was present in all of them. The identification of this species was on the same basis as reported by us earlier[7]. The most heavily infected species (> 50% of root segments showing the VAM fungus) were *Arachis hypogaea*, *Cajanus cajan*, *Crotalaria juncea*, *Dolichos biflorus*, *D. lab lab*, *Phaseolus aureus*, *P. mungo* and *Rhynchosia minima*. The remaining species showed 8 to 40% infection. Arbuscules were seen only in a few plant species *viz Archis hypogaea*, *Cajanus cajan*, *Cassia occidentalis*, *Crotalaria juncea*, *Dolichos biflorus*, *D. lab lab*, *Phaseolus trilobus* and *Sesbania aculeata*.

The relative abundance of spores of VAM fungus in the rhizosphere soil samples was positively related to the data on the per cent infection of the host species concerned. The most common spore type is that of *G. mosseae*. Another spore type was also found, but only in the rhizosphere of a few species. It is identified as *Gigaspora* sp. basing on spore characters (spherical, 300 to 490 μm diameter; hyaline or yellowish with bulbous attachment). As this fungus is not known to produce vesicles in host roots[8], its presence in the roots of the legumes examined could not be ascertained.

These results clearly bring out that mycorrhizal fungi colonize effectively in the roots of a variety of leguminous plants growing in the infertile lateritic soil of the University campus. Such a condition can be expected to be beneficial to the plants. Our preliminary observations also reveal that *G. mosseae* is the most widespread VAM fungus in this soil type. With the exception of *A. hypogaea*, *C. cajan*, *D. lab lab* and a species of *Phaseolus*[7], the occurrence of *G. mosseae* had not hitherto been reported on the other hosts on which it is now recorded. It is worthwhile to study the contribution of this isolate to the phosphorus nutrition of legumes.

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MODIFIED BLOTTER METHOD FOR THE DETECTION OF *PHOMA* AND *MACROPHOMINA* ON SEEDS

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MANY species of *Phoma* and *Macrophomina* are seed-borne pathogens of *Beta vulgaris*, *Capsicum annuum*, *Lycopersicum esculentum*, *Bellis perennis*, *Linum usitatissimum*, *Dolichos biflorus* in addition to some cereals and other legumes and cause seed rot, seedling blight, fruit rot and foliar diseases[1].

In the routine seed health testing to detect *Phoma* spp and *Macrophomina phaseolina*, standard blotter method is followed. However, Hagborg *et al*[2] and Neergaard[1] introduced a modified PDA and blotter method to detect *Phoma lingum* on cabbage seed.

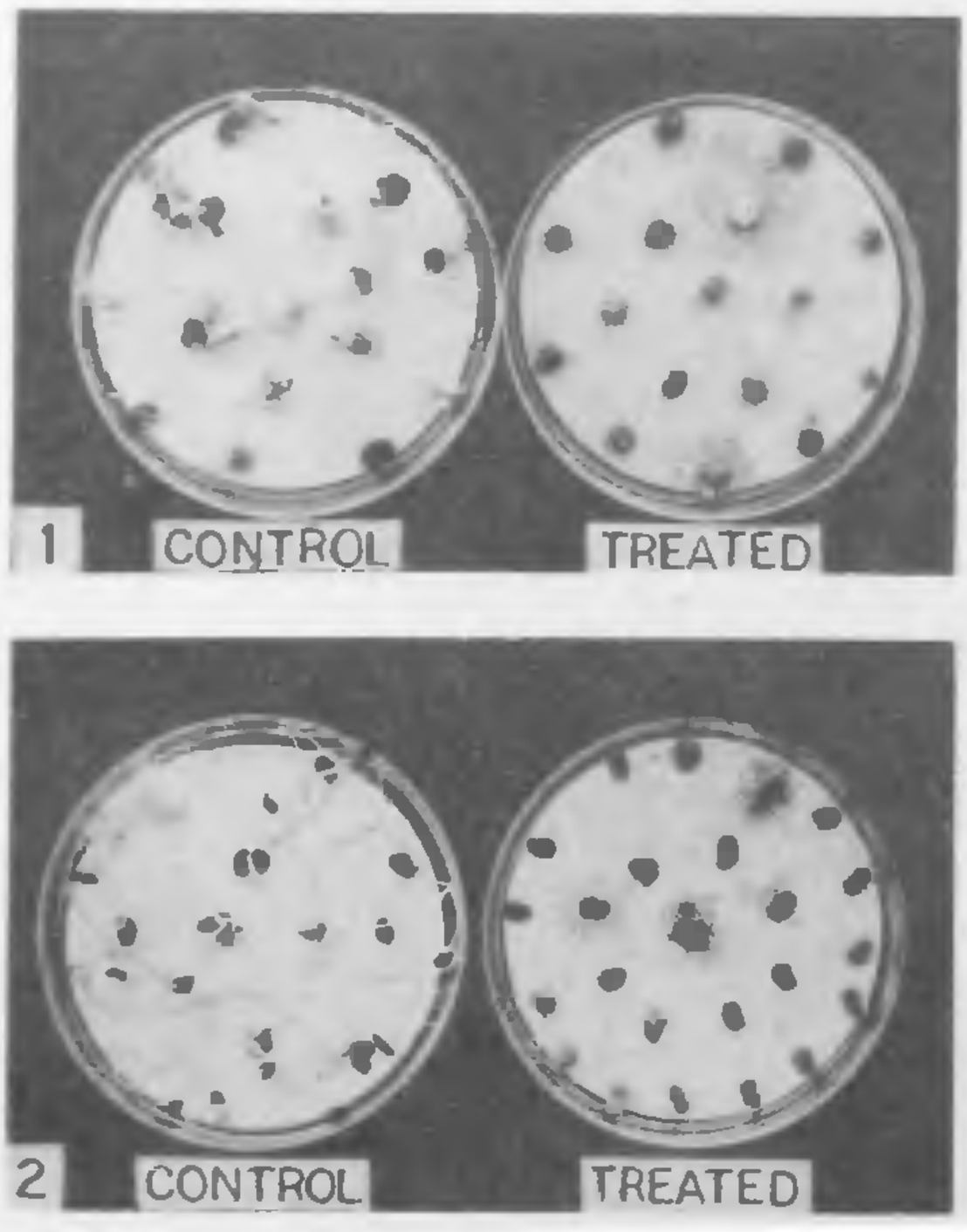
Correct infection percentage of the seed-borne *Phoma* and *Macrophomina* species cannot be determined by the above methods due to the presence of saprophytic fungi and the natural resistance exerted by the germinated seeds. In the present study, a selective method has been devised to detect these pathogens. For this purpose, different salts of sodium, calcium, magnesium, cobalt at 0.1, 1, 2.5, 5, 10 and 15% have been used. In this method blotters were soaked in different concentrations of the salts instead of moistening with distilled water. Incubation was carried out according to the standard seed health testing procedure[3].

Of these, blotters treated with 5% calcium chloride gave better results over standard blotter method (table 1). Observations could be made easily as only *Phoma* and *Macrophomina* were found to grow profusely on the treated blotters around the infected seeds despite the presence of other fungi associated with the seed (figures 1, 2). Further the seeds did not germinate on treated blotter which facilitated easy scoring for the pathogen.

This modified method is found to be superior over

Table 1 *Incidence of seed-borne Phoma species and Macrophomina phaseolina on standard blotter and modified blotter*

	Percent incidence on			
	Standard blotter		Modified blotter	
Crop	*Phoma* spp	*Macrophomina phaseolina*	*Phoma* spp	*Macrophomina phaseolina*
Cluster bean	6	–	11.8	–
Groundnut	9	–	14.0	–
Cow pea	5	–	11.5	–
Sorghum	32	–	51.5	–
Chilli	–	6.5	–	11
Horse gram	–	20.0	–	32



Figures 1, 2. **1.** Profuse growth of *Phoma* species on clusterbean seed incubated on the blotters treated with 5% calcium chloride solution: **2.** Profuse growth of *Macrophomina phaseolina* on horse gram seed incubated on the blotters treated with 5% calcium chloride solution

all the known methods which help in determining even traces of the inoculum present on the seed.

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CYTOLOGICAL OBSERVATIONS ON SOME AUTOTETRAPLOIDS AND AMPHIDIPLOIDS IN SPINOUS SOLANUMS AND THEIR BEARING ON INTERRELATIONSHIPS

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SEVERAL interspecific hybrids involving *Solanum melongena* L and its wild forms, *S. indicum* L, *S. integrifolium* Poir, *S. surattense* Burm F (= *S. xanthocarpum* Schrad and Wendl) were produced. In all hybrids, formation of twelve bivalents per PMC was common ($2n = 24$) with higher chromosome associations prevailing to varying extents suggesting close genome relationships with chromosomal repatterning to varying extents in their speciation. The objective of the present communication is to further our knowledge on spinous solanums in this direction.

Propionic carmine schedule was used in cytological analyses. Statistical calculations were made following Snedecor and Cochran[1].

General chromosome behaviour and chiasma frequencies in the amphidiploids and autotetraploids are summarised in table 1. A comparative study of the doubled mean chiasma frequencies of the diploids and tetraploids revealed that the three autotetraploids had significantly lower chiasma frequency than the doub-