

Asian Resonance

Parakeet (*Psittacula krameri*) Damage to Ber (*Ziziphus mauritiana*, Rhamnaceae) in an Orchard of Jhunjhunu (Raj.)



Sunita Singh

Lecturer,
Deptt. of Zoology,
S.K. Govt. (P.G.) College,
Sikar, Rajasthan

Digvijay Singh Shekhawat

Lecturer,
Deptt. of Zoology,
Govt. Dunger College,
Bikaner, Rajasthan

P.C. Acharya

Lecturer,
Deptt. of Zoology,
Govt. Dunger College,
Bikaner, Rajasthan

Abstract

Rose-ringed parakeet (*Psittacula krameri*) has acquired the status of a serious vertebrate pest for the agricultural and horticultural crops. Ber (*Ziziphus mauritiana*) is a tropical/subtropical fruit native to the Northern India. Jhunjhunu district is situated in the semi arid zone of the Rajasthan State and provides favourable conditions for the growth of ber plant. *Ziziphus mauritiana* has a high nutritive value, being a rich source of vitamins, essential minerals and carbohydrates. The parakeet damage to ber fruit was estimated to be 20.72% for an orchard at Jhunjhunu (Raj), during December 2012 to June 2013. Loss by parakeet on ber fruits were estimated through direct field observations, applying the probability sampling (Simple random sampling) method. Of the total estimated loss, 17.62% damage was recorded for the ripened fruits and 3.10% for unripe fruits. It was concluded that compared to unripe fruits damage was more visible in the ripened fruits. Effective pest management methods need to encourage environment sustainable management strategies for crops to minimize damage caused by parakeet. To curb parakeet damage, multiple cropping systems and the repellants can be used as eco-friendly method.

Keywords: Rose Ringed Parakeet, Ber, Damage, Pest and Orchard.

Introduction

The rose-ringed parakeet (*Psittacula krameri*), commonly known as the parrot, belongs to the order psittaciformes and family psittacidae. It is one of the serious problem of agriculture and attacks a variety of crops and orchard fruits (Ramzan and Toor, 1972; Bashir, 1978; Ali et al, 1981; Shafi et al, 1986; Babu and Muthukrishnan, 1987). It has a wide feeding niche and as such obliterates the food crops substantially, thus causing not only damage, but also considerable economic losses (Roberts, 1991). The importance of fruit as a source of food needs no emphasis. Being cheap and easily available, Ber (*Ziziphus mauritiana*, family-Rhamnaceae) is cultivable fruit in drier parts (arid and semi arid) of the Indian subcontinent (Sebastian and Bhandari, 1990). This fruit is a drupe and is generally eaten raw and fresh. It is quite nutritious and also rich source of vitamin C, A & B complex and also of Ca, K, Br, Rb & La (Tiwari & Banafar 1995). Being a rich source of ascorbic acid, essential minerals and carbohydrates (Pareek et al 2002), it is also known as Indian Jujube, desert apple or Indian plum. Colour of fruit is changed from green to yellow to chocolate brown with the maturity & ripening.

The factors that limit ber fruit production include insects & avian pests. Insects spoil this fruit only at ripening stage while the parakeets, as a major avian pest of ber, attack them even at unripe stage when the fruit is hard. Though the problem of parakeet depredation on many farm crops like sunflower, maize, wheat etc. and fruit crops like guava, mango, citrus etc. in various regions, which are native habitats of parakeet, have been defined, but in this study area, such type research work has been not done and about ber fruit, detailed information on losses of fruit production due to parakeet are lacking. Paucity of available information in the croplands not only with respect to the damage, but also managing the parakeet population sustainably required further concerted studies. This study was conducted to gather data on depredation and damage levels, so as to help in formulating policies and control methods to reduce the damage.

Aim of the Study

The main aim of the study is to draw the attention of researchers and scientists in the field of avian ecology. The present need is to

Asian Resonance

implement effective strategic eco friendly pest management methods to curb the menace of crops caused by parakeet. There is a need to curb the parakeet damage by adopting multiple cropping systems and biological repellants.

Materials and Methods

Estimation of damage by Rose Ringed Parakeet on ber fruit was extended from December 2012 to June 2013 in a fruit orchard farm, which was comprised about 20 bigha kaccha (approximately 4 acre) in dimension and situated at village Islampur, distt. Jhunjhunu (Rajasthan). This study area was located on the northeastern part of Rajasthan (Fig.1) and categorized in semi arid zone of the state, which provides favourable environment for growing and producing fruit of ber plant. This area is also a favourable habitat for rose-ringed parakeet.

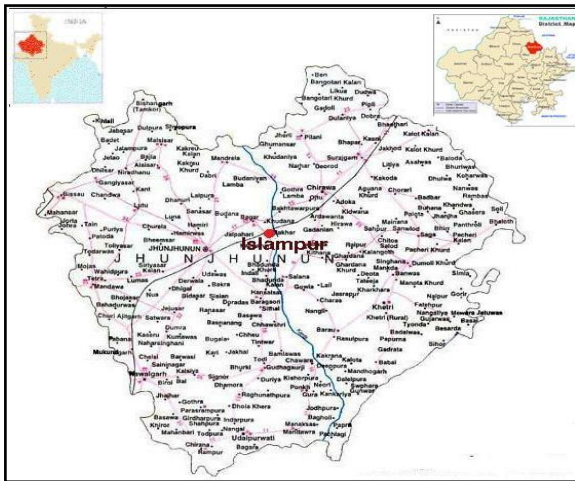


Fig.1 Showing Study Area.

In all, 45 ber trees were growing here. Depredation in ber fruits was estimated through direct field observations, applying the probability sampling

(Simple random sampling) method. Canon camera was also used for photography of parakeet during damage to ber in form of unripe and ripened stages (Fig.2 & 5). For convenience 15 ber trees were randomly selected and data was watchfully recorded in evening once a day during study period.

Ber trees flower in July to November and fruits are formed soon after. In February to March-April the fruits are mature. So the study was carried out from December to June, which is a time of fruit forming (unripe and ripening stages) for ber trees. Till the completion of study, the fruits damaged and dropped by parakeets, were collected, placed in polythene bags and weighed to record total production of fruits and depredation by parakeets.



Fig.2 –Damaging of BER Fruit (Unripe Stage) by Rose-ringed Parakeet

Results

Rose ringed parakeets attacked the fruits with their beaks and rendered them unfit for marketing. The data on damage to ber fruits have been summarized in table 1

Table-1
Extent of Parakeet Damaged to BER Fruits

Sampled Trees	Total production of Fruits (in Kg.)	Undamaged production of Fruits (in Kg.)	Unripe Fruit Damage (in Kg.)	Ripening Fruit Damage (in Kg.)	Total Fruit Damage
1	90	67	3	20	23
2	82	64	3	15	18
3	95	77	3	15	18
4	78	63	2	13	15
5	72	60	2	10	12
6	86	62	3	21	24
7	91	62	4	25	29
8	85	77	1	7	8
9	79	58	3	18	21
10	88	62	4	22	26
11	94	80	2	12	14
12	96	72	4	20	24
13	73	56	3	14	17
14	98	86	2	10	12
15	81	75	1	5	6
Total (%)	1288	1021 (79.28%)	40 (3.10%)	227 (17.62%)	267 (20.72%)

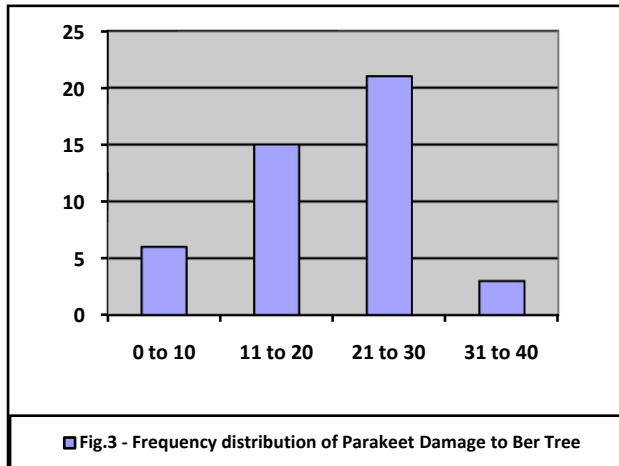
Kg = Kilogram

Asian Resonance

Of a total production of 1288 kg fruits sampled from 15 trees out of 45 trees of studied orchard, 267 kg fruits were damaged by parakeets which amounted to 20.72 % loss. Ali (1977) and Ali and Fatehally (1967) rated the rose ringed parakeet a serious pest to the standing fruits. In general, rose ringed parakeets are wasteful feeders often dropping and discarding partially consumed fruits. Partially consumed fruits have no marketing value. Thus, farmers are faced to loss of fruit production.



Fig.5 - Damaging of BER Fruit (Ripening Stage) by Rose-Ringed Parakeet



Frequency distribution of losses is shown in figure 3. The magnitude of damage in majority of trees (46.66% of the total) was between 21-30%. The damage between 11-20% was seen on 33.33% of the total trees. 0.2 trees (13.33%) showed in the range of 0-10%. The damage between 31-40% was seen only on 6.66% of the total trees. So, it was concluded that averagely approximate 21% damage to ber fruit production is faced by farmers.

Discussion

This paper provides localized estimation regarding the damage by rose ringed parakeet on ber (*Ziziphus mauritiana*), that is not applicable over large areas, but a definite indication about the damage potential of parakeet to ber. The *Psittacula krameri* with the status of a serious vertebrate pest, throughout the region of Jhunjhunu district, with the availability of suitable roosts and nests on various trees, damages and destroys both cultivated and fruit crops, and incurs in substantial damage to farmers and commercial fruit growers in the absence of management devices. The roosts of the rose ringed parakeet occur closely to the food sources and as such lower levels of energy budgets are required to manifest with the frequent vegetations from and to their roosts throughout the day, inflicting damage and production losses to them.

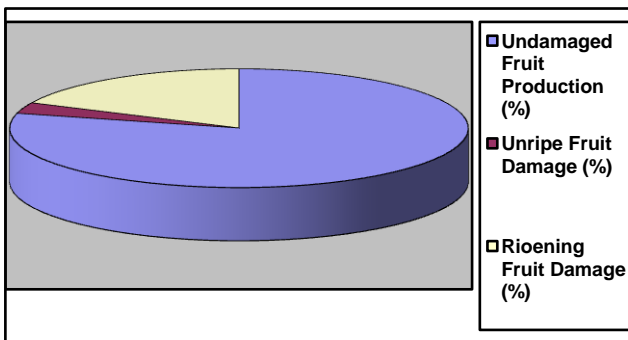


Fig. 4 Total Fruit Production of Sampled Tree

Of the total estimated loss 17.62 % (approx. 18%) damage was recorded for the ripened fruits and 3.10% (approx. 3%) for unripe Fruits (Figure 4). So, it was also concluded that loss of fruit production is started when fruits are in unripe

Focus on management of avian pest has received a far less attention in India possibly due to aerial mode of life and the related complexities (Anonymous, 1995). Sustainable methods viz. mainly the repellants therefore; appear to be the favourable alternative to alleviate the productive food crops of the rose ringed parakeet destruction. Besides this, multiple cropping systems, which is a traditional method, also provides some respite to the farmers but predominantly their impact remained restricted (Dechant *et. al* 2003). Another important aspect of controlling parakeet damage is food preference studies, because these studies may be helpful in the management of avian pest species since a preferred crop may be used as a decoy crop to reduce damage to more important crop (Cummings *et.al* 1987, and Fairaizl & Pfeifer 1988).

Overall conclusion is that the control aspects of the avian pest require more logical and environment friendly approach to improve the crop quality and production in the productive agro ecosystems of Rajasthan.

References

1. Ali, M.H., B.H.K. Rao, M.A. Rao and P.S. Rao, 1981. Bird (*Psittaculakrameri*) damage to maize. *J. Bomb. Nat. His. Soc.*, 79: 201-4
2. Ali, S. 1977. The Indian birds. 10th Edition. Bombay Nat. Hist. Soc. 162 pp.
3. Ali, S and L. Fatehally, 1967 Common birds

- National Book Trust, India, New Delhi.
4. Anonymous, 1995. *Management of Bird Pests in South Asia*, pp: 1–14. Economic Survey of India, Ministry of Agriculture, India
 5. Babu, E.S. and T. S. Muthukrishnan. 1987. Studies on the damage by *psittacula krameri* (scopoli) and *passer domesticus* (linnaeus) on certain crops trop. Pest manage., 33(4) : 367-369
 6. Bashir, el. S.a. 1978. Review of parakeet damage in pakistan and suggested control methods. In: proceedings of seminar on bird pest problem in agriculture, july 5-6, 1978. Karachi, pakistan) pp. 22-27.
 7. Cummings J L, Guarino J L, Kuittle C E and Royall W C Jr 1987 Decoy planting for reducing blackbird damage to nearby commercial sunflower fields; *Crop Prot.* 6 56-60
 8. Dechant, J.A., M.L. Sondreal, D.H. Johnson, L.D. Igl, C.M. Goldade, P.A. Rabie and B.R. Euliss, 2003. *Effects of Management Practices on Grassland Birds: Burrowing Owl*, p: 33.
 9. Fairaizl S D and Pfeifer W K 1988 The lure crop alternative; *U. S. Forest Service General*
 10. Pareek, S., M. S. Fageria and R. S. Dhaka. 2002. Performance of ber genotypes under arid condition. *Curr. Agric.* 26:63–65.
 11. Ramzan, M. And H.S. Toor. 1972. Studies on damage to guava fruit due to rose - ringed parakeet, *psittacula krameri* (scopoli) at ludhiana. *Punjab hortic. J.*, 12 (2&3):144-145. Northern Prairie Wildlife Research Center, Jamestown, Nevada, USA
 12. Roberts, T.J., 1991. *Birds of Pakistan*, p: 667. Oxford University Press, London, England.
 13. Sebastian, M. K. and Bhandari, M. M. 1990. Edible wild plants of the forest areas of Rajasthan, India. *J. Eco. Taxon. Botany* 14:689–694.
 14. Shafi, M.M., A.A. Khan and I. Hussain, 1986. Parakeet Damage to Citrus fruit in Punjab. *J. Bombay Nat. His. Soc.*, 83: 439–444
 15. Tiwari, R. J. and R. N. S. Banafar. 1995. Studies on the nutritive constituents, yield and yield attributing characters in some ber (*Zizyphus jujuba*) genotypes. *Ind. J. Plant Physiol.* 38:88-89.