Specimen examined: On dead twigs of *Acrocarpus fraxinifolius*. 5–11–1979, FFSI No. 2788, Magod Falls, Karnataka State.

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1. Sutton, B. C., *The Coelomycetes*, Commonwealth Mycological Institute, Kew, England, 1980, p. 686.

ALLELOPATHIC EFFECT OF *ARGEMONE MEXICANA* L. ON SPECIES OF *TRITICUM*, *BRASSICA*, *RAPHANUS* AND *PENNISETUM*

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ALLELOPATHIC effect of *Argemone mexicana* Linn. was observed in four different plants growing in semi-arid area of Jaipur (Rajasthan). It was found that although there was very little effect on the seedling emergence of all the four plants, the later growth was badly affected by the allelochemics present in the *A. mexicana*.

The allelopathic effect of the weeds growing in the agroecosystem is a well-known phenomenon. Many authors have given a good account of our present knowledge of allelopathy[1-3]. Allelopathic studies have been undertaken for the weeds found in the agricultural fields of semi-arid area, Jaipur.

The aim of the present paper is to present the results of the study of the allelopathic effect of the weed *A. mexicana* L. on *Triticum* spp. (Wheat) *Brassica campestris* L. var. Sarson, Rhaphanus sativus L. and *Pennisetum typhoides* (Burm. f.) S & H (Bajra).

A. mexicana L. plants were dried and powdered. Sterilized cotton pads and filter papers were placed in petridishes and moistened with distilled water. *A. mexicana* (50, 100, 200 mg) was added to different petridishes. Five replicates of each of these treatments including control (seeds grown in distilled water) were placed. Ten seeds were placed in each petriplate for each crop and seed germination was observed for a week. On the seventh day percentage germination was recorded. Five healthiest plants were chosen from each petriplate and their shoot and root lengths were measured. Percentage retardation (or enhancement in the case of *R. sativus*) and percentage germination in each replicate were calculated.

The percentage germination of the four crops with different amounts of *A. mexicana* powder are given in table 1.

The data (table 1) revealed that there was an irregularity in the percentage germination of *Triticum* spp. and *B. campestris* var. Sarson, but in the case of *R. sativus* and *P. typhoides* there was a clear decrease in percentage germination with increasing amount of *A. mexicana* powder, percentage ger-

Table 1 *Percentage germination of Triticum spp., B. campestris L. var. Sarson, R. sativus L. and P. typhoides*

	A. mexicana powder (mg)		
	50	100	200
Triticum	84	92	90
Brassica	98	74	80
Raphanus	60	54	48
pennisetum	90	85	80

Table 2 *Percentage retardation in shoot length*

	A. mexicana powder (mg)		
	50	100	200
Triticum	−8.1	−51.6	−68.77
Brassica	−6.1	−33.4	−51.5
Raphanus	−16.7	−33.4	−38.9
Pennisetum	−8.9	−41.0	−37.5

(−) shows retardation.

Table 3 *Percentage retardation or entrancement in root length*

	A. mexicana powder (mg)		
	50	100	200
Triticum	−25.9	−51.9	−75.9
Brassica	−6.1	−60.6	−93.9
Raphanus	+73.3	Normal	−13.3
Pennisetum	−68.8	−94.2	−94.2

(−) shows retardation; (+) shows enhancement

mination of *Triticum* spp., *B. campestris* var. Sarson and *P. typhoides* was comparatively less retarded (2–20%) as compared to *R. sativus* Linn (40–62%).

The effect of *A. mexicana* on the shoot and root length of the four crop plants was measured on the seventh day. The data for percentage retardation or enhancement of shoot length are given in table 2 and the root length in table 3.

The shoot lengths of *Triticum* spp., *B. campestris*, *R. sativus*, *P. typhoides* continuously decreased with the increase in concentration of *A. mexicana* powder from 50 mg 100 ml distilled water to 200 mg/100 ml distilled water. The highest shoot length retardation was observed in *Triticum* spp. at 200 mg amount of *A. mexicana* powder.

It is clear from table 3 that there is a decreasing trend in the root lengths of *Triticum* spp., *B. campestris* var. Sarson and *P. typhoides* root. Interestingly there is no further reduction in the root length of *P. typhoides* beyond 100 mg level.

In the case of *R. sativus* there is an increase in the root length at 50 mg amount of *A. mexicana* powder in comparison to control treatment. This indicates that at this level allelochemics present in the *A. mexicana* powder have a stimulating effect on *R. sativus* roots. The length of roots *R. sativus* was normal at 100 mg in comparison to control and only at 200 mg there was retarding effect (13.3%).

The greatest (94.2%) retardation in the root length was observed at 100 mg amount of *A. mexicana* with *P. typhoides*.

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1. Putmann A. R. and Duke, W. D., *Annu. Rev. Phytopathol.*, 1978, **16**, 431.
2. Rice, E. L., *Bot. Rev.*, 1979, **44**, 15.
3. Rice, E. L., *Allelopathy*, Academic Press, New York, 1984.

ELECTRICAL CONDUCTIVITY AS A MEASURE OF SEED VIABILITY IN SAL (*SHOREA ROBUSTA* GAERTN F.)

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An association between the readiness with which solutes leach out from seeds and their germinability in the field was first reported in *Pisum sativum* L[1]. This has led to a series of advisory recommendations by the Official Seed Testing Station, Cambridge, UK[2]. Electrical conductivity test was routinely used for testing the viability of field beans *Vicia faba*[3].

Studies on seed testing are mostly confined to field crops and vegetables. Such studies are scanty for forest trees particularly of the tropical region. Sal (*Shorea robusta* Gaertn f) is one of the most important timber trees confined to the tropical moist forests of India. Seeds of this species do not retain their viability for long even at a low temperature and moisture. Such seeds have been classified as recalcitrant[4]. For afforestation programmes, a quick and economic method for predicting germination of the seeds of forest tree species is desirable but this information is lacking. The present work was therefore undertaken to establish a relationship between seed germination and electrical conductivity in Sal.

Fresh Sal seeds were collected from a natural tropical moist deciduous forest of Amarkantak, Madhya Pradesh, during the second week of June 1985 and brought to laboratory in polythene bags. The seeds (200) from each lot were soaked in water for 24 hr and kept for germination in moistened filter papers in seed germinator[5] at 25 ± 2°C. Radicle emergence was recorded as an index of seed germination. Electrical conductivity was tested[6] taking two replicates of 50 seeds for each lot. Seeds were placed in a glass beaker of 80 ± 5 mm base diameter. Beakers were covered after adding distilled water (250 cm^{-3}) to reduce evaporation and contamination by dust. All beakers were kept at 20°C for 24 hr. Soaked water was poured through a course sieve to remove seeds and was then poured back into the first beaker. Electrical conductivity was measured using a dip cell conductivity meter (Systronics, DDR, type 304). The reading of control beaker is subtracted and the electrical conductivity is expressed as $\mu s\ cm^{-1}g^{-1}$.