

SEED GERMINATION STUDIES IN PANNIYUR-1 BLACK PEPPER

Black pepper (*Piper nigrum* L.) is a vegetatively propagated plant for which importance of seed germination is restricted to the plant breeder. Seed germination studies were conducted as early as in 1954-55 where seeds were sown with stigmatic end up and down and no significant variation in germination was seen (Anon., 1955). Another study showed no decrease in germination when sown up to the 20th day after harvest. The nature of germination and its success under various methods of handling, prior to sowing was studied at the Pepper Research Station, Panniyur, Kerala in 1987. Fully ripe seeds, as indicated by reddish mesocarp, mature seeds from spikes having at least a few ripe seed, and mature seeds from spikes having no ripe seed at all were sown fresh and after two or three days. Ripe seeds were sown also after the

removal of mesocarp. There were nine treatments in all, laid out in CRD with five replications and 50 seeds per plot. Each plot was represented by a large polybag (30 cm x 30 cm).

Seed germination started only 40 days after sowing and 80% of the total germination took place within ten days. Ravindran *et al.* (1985) reported that seeds initiated germination after periods ranging from 22 to 45 days in various cultivars and in Panniyur-1, it was 37 days. The germination was epigeal. The enlarged and leafy cotyledons were seen shrugging out of the seed coat, when the seed was pushed above the soil surface. But distal fleshy parts of the cotyledons were still embedded in the food material.

Table 1. Percentage of seed germination under various treatments

Sl. No.	Treatments *	Germination (%)
1	Fully ripe seeds sown fresh without mesocarp	50.40
2	Fully ripe seeds sown after 2 days without mesocarp	56.00
3	Fully ripe seeds sown after 3 days without mesocarp	74.67
4	Fully ripe seeds sown fresh	43.20
5	Fully ripe seeds sown after 3 days	62.80
6	Mature seeds from spikes having a few ripe seeds, sown fresh	24.80
7	Mature seeds from spikes having a few ripe seeds sown after 3 days	13.20
8	Mature seeds from spikes having no ripe seed at all, sown fresh	4.80
9	Mature seeds from spikes having no ripe seed sown after 3 days	0.00
	CD (0.05)	7.53

*Treatment numbers 4 to 9 were sown with mesocarp

Visible shoot elongation did not take place in most cases until after the seed coat was dropped. The minute plumule was seen when cotyledons were pulled apart and backward. The seed retained the pungency even after germination until the food was completely consumed by the growing seedling.

Germination of seeds under various treatments showed drastic reduction in germination when seeds were just mature and not ripe (Table 1). The mature seeds when harvested from spikes having at least a few ripe seeds, showed higher germination, but much lower than in ripe seeds. Hence, in harvest of valuable hybrid seeds for germination, staggered harvest of ripe berries instead of whole spike has to be practised to ensure

maximum germination. Removal of mesocarp of the ripe seed before sowing increased germination percentage. Hence, this practice can be done in case of hybrid seeds, but too cumbersome for open-pollinated seeds where quantity is not a limiting factor. Keeping ripe seeds in shade for three days after harvest was beneficial, whether mesocarp was removed or not. There was approximately 50% increase in germination in both cases.

The germination of unripe seeds was less than a quarter in all cases. Keeping ripe seeds in shade for three days can increase the germination considerably. Removal of mesocarp, when it is feasible, can be practised to further improve the germination.

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