



## Influence of Herbicide Application on Resultant Seed Quality in Bhendi

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**The storage potential and quality of bhendi seeds obtained from the seed production fields applied with herbicides at different dosage were assessed through accelerated ageing test. Seeds obtained from herbicide trial carried out in bhendi (cv. Parbhani kranti) seed crop with Fluchloralin and Pendimethalin at different dosage were utilized. The findings revealed that the seeds obtained from the plots applied with fluchloralin (@ 1.5 l ha<sup>-1</sup>) maintained higher seed quality attributes after the accelerated ageing test followed by the seeds obtained from the plots applied with pendimethalin (@1.5 l ha<sup>-1</sup>).**

**Key words:** Herbicide, accelerated ageing, seed germination, vigour index

Storage life of seed starts even prior to harvest as standing crop. Quality of seed in terms of storage potential is influenced by pre-harvest factors *viz.*, cultural (spacing, weeding, manuring, irrigation and harvesting), environment and edaphic factors. Despite large scale production of bhendi seeds, little information is available on the effect of herbicides on the resultant seed quality and vigour. Hence, to study the effect of herbicide application on bhendi seed quality, vigour and storability, the present study was under taken and the resultant seeds obtained from the herbicide treatments were subjected to accelerated ageing to predict their quality and storage potential.

### Materials and Methods

A field experiment was laid out to know the effect of herbicide application on seed quality in bhendi at the Horticultural College and Research Institute, Periyakulam, Tamil Nadu. Seed production plots of bhendi var. Parbhani kranti were applied with the following herbicides. All other recommended package of practices for seed production was followed through out the cropping period.

### Treatments

- H<sub>0</sub> - Unweeded control
- H<sub>1</sub> - Manual weeding (25<sup>th</sup> and 45<sup>th</sup> day)
- H<sub>2</sub> - Application of pendimethalin @ 1.5 lit ha<sup>-1</sup>
- H<sub>3</sub> - Application of pendimethalin @ 2.0 lit ha<sup>-1</sup>
- H<sub>4</sub> - Application of fluchloralin @ 1.5 lit ha<sup>-1</sup>
- H<sub>5</sub> - Application of fluchloralin @ 2.0 lit ha<sup>-1</sup>

The seeds were harvested at maturity, extracted, cleaned, dried, graded and then subjected to accelerated or artificial ageing test (Woodstock and Feeley, 1965). During accelerated ageing, seeds

were packed in small perforated paper packet and arranged loosely inside a desiccator maintaining 99% RH and closed tightly with the lid. Then the desiccator with seed packets was kept inside a BOD incubator maintaining 40°C.

Seed packets were rearranged every day 9 AM to facilitate uniform ageing. After 7 days of ageing, the seeds were subjected to the seed quality attributes *viz.*, germination (ISTA, 1999), seedling measurements (root and shoot lengths), dry matter production and vigour index (Abdul-Baki and Anderson, 1973).

### Results and Discussion

The germination potential after seven days of ageing was the highest for the resultant seeds from fluchloralin @ 1.5 lit ha<sup>-1</sup> (70%) followed by pendimethalin @ 1.5 lit ha<sup>-1</sup> (66%) compared to control and other treatments. Similar results in aged seeds obtained from herbicides treated plots had been reported by Doijode (1986) and Gelmond (1971) in bhendi and Bhaskaran (1995), Ram and Wiser (1988) and Singh *et al.*, (1988) in rice.

Seedling growth is often used as an index of seed vigour (Doijode, 1986). Consequent to accelerated ageing, seedling growth reduction was noticed in root and shoot length, dry matter production and vigour index irrespective of the herbicide applications. The resultant seeds obtained from fluchloralin @ 1.5 lit. ha<sup>-1</sup> applied field recorded the longest root (11.6 cm) and shoots (15.13 cm), dry matter production (275 mg) and vigour index (1888) followed by the seeds obtained from the field applied with pendimethalin @1.5 lit ha<sup>-1</sup>. The results are in agreement with the findings of Doijode (1985) and Peri *et al.*, (1978) in onion, Santhaceline Mary (1991) in bhendi and Bhaskaran, (1995) in rice.

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**Table 1. Effect of herbicide application on resultant seed germination, root length, shoot length, drymatter production and vigour index after accelerated ageing in bhendi**

Treatments	Germination %	Root Length (cm)	Shoot length (cm)	DMP 10 seedlings <sup>-1</sup> (mg)	Vigour index
H <sub>0</sub>	46.0 (42.70)	7.1	10.63	158	807
H <sub>1</sub>	56.5 (48.74)	8.0	11.13	178	1067
H <sub>2</sub>	66.0 (54.35)	11.1	14.63	259	1696
H <sub>3</sub>	61.0 (51.36)	10.3	12.88	240	1407
H <sub>4</sub>	70.0 (57.44)	11.6	15.13	275	1888
H <sub>5</sub>	65.5 (54.04)	9.8	13.63	209	1521
Mean					
CD (P=0.05)	3.80	0.7	0.80	4.5	72.3

(Figures in parentheses are transformed values)

The reduction in physiological manifestation of vigour during ageing could be attributed to irreversible deteriorative changes occurring in seeds. The better results recorded by the resultant seeds from herbicide applied plot might be due to lesser weed competitions and increased uptake of major nutrients which might have been resulted in the production of large sized, well filled and vigorous seeds. The poor results in control plot might be due to more number of ill-filled seeds formed under stress conditions. The results of the present study revealed that the application of herbicide fluchloralin or pendimethalin @1.5 lit ha<sup>-1</sup> could be useful for production of good quality seeds with better storage potential in bhendi.

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