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Research Article

Effect of Picking Stages on Seed Quality of Okra (*Abelmoschus esculentus* L. Moench)

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ABSTRACT

The present study was carried out in the field of Department of Seed Science and Technology, CCS Haryana Agricultural University, Hisar, Haryana during 2018-2019 to investigate the effect of picking stages on seed quality of okra. The okra plant was divided in three parts on the basis of node numbers which constitutes 1st to 5th nodes as part1 and 6th to 10th nodes as part 2 and 11th to 15th nodes as part 3 respectively. The parameters recorded during the study was flowering at 1st, 6th and 11th node, fruit length at maturity, seed yield per fruit, test weight of 1000 seeds and number of seeds per fruit at harvesting. The study suggested that the picking of fruits developed on middle nodes (6th to 10th) showed higher values for parameters recorded as compare to lower (1st to 5th) and upper nodes (11th to 15th).

Keywords: *Okra, Picking, Nodes, Seed, Fruits.*

INTRODUCTION

Vegetables play an important role in providing food nutrition and economic security of the country. They are an important component of human diet for the maintenance of good health. China is the leading producer with a production volume of nearly 554 million MT, followed by India with approximately 127 million MT of fresh vegetables (Shahbandeh, 2020). Okra is one of the most commonly known and utilized species of the family Malvacae, an economically important vegetable crop grown in tropical and sub-tropical parts of the world (Oyelade et al., 2003 & Andras et al., 2005). India is the global leader in the production of okra (Saxena et al., 2016). In India, okra is commercially cultivated in an area of 5.1 lakh ha and annual production of 61.26 lakh ton (FAOSTAT, 2018). Okra has a prominent position among vegetables due to its high nutritive and medicinal value, year-round cultivation, high yield, ease of cultivation, wider adaptability to varying weathers, resistance to various diseases and pests and also the export potential (Reddy et al., 2012 & Meena et al., 2017).

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The picking stage of fruit is also important from the quality point of view. Hedau et al. (2010) stated that high quality seeds were obtained from the fruits positioned at middle nodes, followed closely by seeds collected from the lower nodes of the plant. However, seeds obtained from the upper fruits showed lowest seed yield and quality.

MATERIALS AND METHODS

Seeds of okra were soaked in water for 12 hrs before sowing. The sowing of seed (1.5kg) was done at second fortnight of June in 2 *kanal* field area of Department of Seed Science and Technology, CCS HAU, Hisar. The method used for sowing was flat bed with 60x30 cm spacing. The portions of the plant were divided on the basis of node numbers. The lower portion constitutes 1^{st} to 5^{th} node, middle portion from 6^{th} to 10^{th} and upper portion from 11^{th} to 15^{th} node respectively. The mature fruits of okra were harvested at colour change of pod from grey to brown and formation of hairline cracks. Picking of mature pods were done from the lower, middle and upper portions of the plant. The mean values of data were analyzed for significance by T-test.

The following parameters were recorded in field.

- No. of days taken to flowering at 1^{st}, 6^{th} and 11^{th} node

Number of days taken from sowing to first flower opening was recorded on first, sixth and eleventh nodes.

- Fruit length at maturity (cm)

Fruit length of ten individual selected fruits from each portion of the plant was measured in centimeters and average was calculated.

- Seed yield per fruit (g)

Selected ten individual fruits from each portion of the plant were split open to weigh the yield of seeds per fruit in grams and average was calculated.

- Test weight (g)

The random seed sample of 1000 seeds was taken from seeds obtained from all the three portions of plant in three replications and average was calculated.

- Number of seeds per fruit at harvesting

Selected ten individual fruits from each portion of the plant were split open to count the number of seeds per fruit in grams and average was calculated.

RESULTS AND DISCUSSION

The okra seed used in experiment was having 94 per cent initial germination which was above Indian Minimum Seed Certification Standards (IMSCS). The flowering was recorded on 1^{st}, 6^{th} and 11^{th} nodes after 38^{th}, 54^{th} and 66^{th} day after sowing respectively.

The perusal of data presented in table 1 showed the fruits collected from different nodes of okra plants showed considerable differences in parameters recorded during the study. The maximum fruit length was recorded in fruits collected from middle nodes followed by upper nodes and minimum was recorded in fruits of lower nodes. While in case of number of seeds per fruit, the highest number of seeds was counted in fruits of middle nodes closely followed by fruits of lower nodes and the lowest number of seeds was counted in upper node fruits. When recorded for test weight, the superiority was shown by seeds of middle node fruits followed by seeds of lower node fruits and least weight was found in seeds of upper nodes. The observations recorded for seed yield per fruit revealed that the highest yield of seed per fruit was obtained from middle node fruits followed by lower node fruit seeds and the lowest seed yield per fruit was obtained in upper node fruits. The results are in conformity with Malik et al. (2000), Prabhakar et al. (2003), Yadav and Dhankhar (2001), Ibrahim and Oladiran (2011) in okra and Kumar et al. (2015) in pumpkin. The results also found similarity with Hedau et al. (2010) who reported that the pods from the lower and middle positions produced the best quality seeds in okra.

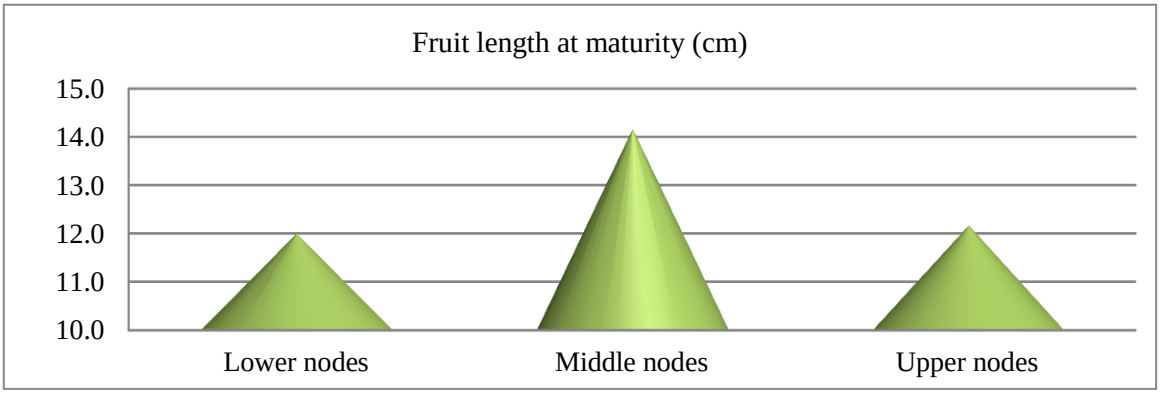

Fig. 1: Study of picking stages on fruit length at maturity

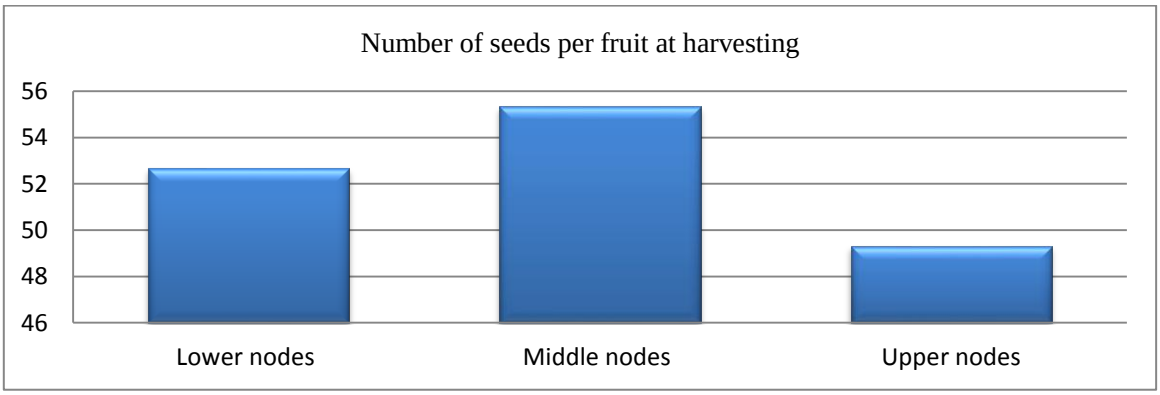

Fig. 2: Study of picking stages on number of seeds per fruit at harvesting

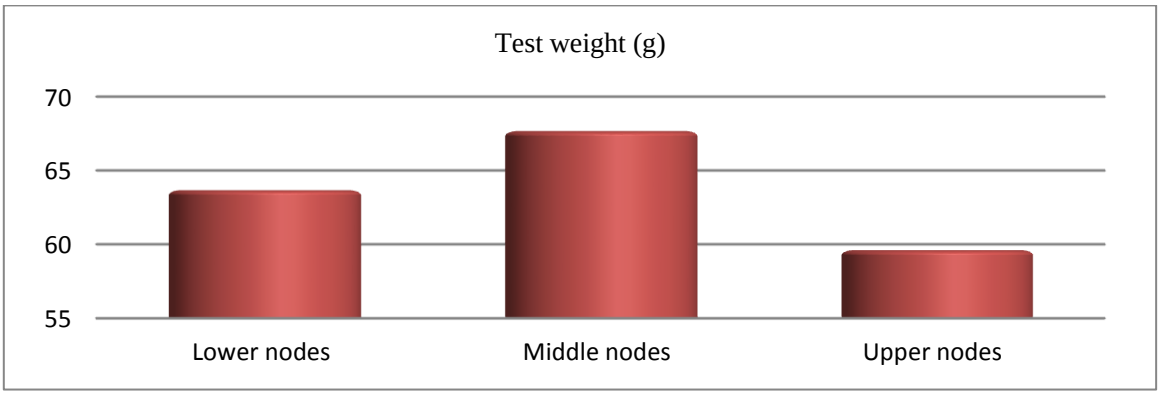

Fig. 3: Study of picking stages on test weight of seeds

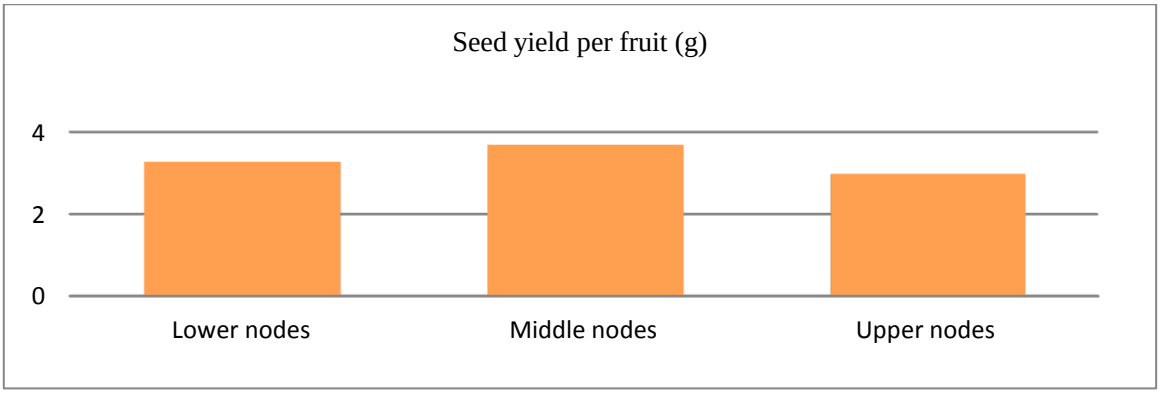

Fig. 4: Study of picking stages on seed yield per fruit

Table 1: Study of picking stages

Picking stage	Fruit length at maturity (cm)	Number of seeds per fruit	Test weight (1000 seeds/g)	Seed yield per fruit (g)
Lower nodes	12	52.66	63.66	3.27
Middle nodes	14.16	55.33	67.66	3.69
Upper nodes	12.16	49.31	59.61	2.98

T-test was applied on the data presented in table 4.1.1 and it was found significant. The significance between lower nodes characters and middle node characters, middle node characters and upper node characters was found $p = 0.026$ and $p = 0.045$ respectively.

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