DOI : 10.5958/2349-4433.2024.00014.X

J Krishi Vigyan 2024, 12(1) : 74-76

Extent of Damage by Avian Fauna in Maize and the Measures for Management

J Ramkumar[1], M Jegadeesan[2] and T Balaji[3]

ICAR-KVK, Tamil Nadu Agricultural University, Ramanathapuram (Tamil Nadu)

ABSTRACT

The study on extent of damage by avian fauna in maize and measures for management was conducted at ICAR-Krishi Vigyan Kendra, Virudhunagar District, Tamil Nadu. The per cent cob damage was assessed at the time of harvest. In addition, the bird species and its nature of damage also recorded. The results showed that, three rows of pearl millet in the border area combined with placement of reflective ribbons and scare crows (12/ha) had recorded least cob damage (32.29%) followed by treatment with placement of reflective ribbons and scare crows (12/ha) (35.43%) as against 68.29 per cent in the control plots. The yield also comparatively higher in treatment imposed plots (6242 and 5400 kg/ha), while the control plots registered 4562 kg/ha. Mostly the bird species *viz*., *Columbia livia, Psittacula krameri* and *Corvus splendens* were primarily causing damage to the maize crop.

Key words*:* Avian Fauna, Cob Damage, Reflective Ribbons, Scare Crow.

INTRODUCTION

Birds are considered to be an important component of agro-ecosystems. They cause potential threat to crop production due to their habit of damaging in both agricultural and horticultural crops (Brooks and Ahmed, 1990; Khan and Ahmad, 1990). The pigeons and crows inflict the damage at the germination and seedling stages. Maize kernels were severely attacked by the birds during milking stage. The parakeet was very destructive to maize, sorghum, wheat, sunflower and other grain crops. It is also damage the fruits such as mango, loquat, guava and orange despairingly. The bird damage occurs at various stages of the crops *i.e.* seeds may be picked or destroyed after sowing, seedlings may be pulled out or uprooted, and grains in milky stage or at the ripening stage may be fed by the birds. However, birds are difficult to control because of their behavior and feeding habits. Usually, many traps such as parotrap, mist trap, clip net and house loop traps were used to manage or capturing the bird pests (Khan *et al*., 2002). Stevens *et al.* (1998) reported that use of mechanical devices was far better for controlling pest birds. But very few attempts were made by to test the reflector ribbon and scare crow. Hence, the present study was undertaken by the ICAR-Krishi Vigyan Kendra, Virudhunagar District, Tamil Nadu to manage the avian fauna in millets.

MATERIALS AND METHODS

The study was carried out at ICAR-Krishi Vigyan Kendra, Virudhunagar research farm during 2021-22. The areas in and around the research farm is the hub for the rainfed crops such as sorghum, pearl millet, maize and other minor millets. Soil was mostly black cotton soil, which is rich in nutrients. The maize hybrid Co8 was cultivated in macro plots. Before sowing, seed treatment was done with Chlorpyriphos 20EC @ 4 ml/kg of seed along with 0.5 gram gum in 20 ml of water. The treated seeds were dibbled at a depth of 4 cm along the furrow in which fertilizers are placed and cover with soil. Thinning was done on the 12-15 days after sowing by leaving only one healthy and vigorous seedling per hole. Other intercultural operations *viz*., irrigation, weeding and fertilizer application was followed as per the TNAU crop production guide for the agriculture crops. To assess the damage potential and minimizing the bird damage, the experiment was conducted in macro plot design with following treatments.

Corresponding Author's Email: jramtnau@gmail.com

2,3Assistant Professor, ICAR-KVK, TNAU, Ramanathapuram, TN

Treatment	Maize
T1	Pearl millet - 3 rows (border crop) + reflective ribbons + scare crows (12/ha)
T2	Reflective ribbons + scare crows (12/ha)
T3	Control

All the treatments were imposed at early cob formation stage. The reflective ribbons were tied up around the crop and were supported by the bamboo sticks used to fence around the field. The height of the reflective ribbons was given special consideration because too high and too low reflectors had significant effect on visiting bird pests. Hence, the reflective ribbons were erected three to four feet above the soil surface was found to give better results for maize crop. Similarly, five numbers of scare crows are placed 2 feet above the crop canopy in and around experimental plots.

The mean cob damage was assessed by recording the number of cobs damaged out of 50 cobs at five different points in the experimental plot. The weighted damage percentage was worked out as per the following formula.

$$\text{Weighted cob damage (\%)} = \frac{0.0\times S1+0.25\times S2+0.50\times S3+0.75\times S4+1.0\times S5}{N} \times 100$$

Where, S1 = No. of cobs with no damage; S2 = No. of cobs with < 25 % damage; S3 = No. of cobs with 25 - 50 % damage; S4 = No. of cobs with 51 - 75 % damage and S5 = No. of cobs with > 75 % damage.

The data on per cent earhead damage, weighted earhead damage, yield per ha and BCR also worked out and statistical analysis was done. In addition, the bird species visiting or damaging the maize crop also recorded along with nature of damage caused from sowing to till harvest.

RESULTS AND DISCUSSION

The predominant bird species damaging maize crop was Blue Rock Pigeon *Columbia livia*, Rose Ringed Parakeet *Psittacula krameri* and common house crow *Corvus splendens*. The pigeon and common house crow caused damage to the sown maize seeds and eat away the young seedlings. The rose ringed parakeet incidence was noticed from cob formation to maturity stage. The tender cobs along with silky style was heavily damage by the rose ringed parakeet. They cut the green spathe covering the cob into pieces and feed on exposed grains resulting in higher per cent of yield loss.

Similarly, the per cent cob damage was assessed at the time of harvest. The results showed that, three rows of pearl millet in the border area combined with placement of reflective ribbons and scare crows (12/ha) (T1) was superior in registering the least cob damage (32.29%) followed by treatment with placement of reflective ribbons and scare crows (12/ha) (T2) (35.43%) as against 68.29 per cent in the control plots. Similarly, the yield was also comparatively

Table 1. Effect of different pest control methods on the avian pest damage in maize.

Treatments	Earhead damage (%)*	Weighted earhead damage (%)	Reduction over control (%)	Yield (kg/ha)	Yield Increase over control (%)	BC ratio
T1 – Pearl millet (3 border rows) + Reflective ribbons + scare crows (12/ha)	32.29 (34.62)	25.77 (30.50)	52.71	6242	36.82	2.10
T2 - Reflective ribbons + scare crows (12/ha)	35.43 (36.52)	24.69 (29.79)	48.11	5400	18.35	1.83
T3 - Control	68.29 (55.72)	39.19 (38.75)	-	4562	-	1.69
SEd	1.8	0.80	-	-	-	-
CD (0.05 %)	3.9	1.72	-	-	-	-

* Values in paranthesis are arcsine transformed values
Means followed by a common letter are not significantly different by LSD ($p<0.05$)

higher in T1 (6242 kg/ha) followed by T2 (5400 kg/ha) while the control plots registered 4562 kg/ha. The mirror reflections from the reflective ribbons disturbed the birds and forced them to leave the experimental plots. The inclusion of pearl millet as border rows, though effective to certain extent, was not significantly contributing to reduction in bird damage. Hence, tying reflective ribbons and placement of scare crows (12/ha) can be recommended to farmers for minimizing the bird damage in maize. Hafeez *et al*. 2008 reported that, the continuous use of reflector ribbon in wheat and maize fields is helpful to minimize the visit of bird pests to "Zero" level. They also revealed that, maximum number (26) of parakeets attacked maize crop during early stage but this number was decreased drastically to 5 during later stage, where as the number of mynah attacking maize crop also decreased from 9 to "zero" by using reflective ribbon. The present finding was in accordance with the finding of Hafeez *et al*.

CONCLUSION

Using of reflective ribbons around the maize crop and scare crows @ 5numbers per acre would be very effective in scare away the avian fauna. For maximum benefit this method should be adopted over an large area.

REFERENCES

Brooks J E and Ahmed E (1990). Pest birds of Pakistan Identification and distribution. In: Brooks, J.E., E. Ahmad, I. Hussain, S. Munir and A.A. Khan (eds.), "A Training Manual on Vertebrate Pest Management", pp: 173–9. A GOP/USAID/DWRC-Vertebrate Pest Management Control Project, National Agricultural Research Centre, Pakistan.

Khan A A and Ahmad E (1990). Damage pattern of pest birds and assessment methods. In: Brooks, J.E., E. Ahmad, I. Hussain, S. Munir and A.A. Khan (eds.), "A Training Manual on Vertebrate Pest Management", pp: 181–5. A GOP/USAID/DWRC-Vertebrate Pest Management Control Project, National Agricultural Research Centre, Pakistan, Agricultural Research Council, Islamabad, Pakistan

Khan R A, Hafeez S and Habibullah M A (2002). Conventional netting techniques and their efficacy. A threat to small game birds in Pakistan. *Indus J Sci* **1**: 297–300.

Stevens G R, Clark L, Fall M W and Jackson W B (1998). Bird repellents: development of avian specific tear gases for resolution of human wildlife conflicts. Vertebrate deteriogens. *Int Biodeterioat Biodegrad* **42**: 153–60.

Hafeez S, Khan T H, Khan T N, Shahbaz M and Ahmed M (2008). Use of reflector ribbon as a pest birds repellant in wheat and maize crop. *J Agri Soc Sci* **4**: 92–94.

Received on 2/1/2024 Accepted on 12/2/2024