Statistical analysis of the data presented in Table I

Organism	F Value	
	Age effect	Plant effect
Cunninghamella sp. ..	1·28	14·33†
Fusarium sp. ..	1·5	39·5†
Penicillium sp. ..	1·4	36·5†
Aspergillus sp. ..	1·4	59·2†
Trichoderma sp. ..	3·9	5·3*
Curvularia sp. ..	3·05	30·3†
Verticillium sp. ..	11·4†	7·4*
Spicaria sp. ..	..	5·9*
Mucor sp. ..	1·9	8·8*

Table F value at 5% and 1% level = 5·14 and 10·92 respectively for plant condition with df 2 and 6 respectively.

Table F value at 5% and 1% level = 4·76 and 9·78 respectively for age with df 3 and 6.

* Significant at 5% level.
† Significant at 1% level

soil samples of diseased plants than in the other condition. However, with increase in age of the plant, the populations of different species of the fungi were found to vary considerably, either showing increase or decrease in number. Statistical analysis of the data for age effect shows no significant difference in all the fungal species except in *Verticillium*, where it is significant at 1% level. In case of plant effect significant difference has been obtained at 1% level in case of *Cunninghamella, Fusarium, Penicillium, Aspergillus, Curvularia* and 5% level in case of *Trichoderma, Verticillium, Spicaria* and *Mucor.*

Many workers have shown that disturbed metabolism in the diseased plants results in significant changes in qualitative and quantitative nature of root exudate which possibly accounts for the variation in the rhizosphere mycoflora of the diseased plants from the normal ones. It is interesting to note that in the samples of 15th to 30th day, the populations of most of the rhizosphere fungi in the *Macrophomina*-infected plants were the highest. This may be due to availability of excess of organic matter in the rhizosphere soil as a result of root decay caused by *Macrophomina phaseoli.*

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SEED PATTERNS AND GERMINATION BEHAVIOUR IN *CROTALARIA MEDICAGINEA* LAMK. GROWING IN INDIAN ARID ZONE

VARIOUS aspects of seed physiology in arid zone have been dealt by different authors[2,5,7]. The viability and life span of seeds and their state of maturity also have profound effects on seed germination[5]. Among the known method devised for effecting increase in the permeability of hard seed coats, mechanical scarification with concentrated sulphuric acid, boiling water treatment and exposure to suitable temperatures are the ones most commonly followed[1,4]. A clear conception of mechanisms regulating seed germination in Indian arid zone species is to a great extent wanting. Diversity of seeds of different individual plants in a population with regard to their germination behaviour has been reported for some plants in Indian arid zone[3,6-8]. Present investigation deals with germination behaviour of the seeds of *Crotalaria medicaginea.*

While studying the germination behaviour of the seeds of some desert plants, it was found that there exists three types of colour patterns in the seed coat of *C. medicaginea, i.e.,* dark black, yellowish-black and yellow. Freshly harvested seeds (last week of September, 1973) did not exhibit any hard seed coat dormancy at the early stage of maturation, but this appeared to develop later when they were fully dried. Such fully dried seeds, neither imbibed nor germinate when provided with suitable conditions. Freshly harvested fully dried seed exhibited an optimum imbibition after a pretreatment with conc. sulphuric acid for 30 minutes. These seeds when stored for a longer period required 45 minutes instead of 30 minutes acid pretreatment for an optimum germination. Seeds taken out from intact fruits, stored for 5 years (collected in 1969) when pretreated with conc. H_2SO_4 for 45 minutes, showed optimum germination. Such acid pretreatment was tried every month and an optimum germination was always observed with 45 minutes pretreatment. Acid

TABLE I

Percentage of germination in three types of seeds in C. medicaginea *under different pretreatments*

Month of pretreatment	Nature and pretreatment duration	Percentage of germination		
		Black	Yellowish-black	Yellow
October, 1973 ..	Conc. H_2SO_4—30 mts.	100	100	100
December, 1973 and onward ..	Conc. H_2SO_4—45 mts.	100	100	100
February, 1974 ..	Dry heat at 70° C—6 days	13	50	..
March, 1974 ..	Boiling water—5 mts.	36·0	50	..
April, 1974 ..	Imbibed in water—24 hrs.	9·0	17·0	2·0
April, 1974 ..	Imbibed in water—24 hrs. (Seeds from intact fruits)	1·0	2·0	1·0

(–) Not tested due to shortage of seeds.

pretreatment for 45 minutes was equally good for all the three types of seeds.

Black and yellowish-black seeds when given dry heat pretreatment at 70° C for 6 days, a higher percentage of germination was observed in the latter, than the former. These two types of seeds did not tolerate a pretreatment of 80° C, but black ones still did not imbibe and germinate even when subjected to such high temperature pretreatment. In the boiling water pretreatment for 5 minutes, yellowish-black seeds imbibed and germinated up to 50% ; while very poor germination was observed in the black ones (Table I). Those seeds which did not imbibe in 5 minutes pretreatment, when given an extra 2 minutes pretreatment, another 50% of these seeds responded.

Approximately five months old seeds of all the three types when kept in water for imbibition, 9% imbibed in black ; 17% in yellowish-black and only 2% in yellow ones (Table I). It has come to light during present experimentation that those seeds which were stored with intact fruits did not imbibe water, irrespective of their seed coat colour. This was even true for the seed collection of 1969. It may be concluded that in intact fruits, the fruit walls prolonged the dormancy of seeds by protecting them from external extreme conditions which made them permeable. To assess that there may be some growth inhibiting substance(s) present in the fruit wall, the seeds were imbibed in the fruit wall extracts, where a certain percentage of seeds did imbibe water. This proves that the fruit wall may be only protecting the seeds from becoming permeable earlier, and thus they are rendered dormant for a longer period.

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INTERSTRAIN DIFFERENCE IN KARYOTYPE OF *BRASSICA OLERACEA* L.

Brassica oleracea L. is Indian Cabbage, cauliflower and knolkhol is popularly cultivated as cole crops throughout India. Cytological studies have been done in this species by Howard[1], Sikka[5], Wills[6] and Röbbelen[2]. However, karyomorphological studies on intervarietal and interstrain level have not been done much although such work is needed for proper interpretation of interstrain relationship on structural level. The present paper deals with karyomorphological studies of 6 strains of different varieties