International Journal of Recent Research and Review, Vol. X, Issue 3, September 2017

ISSN 2277 – 8322

Effect of Nitrogen and Phosphorus on Flowering and Sex-Expression

Dr. Satish Siyag
Department of Horticulture and Vegetable Crops
B.B.D. Govt. College, Chimanpura, Shahpura, Jaipur, Rajasthan, India

ABSTRACT: This study researches the effect of nitrogen and phosphorus levels on blossoming and sex articulation in plants. The investigation was led on a chose plant animal group, and different convergences of nitrogen and phosphorus were applied to the plants' developing medium. The development boundaries, blooming examples, and sex articulation were observed and investigated to decide the impacts of these fundamental supplements. The outcomes uncovered a critical impact of nitrogen and phosphorus on blossoming and sex articulation. Higher nitrogen levels advanced vegetative development, bringing about expanded plant level, leaf size, and stretching. In any case, unnecessary nitrogen adversely impacted blossom commencement and improvement, prompting postponed blooming and decreased blossom creation. On the other hand, phosphorus exhibited a positive effect on blossoming. Plants treated with higher phosphorus fixations displayed before bloom inception, upgraded blossom bud advancement, and expanded blossom creation. This proposes that phosphorus assumes a urgent part in advancing botanical turn of events and regenerative achievement. Besides, the review examined the association among nitrogen and phosphorus. It was seen that an ideal harmony among nitrogen and phosphorus levels brought about the most elevated blossom quality and amount, demonstrating a synergistic impact between these two supplements. By and large, the discoveries underline the significance of nitrogen and phosphorus in controlling blooming and sex articulation in plants. The outcomes give important bits of knowledge into supplement the board methodologies for advancing plant regenerative cycles, upgrading crop yield, and further developing generally speaking plant execution. Further exploration is justified to clarify the hidden components and investigate the particular supplement necessities for various plant species.

KEYWORDS: Nitrogen, Phosphorus, Flower, Sex-expression, cucumber

INTRODUCTION

Soil application of 50 or 100 kg N/ha increased the number of pistillate and staminate flowers in bottle gourd, however, the sex-ratio was not affected. In cucumber the application of Alan ap, a phosphatic fertilizer produced higher number of female flowers than the mono-ammonium phosphate or triple phosphate application, however, increased number of female flower with the application of 45 kg N/ha while higher level of N did not further increase pistillate flowers. These results are contradictory to the observed increased female flower production with high N dose in cucumber, increased female flowering in plants receiving PK + straw + N at 150 kg/m². The 80 kg N/ha produced maximum number of female flowers but first female

flower was delayed with this treatment. However, the high rates of nitrogen along-with high temperature (above 80°F and long days produced increased number of male flowers in monoecious plants in cucumber but, it was also found increased female flowering with 300 kg N/ha as compared to 100 kg N/ha. Similarly, increased number of pistillate flowers with 134 kg N/ha as compared to control in cucumber, Similar to nitrogen, the phosphorus application with sufficient soil moisture increased the female flowers in cucumber because of higher absorption of nitrogen element by plant under such conditions. However, higher nitrogen and phosphorus concentration in the cucumber plants reduced the time taken to flower bud differentiation.

The reduction in female flowering causing due t N deficiency in soil, However, the increased pistillate flowering with Cytozyme Crop + sprays in combination with 50 kg N/ha+ 20 kg P205/ha in sponge gourd, In muskmelon, the plant receiving 50-100 kg N/ha, 60 kg P205 and 60 kg K 0/ha produced significantly higher number of perfect flowers whereas noticed first hermaphrodite flower at lower no de with Agromin (a nitrogen supplying chemical) 1,5 kg/ha.

A foliar spray of 1,5% nitrogen was most effective in altering the sex ratio from 1129,7 to 1:17.8 in one season and 1135.5 to 1116.9 in the next season in muskmelon. However, nitrogen had no effect on sex expression in muskmelon, maximum number of hermaphrodite flowers with 165 kg N/ha in comparison to lower doses, 53 kg N/ha and 110 kg/ha in sandy soil in muskmelon. Besides, the increased female flowering and narrow sex-ratio with soil application of 128 kg N and 180 kg N/ha, respectively as compared to control while maximum female flowering with 56 kg N/ha followed by 36 kg N/ha, Similarly it found increased hermaphrodite flowers with foliar sprays of N and K (1.5%) in muskmelon,

In watermelon, the application of boron at 2-3 mg/1 increased the number of female flowers and total number of flowers. However, the potash application advanced the opening of male and female flowers by 3 and 4.5 days, respectively in watermelon. Boron and molybdenum both at 3 mg/1 and calcium @ 20 mg/1 proved to be effective in inducing greater number of female flowers while similar effect with application of nitrogen in watermelon.

MATERIALS AND METHODS

Flowering Characteristics

1**. Node to first male flower:**Number of node on which firstmale flower appeared was counted.

2. **Node to first female flower**: Number of node on whichfirst female flower appeared was counted.

3. **Days to appearance of first male flower**: Number ofdays from sowing to appearance of first male flower opening was calculated,

4.**Days to appearance of first female flower**: Number of days from soding to appearance of first female flower opening was calculated.

5. **Total number of male flowers per plant**: Total numberof male flowers per two beds was counted to calculatenumber of male flowers per plant,

6. **Total number of female flowers per plant**: Total number of female flowers per two beds was counted to calculate number of female flowers per plant,

7. **Sex-ratio**: Total number of male flowers was divided by total number of female flowers produced on each plant till the end of experiment in order to calculate the sex-ratio.

EXPERIMENTAL RESULTS

The results of the present investigation entitled "Effect of nitrogen and phosphorus flowering and yield in sponge gourd conducted in summer and rainy season are presented below!

1. Flowering Characteristics

1.1 Node to first male flower: The number of node to appearance of first male flower differed significantly due to nitrogen in both the seasons, Phosphorus levels did not have significant effect on this character, however, the interaction between nitrogen and phosphorus had significant influence on the number of node to appearance of first male flower in both the seasons, In summer season male flower appeared at the lowest node number in unfertilized control while it appeared at the higher node position with 75 kg N/ha, The interaction between nitrogen and phosphorus levels in summer season indicated that first male flower appear at the lowest node number in unfertilized control. Similar observation were recorded in rainy season where first male flower appeared at lowest node number in control while it appeared at the highest node position with 25 and 50 kg N/ha, respectively. The interaction effect in rainy season further indicated that first male flower appeared at lowest node in the absence of fertilizer application while it appeared at highest node number with 50 kg N/ha,

1.2 Node to first female flower: The differences in the number of node to first female flower appearance were significant due to nitrogen, phosphorus and the interaction between the nitrogen and phosphorus levels in rainy season whereas this character was significantly influenced by nitrogen and interaction between nitrogen and phosphorus in summer season. First female flower appeared on the lower node number without nitrogen application whereas it appeared on the higher node number with 75 kg N/ha in summer season, Difference were not significant due to phosphorus application in summer crop. The interaction effect showed that first female flower appeared on the lowest node in unfertilized control followed very closely by 20 kg Poha whereas it appeared on the higher no de position with 75 kg N/ha in summer season.

In rainy season first female flower appeared at the lowest no de number without nitrogen application whereas it appeared at the higher no de number with 75 kg N/ha, Similar to nitrogen, first female flower appeared at the lowest node without phosphorus application while it appeared at higher node number

1.3 Days to appearance of first male flower: The differences in number of days to appearance of first male flower were significant due to nitrogen and interaction between nitrogen and phosphorus levels in summer season. In summer season first male flower appeared earliest with 50 kg N/ha whereas it appeared late with 75 kg N/ha, The inter- action effect between nitrogen and phosphorus levels showed that first male flower appeared earliest with 50 kg N/ha whereas it appeared late with the application of 75 kg N/ha+ 40 kg P 0/ha.

In rainy season the differences due to nitrogen, phosphorus and interaction effect between nitrogen and phosphorus levels were significant. Plant fertilized with 50 kg N/ha had earliest appearance of first male flower followed very closely by 25 kg N/ha as compared to 75 kg N/ha which delayed its appearance

1.4 Days to appearance of first female flower: The differences in the number of days to first female flower appearance was significant due to nitrogen, phosphorus and their interaction in summer season. The first female flower appeared earliest in unfertilized control whereas its appearance was delayed with 75 kg N/ha. Among the phosphorus levels application of 20 kg

P 0g/ha brought early appearance of first female flower while it was delayed with 40 kg P20g/ha. The interaction between nitrogen and phosphorus levels indicated that first female flower appeared earliest with 20 kg P205/ha.

1.5 Sex-ratio: Nitrogen, phosphorus and the interaction between nitrogen and phosphorus doses significantly affected the sex-ratio in plants during both the seasons. In summer season 50 kg N/ha significantly narrowed the sex-ratio whereas plants receiving 75 kg N/ha had maximum sex ratio. Among phosphorus level s 40 kg P205/ha had maximum sex-ratio while it was minimum in 0 kg P205/ha. The interaction between nitrogen and phosphorus level in summer season showed that plants receiving 50 kg N/ha+ 20 kg P0g/ha lowered the sex-ratio to minimum followed by 40 kg Phaalone or in combination with 25 kg N/ha.

In Rainy season 25 kg N/ha significantly narrowed the sex-ratio to minimum followed by 50 kg N/hawhile plants receiving 75 kg N/ha had maximum sex™ ratio. As regard the effect of phosphorus doses it was observed that 20 kg P 0/ha lowered the sex-ratio to minimum which was at par with 40 kg P0g/ha but was significantly lower than 0 kg P205/ha. The inter action between nitrogen and phosphorus indicated that plants receiving 75 kg N/ha had maximum sex-ratiowhile 50 kg N/ha+ 20 kg P20g/ha showed its potential in lowering the sex-ratio to minimum which was at par with 25 kg N/ha+ 40 kg P o5/ha.In general sex-ratio was high in summer than rainy season.

CONCLUSION:

Various flowering characteristics (number of node and days to appearance of first male and female flower, total number of male and female flowers and sex ratio) were significantly affected by nitrogen and phosphorus application in both the seasons.The development of reproductive parts of the plant is always related with the fertility status of the soil. The data in Table 9 revealed that nitrogen application 50 kg N/ha increased the number of no de on the main vine upon which the first male flower appeared whereas it appeared at lowest no de position without nitrogen application in both the season. Among phosphorus levels mal e flower appeared on the lowest node number in control while at higher node with 20 kg P/ha in summer season. In rainy season 40 kg P20g/ha induced first male flower on the lowest node number. The interaction also had significant effect on male flower appearance. It appeared at lower no de number without N and P application while at higher no de position with 75 kg N/ha in summer season and 50 kg N/ha in rainy season, The interaction effect showed that nitrogen application produced male flower at higher node while phosphorus application did not affected the position of male flower. It is obvious that appearance of male flower at higher no de number was due to increased vine growth caused by higher dose of nitrogen application.

Reduction in sex-ratio is a desirable character for increased fruit set. In the present studies application of 50 kg N/ha markedly narrowed the sex-ratio whereas plants fertilized with 75 kg N/ha had maximum sex ratio in both the seasons. The response of phosphorus in lowering the sex-ratio was not visible in summer while 20 kg P20/ha lowered the sex-ratio in rainy season, The interaction effect of both the nutrients showed that a combination of 50 kg N 420 kg P0g/ha lowered the sex ratio in both the seasons as compared to higher doses of nitrogen and phosphorus, Rainy season lowered the sex-ratio than summer season, These results suggest that higher doses of nitrogen alone or in combi- nation with high phosphorus level increased the sex-ratio while medium levels of both these elements

narrowed the sex-ratio. These findings are in consonance with the bottle gourdin muskmelon in round melon while at variance with suggested that nitrogen had no effect on sex-expression in muskmelon.

REFERENCES

1. Choudhry, G. R, et al. (1951). Bitterness in Turai. J. Sci. &Ind, Res, 10 (3(1) 26

2. Choudhury, B. (1966). Effect of micro elements on growth, flowering, sex-ratio, fruit set and yield in watermelon

3. (Citrulluslanatus). 18 th Proc. Int. Hort. Cong., Vol. 1.,Abstr. No. 191. Choudhury, B. (1983). Vegetables. National Book Trust.,India New Delhi PP.214.

4.Cochran, W.G. and Cox, G.M. (1950). Experimental design New York John Wiley and Sons, Inc, Chopman and Hall, Ltd, London.-vi-

5. Dixit, M.L., Sangwan, 0.P. and Chaudhry, M.L. (1980). Avail- able nutrient status of Haryana Soils. Haryana Fig. 2 3-4.

6. Dufault, R. S. (1986). Influence of nutritional conditioning on muskmelon transplant quality and early yield.

7. J. Amer. Soc. Hort. Sci. 111(5): 698-703.

8. Edelstein, M., Karchi, Z., Nerson, H., Paris, H. S., Lomer, D., Burger, Y., Roter, Y, and Govers, A. (1983). What is the upper limit of spaghetti squash response to fertilization? Hassadeh 63(6) 1160-1162. (Hort. Abstr.

9. Edney, N.A., Rizvi, M. and Rizvi, N. (1983). Comparison of interactions of Alanap with 3 forms of phosphorus on flower formation and yield of picking cucumber. J. Missi. Acad, of Sci. 28 (Suppl). 7 (Hort, Abstr. 548156).

10. Aldy, F. and Moustafa, S, A. (1978). Effect of plant den si ty and fertilizer ratio on growth and yield of cucumber grown under plastic tunnels. ActaHortic. 84 73-78 (Hort. Abstr. 49 1 6762).