

ADOPTION OF INTEGRATED PEST MANAGEMENT PRACTICES AMONG SOYBEAN GROWERS IN REWA DISTRICT (M.P.)

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Received-10.06.2017, Revised-22.06.2017

Abstract: Keeping in mind the importance of Integrated Pest Management (IPM) in soybean crop, the present study was conducted in Rewa District with the objective to study the extent of adoption of Integrated Pest Management practices among the soybean growers. Primary data were conducted from 120 farmers from Rewa blocks of Rewa district using proportionate random sampling method. Pre-structured interview schedule was used for data collection by using personal interview method. The findings of study indicated that higher percentage 44.17 percent respondents had low adoption of Integrated Pest Management practices. On the basis of mean adoption score regarding different management practices it may be concluded that the adoption of the cultural practices was found to be highest followed by chemical, mechanical and biological practices on the basis of farmers feedback obtained in the study it suggests it is an urgent need of trials and demonstration on IPM practices and skill oriented training programme for soybean growers in Rewa district for higher and safer soybean production.

Keywords: Integrated Pest Management, Adoption, Mean adoption score, Soybean

INTRODUCTION

Soybean (*Glycine max* L. merill) became the miracle crop of the 21st century. Soybean is the single largest oilseed produced in the world of the total 310-320 million tones oilseeds produced annually. On the global scale, it tops on the list of oilseed crops. Amongst soybean producing countries USA enjoys first rank while India is placed in fifth position. In India in the year 2014-15 area under soybean crop was 116.28 lakh hectare with the production of 86.42 lakh ton (SOPA 2014-15). Madhya Pradesh is known as “Golden State or Soya State” because of highest area sown in soybean as compared to other states in India. The total area under soybean in M.P. was recorded as 6164.40 thousand hectares and production of 4517.30 thousand ton with the productivity 733 kg/ha (M.P. Govt. in 2013-14). The productivity of soybean is affected by many factors viz. crop genetics, resource managements and climatic factors. Yield losses due to individual diseases/ insect/ weed species ranges from 20 to 100 percentage (Anonymous 2014). Integrated Pest Management (IPM) approaches have been globally accepted for achieving sustainability in agriculture and maintaining the agro-eco-system. It has more relevant due to a number of advantages like safely to environment, pesticide-free food commodities, low input based crop production. Keeping this in view the present

study was under taken to assess the extent of adoption of Integrated Pest Management practices among the soybean growers.

METHODOLOGY

The study was purposively conducted in Rewa district of Madhya Pradesh due to larger area under soybean crop. The district comprises 9 blocks out of which Rewa block was selected purposively because this block is occupying the largest area under soybean crop presently. From this block, five villages and soybean growers were selected by using proportionate random sampling method, to make a sample of 120 respondents. The selected respondents were interviewed with the help of a pre-structured interview schedule. The collected data were analyzed in the light of the objective. To study the extent of adoption of Integrated Pest Management practices by soybean growers. An index was developed in consultation with the experts and scientists of College of Agriculture Rewa, JNKVV (M.P.). All the recommended practices of IPM namely cultural, mechanical, biological and chemical practices were incorporated in the index. The responses of the respondents were recorded on 3 points scale as complete, partial and incomplete with the scores 2, 1 and 0 respectively.

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RESULT

Table 1. Practice wise adoption of Integrated Pest Management practices (N=120)

| S. No. | Statement | Extent of Adoption | | | Total score | Mean adoption score | Rank |
|-----------|--|--------------------|---------------|---------------|-------------|---------------------|------|
| | | complete | partial | Incomplete | | | |
| A | Cultural practices | | | | | | |
| 1 | Deep summer ploughing | 85 (70.83) | 24 (20.00) | 11 (9.16) | 194 | 1.61 | I |
| 2 | Use of Recommended dose of chemical fertilizer i.e. NPK | 44 (36.67) | 52 (43.33) | 24 (20.00) | 140 | 1.16 | VII |
| 3 | Use of resistant varieties. | 73 (60.83) | 30 (25.00) | 17 (14.17) | 176 | 1.46 | V |
| 4 | Hand weeding or hoeing. | 79 (65.83) | 27 (22.50) | 14 (11.67) | 185 | 1.54 | III |
| 5 | Timely sowing | 82 (68.33) | 28 (23.33) | 10 (8.33) | 192 | 1.60 | II |
| 6 | Seed rate and proper spacing | 57 (47.50) | 51 (42.50) | 12 (10.00) | 165 | 1.37 | VI |
| 7. | Removal and destruction of infected and infested stubbles | 77 (64.17) | 26 (21.67) | 17 (14.16) | 180 | 1.50 | IV |
| 8. | Crop rotation | 43 (35.83) | 48 (40.00) | 29 (24.17) | 134 | 1.11 | VIII |
| 9 | Inter-cropping | 49 (40.83) | 29 (24.17) | 42 (35.00) | 127 | 1.05 | IX |
| | Over all mean Score | | | | | 1.37 | |
| B | Mechanical practices | | | | | | |
| 10 | Hand picking and destruction of larvae/eggs | 38 (31.66) | 22 (18.33) | 60 (50.00) | 98 | 0.81 | III |
| 11 | Use of yellow trap | 20 (16.66) | 44 (36.66) | 56 (46.66) | 84 | 0.70 | IV |
| 12 | Use of Pheromone trap | 10 (8.33) | 24 (20.00) | 86 (71.66) | 44 | 0.36 | V |
| 13 | Use of light trap | 30 (25.00) | 40 (33.33) | 50 (41.66) | 100 | 0.88 | II |
| 14 | Collection and destruction of infested plant parts | 64 (53.33) | 36 (30.00) | 20 (16.66) | 120 | 1.36 | I |
| | Over all mean Score | | | | | 0.82 | |
| C. | Biological control | | | | | | |
| 15 | Seed treatment with <i>Trichoderma viride</i> (@ 4-5 g/kg seed). | 40 (33.33) | 45 (37.50) | 35 (29.16) | 120 | 1.04 | III |
| 16 | Use of bio fertilizer | 49 (40.83) | 46 (38.33) | 25 (20.84) | 144 | 1.20 | I |
| 17 | Spraying of NPV. | 5 (4.16) | 17 (14.16) | 98 (81.66) | 27 | 0.22 | V |
| 18 | Installing perchers for birds | 17 (14.16) | 23 (19.16) | 80 (66.66) | 57 | 0.47 | IV |
| 19 | Use of NeemKarnel Extract 4% or Nemecticide | 47 (39.16) | 33 (27.50) | 40 (33.33) | 127 | 1.05 | II |
| | Over all mean Score | | | | | 0.79 | |
| D | Chemical practices | | | | | | |
| 20 | Soil application of Phorate 10 G @ 15 kg/ha at sowing time | 24 (20.00) | 20 (16.66) | 76 (63.33) | 68 | 0.56 | IV |
| 21 | Seed treatment with Thiram+Carbendazim. | 66 | 28 | 26 | 160 | 1.33 | II |

| | | | | | | | |
|----|---|---------------|---------------|---------------|-----|------|-----|
| | | (55.00) | (23.33) | (21.66) | | | |
| 22 | Spraying of Trizophos 40 EC @ 800ml/ha or chloropyriphos 20EC @ 1500ml/ha insecticide | 74 (61.66) | 26 (21.66) | 20 (16.66) | 174 | 1.45 | I |
| 23 | Seed treatment with Thiamethoxam 30FS @ 10ml/kg seed. | 56 (46.66) | 35 (29.16) | 29 (24.16) | 147 | 1.22 | III |
| | Over all mean Score | | | | | 1.44 | |
| | Mean adoption score of all the practices | | | | | 1.10 | |

The practices wise distribution of the respondents according to adoption about IPM practices is presented in under Table 1. It is clear from Table 1 that in care of cultural practices the mean adoption score was highest in summer deep ploughing (1.61) followed by timely sowing (1.60), hand weeding (1.54), removal and destruction of infected and infested stubbles (1.50), use of resistant varieties (1.46), seed rate (1.37), use of recommended dose of chemical fertilizer (1.16), crop rotation (1.11) and intercropping (1.05).

As far as mechanical management practices was concerned mean adoption score was arranged in descending order as collection and destruction of infected plant part (1.36) followed by use of light trap (0.88), hand picking and destruction (0.81), use of light trap (0.70), use of pheromone trap (0.36).

As regarding the biological management practices mean adoption score was highest in use of bio fertilizer (1.20) followed by use of nemecticide (1.05), Seed treatment with *Trichoderma viride*, installing perchers for birds (0.47) and spray of NPV (0.22).

Among the chemical management practices it was observed that the mean adoption score was highest in spray of trizophos (1.45) followed by seed treatment with thiram + carbendazim (1.33), seed treatment with thiamethoxam (1.22) and application of phorate (0.56).

On the basis of mean adoption score it may be concluded that the adoption of the cultural practices was found to be highest followed by chemical, mechanical and biological. This finding is supported by Venkatesh Gandhi *et al* (2008).

Table 2. Distribution of respondents according to their adoption level regarding integrated pest management practices

| S. No. | Extent of Adoption | No. of respondents | Percentage |
|--------|--------------------|--------------------|---------------|
| 1. | Low | 53 | 44.17 |
| 2. | Medium | 38 | 31.67 |
| 3. | High | 29 | 24.16 |
| | Total | 120 | 100.00 |

The Table 2 reveals that out of total selected soybean growers, 44.17 per cent had low adoption level, followed by 31.67 percent had medium and only 24.16 per cent had high adoption level of integrated pest management practices. This finding is supported by Mahoviya (2006) and Raghuwansi (2010).

CONCLUSION

The result of the study revealed that adoption of IPM among soybean growers there was considerably low. Generally, soybean growers had higher adoption regarding cultural practices followed by chemical, mechanical and biological practices. Therefore, it is an urgent need of conducting trials and demonstration and skill oriented training programme on IPM for soybean growers regarding to enhance the adoption of IPM among the soybean growers.

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