there are other similar finstances on record[4]. Before coming to a final conclusion, it would be necessary to study the effect of these chemicals on a number of other vernalizable plants.

This piece of investigation has been carried out under the U.G.C. scheme for utilization of services of retired teachers, in which one of us (S. C. C.) is participating.

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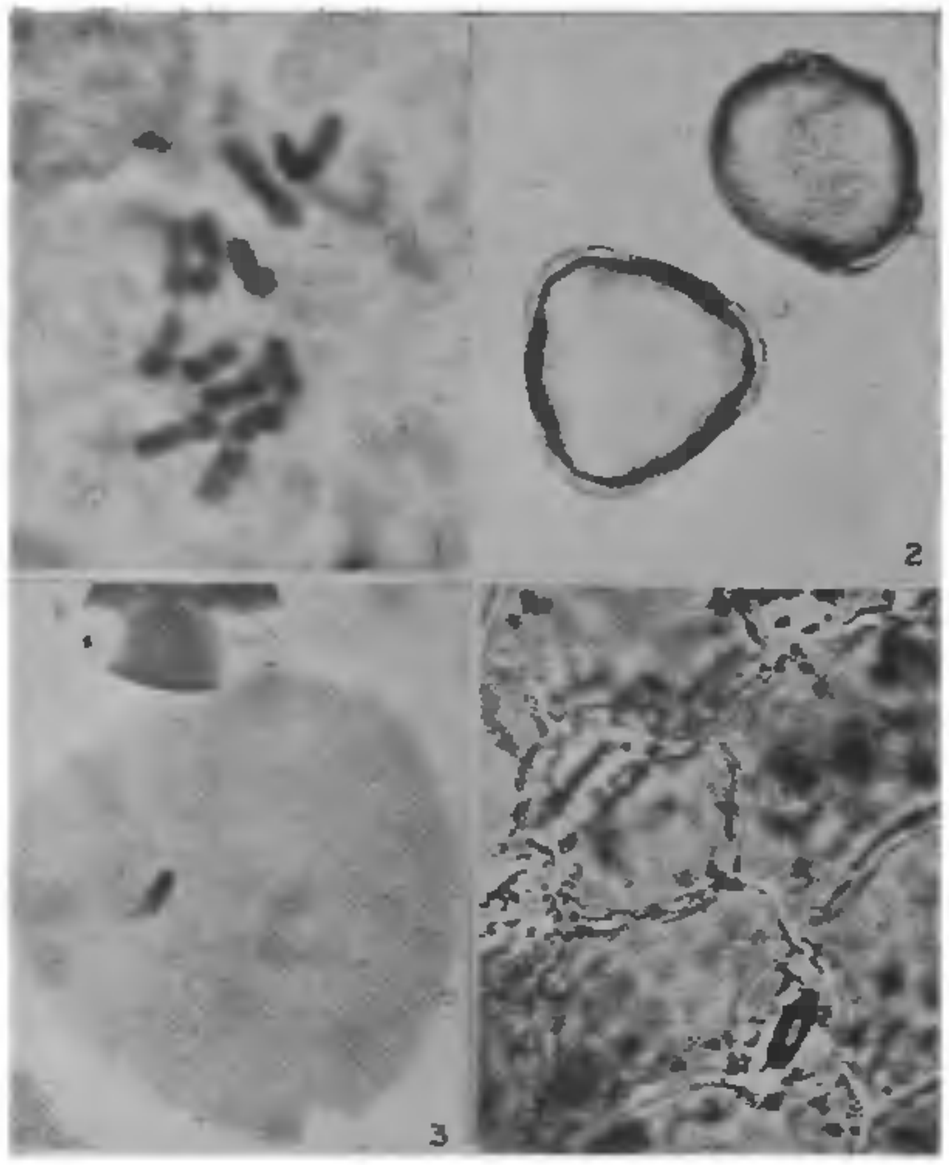
CHROMOSOME NUMBER AND MORPHOLOGY OF *SESBANIA PROCUMBENS* (ROXB.) W. AND A.

Sesbania Scop.. (FABACEAE) is represented by four species in India[1], namely, *S. aegyptica* Pers., *S. aculeata* Pers., *S. procumbens* (Roxb.) W. and A., and *S. grandiflora* Pers. Gamble[5] has erected *S. aculeata* var. *paludosa* of Baker as a distinct species, *viz.*, *S. paludosa*. The chromosome numbers $2n = 12$ in *S. aegyptica*[6-8], *S. aculeata*[8] and $2n = 24$ in *S. aculeata*[6] and *S. grandiflora*[7,10] have been reported earlier. The chromosome number in the only herbaceous species, *S. procumbens*, has not been reported and the same is reported here as $2n = 12$ (Fig. 1). There is no work on this rare sesban which has been recorded for the first time from a non-costal region. Morphological, cytological, palynological and anatomical characters are also presented to supplement the distinctive features of this taxon. Baker[1] and Gamble[5] have given a detailed morphological description of the species.

This species is confined to coromandel regions of peninsular India occurring chiefly in rice fields[1,3,5,9]. The material investigated by the present authors was discovered for the first time in Karnataka State, near Kukkanahalli Tank (Mysore), on 20–9–1975 (Bhaskar and Lakshmi Devi, 574 MGM) on the marshy tank bund. This also forms an addition to the 'Hydrophytes and marsh plants of Mysore' reported earlier[2].

Sesbania procumbens (basionym = *Aeschynomene procumbens* Roxb.) and *Aeschynomene indica* are usually confused since they are similar in habit and bear small sensitive leaflets and more or less yellow flowers, However, the present study has revealed many differences. *Sesbania* has a long septate fruit and diadelphous androecium (9 + 1) instead of a lomentum and diadelphous stamens in bundles of 5 each characteristic of *Aeschynomene* and a few other related genera. *S. procumbens* can be easily distinguished in the field by its bright yellow flowers while they are pale yellow or cream-coloured with red streaks in *Aeschynomene*. The stipules are absent in the latter and are small triangular and caducous in *S. procumbens*.



FIGS. 1–4.

Plants in *Sesbania procumbens* flowered from August to October and fruits persist till November. The flowers were found to open in the afternoon, between 1·30 to 2·00 p.m. Pollen grains are 3-colpate (rarely 4), triangular in polar view (Fig. 2) and exine is finely reticulare. LO pattern reverse or OL (pitted ?). As in *S. aculeata* the vegetative nucleus was completely obscure at the shedding stage of pollen (Fig. 3). They were found to be mononucleate throughout the process of maturation of pollen from the smallest flower bud. However, at only one stage of the bud, *i.e.* 3 days before opening, a minute dot-like faintly stained body was observed in the pollen which is believed to be the vegetative nucleus. This becomes completely obscure very soon. A similar condition was also seen in *S. aculeata*. Pollen germinated on the stigma of the same flower, and it is mono-siphonous.

The seeds which are smooth and shining germinated within five days after implanting. Stem

is fistular and pitheaceous at base. Leaves are amphistomatic and stomata are anomocytic (Fig. 4) as in *S. aculeata.*

$2n = 12$ and 24 are the only reported chromosome numbers in the genus[4] and the present count in *S. procumbens* also conforms to the basic number $x = 6$ reported in the genus by earlier authors.

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SOME OBSERVATIONS ON PEPPER SPOT DISEASE OF GROUNDNUT

IN the rainy season crops of groundnut during 1974 and 1975, some plants were observed to be infected with pepper leaf spot caused by *Leptosphaerulina crassiasca* (Sechet) Jackson and Bell. This disease was widespread in the region and the infected leaflets were collected from Andhra and Karnataka States. *L. crassiasca* causes both scorch and pepper spot symptoms on groundnut foliage[1]. In India only scorch symptoms have been reported[2], and this appears to be the first report of pepper spot symptoms.

The spots were round to irregular, in the size range of 0·5–1·0 mm on both sides of the leaflets. The infected leaflets remain attached to the axis for about 30 days without perceptible change in the size of the spots. Sporulation does not occur on the spots when the leaflets were still attached to the branches, but ascocarps develop rapidly on the fallen infected leaflets in the field, and within a week of incubation in moist petridishes in the laboratory. The fungus showed rapid growth of mycelium and ascocarp formation within three days on PDA. However, ascospores did not develop in cultures in continuous fluorescent light, in complete darkness or in alternating light and dark conditions.

The fungus shows active dispersal mechanism, in that the ascospores eject forcibly upwards. To know the height of its ejection, infected leaflets showing well-developed ascocarps were placed in glass containers of different depths (1·5 cm, 4·0 cm, 6·0 cm, 7·5 cm and 10·0 cm) and clean dry microslides were placed so as to cover their mouths. The spores were observed on the slides kept at different heights upto 7·5 cm. The ascospores have a mucilaginous coating and they stick to the clean glass slides. They occurred as only single units and no spore clumps were observed on the slides at any height.

The ascospores, ejected on to the slides, were collected in drops of distilled water and transferred to freshly detached host leaflets in humid chambers for studying germination. The leaflets were cleared, stained and mounted after 24 hrs. Out of 500 spores, 464 had germinated (92·8%). Germtubes developed from one or more of the six celled ascospores and, in some cases, all the six cells produced them. The pattern of germtube growth is given in Table I.

The average number of germtubes from a single spore was 2·77. The number of germtubes from the two end cells is almost equal to the number of germtubes from the four middle cells. But, the average length of germtubes from middle cells is slightly higher than that of germtubes from end cells. Germtubes grow even after the formation of appresoria and thus both terminal and lateral appresoria were observed. The highest number of appresoria observed from the germtubes of a single spore was 13, and from a single germtube and its branches was five. Appresoria were formed outside the stomal region, indicating direct penetration of epidermal cells and, out of 296 appresoria observed only two were found to be formed on the stomata.