

Organic seed production of pepper (*Capsicum annuum*)

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Consumer awareness of potential risks of agrochemicals used in conventional agriculture has expanded the organic production of different crops worldwide including vegetables. Therefore, increased organic seed production is needed to fulfil the demand. Seed production of pepper may be affected by farm and harvest management, including harvest time, but its organic seed production has not been much considered. This research compares organic and conventional seed production of pepper using transplanting. Three plant densities of 9, 6 and 4.5 plants per m² were planted in both an organic farming system as well as a conventional system, in a complete block design with three replications. Growth analysis parameters such as crop growth rate (CGR), net assimilation rate (NAR) and leaf area index (LAI) during the growing season were determined. Fruits were harvested at three different fruit ripening stages (completely green, green/reddish and red) to assess quality of the produced seeds. Seed size, germination and vigour were assessed based on the *ISTA International Rules for Seed Testing*. The quantities of produced seeds were also determined. The comparisons showed that a high quality of seed production is possible in a well-managed organic pepper farm.

Influence of seed enhancement techniques on seed quality and longevity in chilli (*Capsicum annuum* L.)

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The experiment was conducted during 2019–2020 to study the influence of seed enhancement techniques on seed quality and longevity in chilli hybrid NWH-001. Initially, standardisation was done for seed priming and pelleting treatments. Among 12 different priming treatments, seeds primed with KNO₃ (0.5%), *Pseudomonas fluorescens* (1 l/kg) and vermiwash (30%) showed highest germination (93, 94.5 and 94.5%, respectively), speed of emergence (22.98, 22.3 and 24.77, respectively), seedling vigour index (1002, 1000 and 988, respectively), seedling emergence in protray (93.5, 93.0 and 94.5%, respectively) and seedling height at 30 DAS (13.7, 12.4 and 12.5 cm, respectively), over a control. Among ten different pelleting treatments, seeds pelleted with ZnSO₄ (3 g/kg), CaO₂ (10% w/w) and arappu leaf powder (100 g/kg) showed highest germination (89.5, 89 and 90.5%, respectively), speed of emergence (33.0, 33.3 and 33.9, respectively), seedling vigour index (885, 883 and 905, respectively), seedling emergence in protray (92.3, 88.0 and 87.0%, respectively) and seedling height at 30 DAS (12.2, 12.2 and 12.3 cm, respectively). The best three priming and pelleting treatments were stored for 6 months under ambient and cold storage conditions. Chilli seeds either primed or pelleted can be stored for a shorter duration. However, seeds primed with vermiwash (30%) maintained the seed quality even after 6 months (93.0%) of storage.

Relationship between rate of cell cycle and seed vigour of wheat seeds

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To investigate the relationship between seed vigour and cell cycle speed, we monitored the cell cycle in ten wheat seed lots, with different levels of vigour, using flow cytometry. The tips of the