(1·0 mgl^{-1}). The callus thus obtained was compact, slow growing and formed spherical masses. Explants regenerated shoot buds only when the cut end of the cotyledon was in contact with the medium.

Further studies on differentiation of plantlets from other explants types, callus and anthers are in progress.

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A NEW METHOD OF WEED CONTROL

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Pig weed, *i.e., Amaranthus viridis* L. (Family—Amaranthaceae) is one of the most common weeds of cultivated fields, lawns and gardens throughout India[1]. The present study was undertaken to control this weed by using different herbicides, *viz.*, avenge, diuron, RH–2915, tok E–25, weedazol and weedone. Some of these herbicides have been used earlier for the control of different weeds[2]. Different herbicides have different modes of action according to their chemical nature and methods of application[3]. These herbicides were sprayed over this weed in separate culture pots. Plants were not killed by these herbicides, although after some time a change in all the growth parameters was discernible. When treated plants were mature, seed collection was done and kept separately. The collected seeds were germinated in sterilised petridishes lined with a single layer of filter paper, moistened with distilled water. A control set with the seeds obtained from untreated plants was also kept. The germination experiments were carried out in continuous white light obtained from six fluorescent tubes of 40 watts each fitted at a distance of one metre from the petridishes, at constant temperature (28±2° C). The criterion of germination was visual detection of radicle.

After seven days, an interesting observation was made (Table I). Seeds, collected from weedazol treated plants, showed no germination at all as compared to 75·0±1·5% germination in control. Weedazol did not control this weed as such, but the seeds obtained from treated plants were found to be inviable when treated with 2,3,5-triphenyl tetrazolium chloride (TTC). Avenge seemed to help the growth of the treated plants; but control upto a great extent was achieved as evident from the low germination percentage shown by seeds obtained from such plants. Those seeds, which germinated, did not show much effect on seedling growth. The interesting observation was that although diuron, RH–2915 and weedone treatment decreased growth parameters upto a great extent in plants as such; but seeds, obtained from treated plants, germinated fairly well, even an increase in germination percentage was noted in diuron treated plants. Linear growth of radicle and hypocotyl was inhibited and promoted, respectively in germinated seeds, obtained from diuron and RH–2915 treated plants.

Overall, the present study reports the indirect way of weed control in the field of "chemical weed control".

Table I

Effect of different herbicides on seeds obtained from treated plants of A. viridis (*Observations at the end of 7 days*)

Herbicide	Germination (%)	Seedling growth (mm)	
		Radicle	Hypocotyl
Control	75·0±1·5	26·1±0·5	7·5±0·4
Avenge	41·6±0·7	24·5±1·1	12·6±1·9
Diuron	85·0±1·3	16·6±0·7	13·2±1·4
RH–2915	51·6±2·2	18·3±1·3	10·5±1·4
Tok E–25	55·0±0·9	27·4±2·2	10·5±0·6
Weedazol	0·0±0·0	..	..
Weedone	61·6±1·8	17·5±0·6	6·1±0·2

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THE EFFECT OF GAMMA RAYS ON DISTRIBUTION OF CHIASMATA IN THREE VARIETIES OF *LATHYRUS SATIVUS* L.

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PRASAD and Godward[1] after irradiating seeds with X-rays have reported no significant correlation of distribution of chiasmata between and within nuclei in diploid (*Phalaris canariensis*) and tetraploid (*Phalaris minor*). Reduction in the number of chiasma per cell as a consequence of irradiation has also been found by them. The purpose of the present experiment is to compare the varietal response to gamma radiation on chiasma frequency and distribution in the microsporogenesis of plants grown from the irradiated seeds.

Dormant "dry" seeds of *Lathyrus sativus* L. ($2n=14$) var. P_{293}, P_{585} and LC_{76} whose diagnostic features have already been described by Das and Prasad[2] were irradiated with 10–50 kR gamma-rays. Doses were delivered from 1675 curie gamma cell at the dose rate of 330 kR/h. Germinated seeds (untreated and treated) were sown in the field. Randomly collected flower buds were fixed in 1:3 aceto-alcohol. Chiasma per bivalent were scored from temporary squash preparation of anthers stained with 2% aceto-carmine.

In contrast to control (positive), both positive and negative correlation as a result of mutagenization (Table I) have been found in each of the varieties. Variance ratios (F), though differ between varieties, indicate the existence of non-significant correlation of chiasma distribution between and within nuclei either

TABLE I

Analysis of variance of chiasma frequency at diakinesis in Lathyrus sativus *L. grown from gamma rays irradiated seeds* (M_1)

Total cells observed in each case = 50.

Doses in kR	Mean chiasmata per cell	Item: Mean sq. between nuclei	Item: Mean sq. within nuclei	Variance ratio (F)	Correlation
		(A) P_{293}			
0	9·70	0·92	0·49	1·87	+
10	11·32	1·29	1·39	0·92	+
20	12·48	5·92	1·54	3·84	−
30	13·16	1·87	1·27	1·47	+
40	14·48	7·72	3·89	1·98	−
50	14·56	0·16	2·27	0·07	−
		(B) P_{585}			
0	10·94	2·23	1·36	1·96	+
10	11·18	5·70	1·11	5·11	+
20	11·42	7·92	2·56	3·09	−
30	12·36	4·88	3·12	1·56	−
40	13·04	0·47	3·28	0·16	−
50	14·70	4·04	1·58	2·55	−
		(C) LC_{76}			
0	10·58	0·38	0·50	0·77	+
10	10·74	1·73	1·47	1·17	−
20	10·94	1·45	0·48	3·55	+
30	12·10	11·15	4·70	2·37	−
40	12·12	43·09	9·28	4·64	−
50	12·66	0·11	3·82	0·03	−