TABLE 1

Results obtained in different populations of Costus speciosus Smith

Populations Place	Dry wt of the rhizomes (g)	Wt of crude sapogenin (mg)	Percentage of diosgenin by TLC
IV Lucknow	123	600	2.25
VII Lucknow	134	1000	—
X Jammu	141	2377	5.0
XI Bankura	120	1275	3.38
XII Burdwan	116	906	1.25
XIII Coimbatore	36	400	1.50
XIV Dhalgaon	146	1000	4.13
XV Mungpoo	155	850	2.63
XVI New Jalpaigudi	17	450	4.63
XVII Sukhna	68	600	—

The diosgenin zone was stirred with 5 ml of methanol, centrifuged at 1500 RPM for 5 min, the supernatant was evaporated to dryness on a steam bath. The residue was cooled and 4 ml of conc. sulphuric acid : methanol (80:20) mixture was added, allowed to stand for 2 hr and the resulting chromatophore was measured spectrophotometrically at 400–417 nm against the blank. Concentrations of diosgenin content in different populations were determined from the standard curve.

Chemical analysis of the rhizome samples, obtained from various parts of the country, indicated a wide range in the diosgenin content; the sample obtained from Jammu[4] yielded a higher content than those obtained from other parts. Out of the collections made so far, a few elite clones have been identified. Investigations on the economics of the samples are in progress.

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PHENOMENA OF INFECTION IN ERGOT DISEASE OF PEARL MILLET

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PEARL millet (*P. typhoides* (Burmf.) Stapf. and Hubbard) is mainly a rain-fed widely cultivated crop constituting the staple human food in addition to proved forage crop. Late sown crop[1-3] usually gets severely infected with *Claviceps fusiformis* (Loveless)[4,5]. Infected spikelets under favourable climatic conditions get transformed into long crescent shaped sclerotia[5,8]. During continuous rainy days, most of the mature sclerotia fall on the ground, some of them which get burried deep in soil get degenerated[6,7] with time, while some of the surface lying sclerotia germinate and produce apothecia bearing asci. But the number of sclerotia undergoing germination is very rare[6]. King[9] in Nigeria and Bhat[4] in India found the samples collected from consumer market contaminated with sclerotia, which got mixed during thrashing process. Sundaram[8] realised the probability of seed-borne nature of the infection.

Sclerotia was scattered on the soil surface of a Bajra field immediately after harvest in an area of 10 × 10 m and was marked for future use. Correspondingly during the next season two plots of 5 × 3 ft size, well isolated from each other were sown with HB_3 variety of Bajra. The seeds were dressed with Ceresan before sowing. Sorghum was sown on border to check the invasion by the air borne inoculum from other fields. At a far off distance a check plot was run simultaneously. At flowering stage waxed slides were temporarily attached with the stems of plants at varying heights respectively at 18, 36, 52 and 72 inches from ground level at varying physiological stages of the plants. Slides were removed respectively after 12, 24 and 36 hr. after fixing for microscopic examination. The same experiment was repeated in 1978, 1979 and 1980. The slides picked up after different intervals were found to have trapped conidia of *C. fusiformis* (Loveless) along with other pathogenic and non-pathogenic forms of fungi. During the period of observations, a survey of whole Bajra field and surrounding *Sorghum* trail field was done for possible inoculum source but no infection was traceable even in adjacent fields. Laboratory studies with sclerotia also supported the concluded infection process. Intact and broken pieces of sclerotia kept on the surface of autoclave sterilized and unsterilized field soils respectively after 48 to 72 hr were found covered with mycelial covering bearing numerous conidia.

The above observation suggests that conidia plays an equally important role in incitation of primary infection along with the rare sclerotia which on germi-

nation produce ascospores. Ramakrishnan[5] doubted the role ascospores in setting the primary infection only because of the rare germination of sclerotia and suggested the viability of conidia. In nature sclerotia which escape from biodeterioration in soil contribute main inoculum to establish infection. The conidia produced on mycelium covering sclerotial pieces in soil get lifted by air currents and on landing the spikes produce the ergoty spikelets. These infected spikelets then play the role of inoculum source for secondary spread which is much faster especially in continuous rainy days.

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ON THE LOOP FORMATION IN *TRIFOLIUM DUBIUM* SIBTH.

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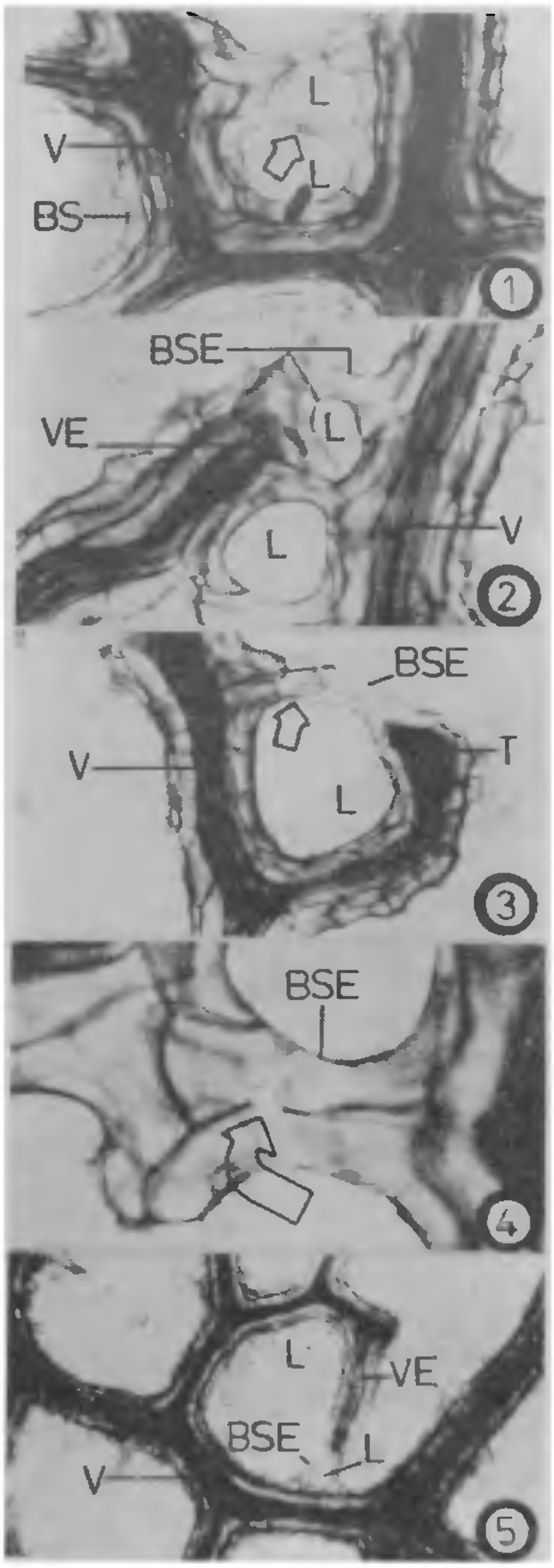
ONE of the interesting aspects of venation pattern is the loop formation by the fusion of (i) marginal ultimate veins[1], (ii) secondary veins with branches of other veins at the margins[2] or (iii) veins in the areoles with fewer or no free vein-endings[3,4]. The occurrence of loops either at the margins or in the areoles of the leaves is frequent in many dicotyledons and their formation, so far reported, is by veins or tracheids.

A detailed investigation of leaf architecture in 22 species of the tribe Trifolieae of the Papilionaceae reveals that the loop formation is by the veins or the



Figures 1–5. Loops of *Trifolium dubium* as seen in cleared leaflets. **1.** Loops between two nearby veins. note the fusion of bundle sheath extensions at arrow × 220, **2.** Loops between a vein and a vein-ending of a close-by vein × 330, **3.** Fusion of bundle sheath extensions (at arrow) between a tracheid and a vein resulting in a loop × 220. **4.** Schizogenous intercellular space in the bundle sheath extension, at arrow × 680. **5.** Two unequal loops × 100. (V - vein, BS Bundle sheath, VE–vein-ending, BSE–bundle sheath extension, T–tracheid, L–loop.)