Short Communication

Berry Drop Management in Black Pepper through On Farm Testing in Uttara Kannada

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ABSTRACT

On farm testing was conducted at farmer field to study the effect of different technology options like Di-Ammonium Phosphate and Naphthalene Acetic Acid spray at berry set and fruit development stage, respectively and Naphthalene Acetic Acid at berry set and fruit development stage to prevent berry drop in black pepper. The results indicated that spraying of Di-Ammonium Phosphate 1.5 per cent and 25 ppm Naphthalene Acetic Acid at berry set and fruit development stage has improved many commercially desirable parameters like number of berries per spike, higher per cent reduction in berry drop and yield in black pepper (Piper nigrum L.). Benefit cost ratio, however, was also highest in the treatment compromising Di-Ammonium Phosphate and Naphthalene Acetic Acid.

Key Words: Black pepper, Crop yield, Di-Ammonium Phosphate and Naphthalene Acetic Acid.

INTRODUCTION

Black pepper (Piper nigrum L.) is a major export oriented spice crop of India. It is a native of the monsoon forests along Malabar Coast of south western India. In India, it is cultivated in an area of 1.35 lakh ha with the production of 64,000 t and the export has been 16,840 t (Anon, 2018). Karnataka, Kerala and Tamilnadu are major spice growing states in India. Uttara Kannada is one of the major black pepper growing districts in Karnataka. In Uttara Kannada, it is cultivated in an area of 1,117 ha with the production of 517 t. The major setback in the cultivation of black pepper in the district is berry drop leading to loss in yield. Spike shedding and berry drop are serious malady that affects the yield of pepper to an extent of 29 per cent and 40 per cent. Abiotic stress like drought, high temperature, nutritional imbalance and biotic stress are the reasons for berry drop in black pepper. These stresses may create a physiological imbalance within the plant, leading to shedding of spikes that adversely affects the productivity of the vines (Kumar et al, 2002). Auxins are organic compounds which play a vital role in regulating various physiological processes of plants. Hence an investigation was carried out with growth regulator and nutrient spray to enhance the productivity of pepper vines by reducing berry drop from spikes.

On farm testing (OFT) is mainly conducted to evaluate the available suitable technology options for particular area. Keeping these points in view an OFT was conducted with the objective of evaluation of growth regulator and nutrient spray treatments for berry drop management in black pepper.

MATERIALS AND METHODS

On farm testing of available technology options was undertaken at Kenchagadde village of Uttara Kannada district during 2016-17 and 2017-18 by Krishi Vigyan Kendra, Sirsi. The OFT was conducted at 5 farmer’s field. The treatments were farmers practice (no spray), Di-Ammonium Phosphate and Naphthalene Acetic Acid spray at berry set and fruit development stage and Naphthalene Acetic Acid at berry set and fruit development stage.
Phosphate (DAP) @ 1.5 per cent and Naphthalene Acetic Acid (NAA) @ 25 ppm spray at berry set and fruit development stage and NAA @ 40 ppm spray at berry set and fruit development stage. The recommended package of practices was followed to raise the crop. The observation on per cent berries per spike at the time of first harvest, per cent reduction in berry drop and yield were recorded. Per cent berries per spike were calculated based on the observations like total number of berries set/spike and berries drop/spike.

**RESULTS AND DISCUSSION**

**Effect on number of berries per spike and reduction in berry drop**

Number of berries per spike was found to be highest in the treatment where 1.5 per cent DAP and 25 ppm NAA were sprayed at berry set and fruit development stage, respectively (Table 2). Further, application of NAA @ 40 ppm at berry set and fruit development stage also showed significantly more number of berries per spike at the time of first harvest as compared to farmers practice. These results were in close conformity with findings of Mahindre et al (2018). More number of berries in the treatment with 1.5 per cent DAP and 25 ppm NAA spray is due to the highest per cent reduction in berry drop. The other treatment of spraying NAA @ 40 ppm also showed reduction in berry drop (Table 1).

**Table 1. Effect of berry drop management treatments on per cent reduction in black pepper berry drop over control.**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Per cent reduction in black pepper berry drop over control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2016-17</td>
</tr>
<tr>
<td>TO1: No sprays</td>
<td>-</td>
</tr>
<tr>
<td>TO2: DAP - NAA</td>
<td>10.07</td>
</tr>
<tr>
<td>TO3: NAA - NAA</td>
<td>8.92</td>
</tr>
</tbody>
</table>

**Effect on yield**

Application of 1.5 per cent DAP and 25 ppm NAA found significantly superior over NAA @ 40 ppm treatment followed by farmers practice. It can be revealed (Table 2) that significantly highest berry yield were observed under 1.5 per cent DAP and 25 ppm NAA spray (13.99 q/ha) and NAA @ 40 ppm spray (13.62 q/ha) as compared to farmer practice (12.89 q/ha). Application of 1.5 per cent DAP and 25 ppm NAA at berry set and fruit development stage respectively recorded 8.53 per cent higher dried berry yield than farmers practice. Similar results were reported by Singh et al (2015).

**Table 2. Effect of berry drop management treatments on per cent berry per spike and yield of black pepper.**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Per cent berry per spike (Pooled)</th>
<th>Yield (q/ha) (Pooled)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TO1: No sprays</td>
<td>67.23</td>
<td>12.89</td>
</tr>
<tr>
<td>TO2: DAP - NAA</td>
<td>74.44</td>
<td>13.99</td>
</tr>
<tr>
<td>TO3: NAA - NAA</td>
<td>72.54</td>
<td>13.62</td>
</tr>
<tr>
<td>SE(m)</td>
<td>0.55</td>
<td>0.13</td>
</tr>
<tr>
<td>SE(d)</td>
<td>0.78</td>
<td>0.19</td>
</tr>
<tr>
<td>C.D. 5%</td>
<td>1.62</td>
<td>0.39</td>
</tr>
</tbody>
</table>

**Economics of berry drop management**

On the basis of pooled data (Table 3), 1.5 per cent DAP and 25 ppm NAA spray fetches the significantly highest net return and B:C ratio (Rs.4,19,256 /ha and 3.34) followed by NAA @ 40 ppm spray treatment. The lowest B:C ratio was observed under farmers practice. Similar findings were also reported by Shil and Nath (2016) and Gare et al (2017).

**CONCLUSION**

On the basis of two years data, it may conclude that application of 1.5 per cent DAP and 25 ppm NAA at berry set and fruit development stage respectively gave significantly higher number of
berries per spike, dried berry yield, net return and B:C ratio as compared to all other treatments tested and significantly reduced the berry drop in black pepper.

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**REFERENCES**


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