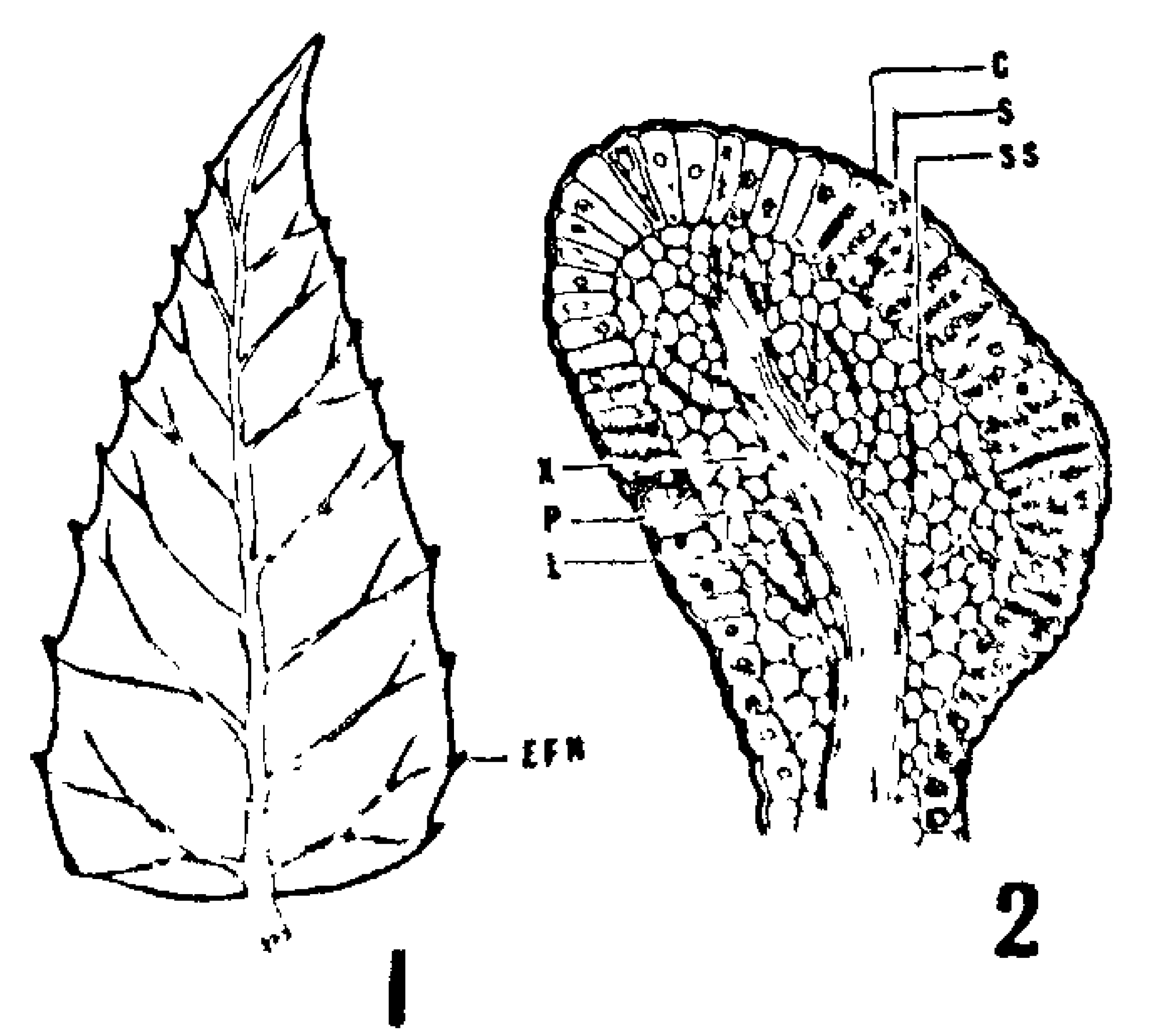
Baliospermum raziana has been reported as a new species of Euphorbiaceae from Coorg recently[1]. *B. raziana* Keshav. et Yog. collected by the present authors from the forests of Dhulia District (Maharashtra) is an addition to the flora of Maharashtra.

B. raziana is distinguished from *B. montana* on the basis of the leaf marginal glands and long peduncled racemes present in the former[1]. The leaves fixed in FAA after customary methods (like infiltration and dehydration) were used for microtomy. The present study reveals that the term extrafloral nectaries apply more aptly than leaf marginal glands. This is also corroborated by earlier reports[2].

The extrafloral nectaries are distributed along the tips of leaf marginal serrations varying in number from 16 to 20 (figure 1). In rare cases two basilaminar nectaries are also seen as small projections on the upper side of the petiole. The extra floral nectaries are globose in shape, enveloped by a thick cuticle (figure 2). The cuticle is not interrupted by



Figures 1 and 2. 1. Occurrence of extra floral nectaries along the leaf margin, and 2. Diagram of LS of an extra floral nectary [C, cuticle; EFN, extra floral nectary; L, laticifer; P, phloem; S, secretory zone; SS, sub secretory zone; X, xylem].

any stomata or pores. The nectary tissue can be differentiated into a secretory and sub-secretory zone. The secretory zone is oval in shape and composed of palisade-like parenchyma cells with dense cytoplasmic contents and prominent nuclei. The sub-secretory zone consists of polygonal parenchyma cells. The vascular supply to the nectary consists of both xylem and phloem strands and it ramifies in the sub-secretory tissue. Branched, non-articulated laticifers also enter into the nectary in association with phloem. The vascular supply represents one of the branches of secondary vein (figure 1). The gross anatomy, mode of distribution and the vascular supply show that these structures can be considered as extra floral nectaries[2].

Notes: Undershrubs, rare in forest undergrowth. Flowers creamy yellow. Calycine nectaries are present along the margin. Unsegmented secretory disc in male flowers is extra staminal in positions.
Illu. Keshav et Yog. *op. cit.*, figures 1–4.
Exsiccata: *MV* (Toranmal) 1548. Fls. & Frs. January.

The authors thank DST (T.J) and MAB (M.V) for financial assistance and Mr. Vinoth Thomas for assistance.

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PRODUCTION OF UNISEXUAL PROGENY IN RICE GALL MIDGE *ORSEOLIA ORYZAE* (WOOD-MASON)

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SOME insects, viz. Hessian fly, *Mayetiola destructor* (Say)[1] and sorghum midge, *Contarinia sorghicola* (Coq)[2] of the family Cecidomyiidae, and others of the closely related family Sciaridae[3] produce unisexual progeny, i.e., broods either exclusively male or exclusively female. The rice gall midge, *Orseolia oryzae* (Wood-Mason) (Diptera: Cecidomyiidae) is a serious pest of rice in India. The adult fly lays eggs on leaf sheath or leaf blade and the eggs hatch after 3–4 days. After hatching the maggots enter the plant, feed on growing points in the tillers and produce 'silver shoots' within 15–20 days. The affected tillers do not bear any panicles. Since no information is available on the question of production of unisexual progeny in rice gall midge, investigations were undertaken.

Newly emerged unmated male and female gall midges were collected separately by covering individual silver shoots with mylar tubes prior to adult emergence. One pair of these adults was then caged on five 25-day-old potted rice plants of the variety T(N)1. After 24 h of mating and oviposition, the mylar tubes were removed and the potted plants were kept in a hum'dity chamber at 80% RH for 4 days for incubation of eggs. The potted plants were then shifted back to normal humid conditions for development of the maggots. About 15 days after oviposition when 'silver shoots' appeared, the individual pots were again covered with triacetate tubes of bigger size for collection of adults. The number of male and female gall midges that emerged — representing the progeny of one mated female — was recorded. Ten pots (5 plants/pot) were used as 10 replications. The experiment was repeated once every month from July 1979 to June 1980.

The results revealed that of the 120 individually mated females studied, 51 produced all-male and 69 all-female progeny. None produced both male and female progeny. Further, temperature effects did not account for the production of unisexual progeny. The overall ratio of females producing male progeny to females producing female progeny was 1:1.35.

In another experiment designed to reveal the existence of parthenogenesis, 10 mated and 10 unmated gall midges were individually caged on five T(N)1 plants as described earlier. Mated females oviposited a significantly higher number of eggs (89/female) compared to unmated females (31.2/female). However, no such difference was reported by Hidaka *et al*[4] possibly because a fewer number of replications were maintained in their study. While over 99% of the eggs laid by mated female hatched resulting in silver shoot formation in 57% of the tillers, none of the eggs laid by unmated female hatched and consequently no silver shoot was observed. This ruled out the existence of parthenogenesis in rice gall midge.

Painter[1] discounted differential death rates between the sexes of Hessian fly as a mechanism for the unisexuality of individual broods. Baxendale and Teetes[2] also reasoned that in sorghum midge unisexual broods were not the result of differential larval mortality. In arrhenotokous insects the mated females