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PARAKEET DAMAGE TO SUNFLOWER IN PAKISTAN

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ABSTRACT

Rose-ringed parakeet (*Psittacula krameri* (Scopoli)) damage to sunflower heads was estimated in two provinces of Pakistan during the spring of 1981. In seven districts of Punjab the damage ranged from 5.0-23.28%, with an average of 11.72%. In rainfed areas the damage was as high as 71.43%, with average of 38.29%. In Sind the damage was on the higher order. In nine districts the damage ranged from 6.98-26.09%, with an average of 16.61% and as high as 55% at some locations. Majority of fields (47%) had 10% damage or less, while less than 10% of fields had 40-75% damage. The economic losses, based on 1983 production statistics, amounted to US\$ 1.95 million.

INTRODUCTION

The rose-ringed parakeet, *Psittacula krameri* (Scopoli), is widely distributed in the Orient (Ali, 1977). In Pakistan during the last two decades, rose-ringed parakeets have reached alarming numbers due to widespread irrigational systems, introduction of crops such as sunflower and citrus (Muhammad and Khan, 1981; Amin, 1983), and expansion of conventional crops. They do serious damage to cereals, oil seeds, and fruits and are very indiscriminate in their feeding habits (Bindra and Toor, 1972; Ramzan and Toor, 1971, 1972; De Grazio and Besser, 1975; Besser, 1976, 1978; Qureshi, 1980; Bashir, 1981; Smith, 1972; Sharma, 1976a, 1976b; Sandhu and Dhindsa, 1982).

With the introduction of sunflower, an unconventional oil seed crop in Pakistan, it became clear that the rose-ringed parakeet was a serious pest. Their damage to ripening heads was identified by Roberts (1974) and Bashir (1980) in different parts of Pakistan. Initially this prevented many farmers from growing sunflower. However, during the last five years, the incentives given by the Ghee Corporation of Pakistan (GCP) resulted in a large increase in the acreage and production of sunflower.

Presently the GCP is spending 3,000 million rupees (about US \$230 million) on the import of vegetable oils. This will certainly increase this decade due to a rise in per capita oil consumption (Muhammad and Khan, 1981) (Fig. 3). The GCP has played an important role in reducing this import bill. In 1981-82 GCP produced about 200 tons of sunflower oil, thus saving foreign exchange of about Rs. 17 million. During 1983, 75,000 acres were brought under sunflower cultivation. This will produce at least 6000 tons of oil and will save about Rs. 51 million in foreign exchange.

Though the problem of parakeet depredation on sunflower has been defined, detailed information on economic losses are lacking in Punjab and Sind provinces, the two major areas of sunflower cultivation. This survey was conducted to gather data on depredation and economic injury levels so as to help in formulating policies and control methods to reduce the damage.

SURVEY METHOD

The survey was conducted in the spring of 1981 in Punjab and Sind provinces, the major sunflower growing areas of Pakistan (Fig. 2). This was the first attempt of the

Vertebrate Pest Control Laboratory to obtain information on the magnitude of parakeet damage to sunflower. From seven districts in Punjab, 13 farms were selected for the survey. Out of these, 25 fields of 0.45 hectare each were randomly selected for sampling. In Sind, the survey was conducted on 23 farms in nine districts. From these, 48 fields were sampled for parakeet damage.

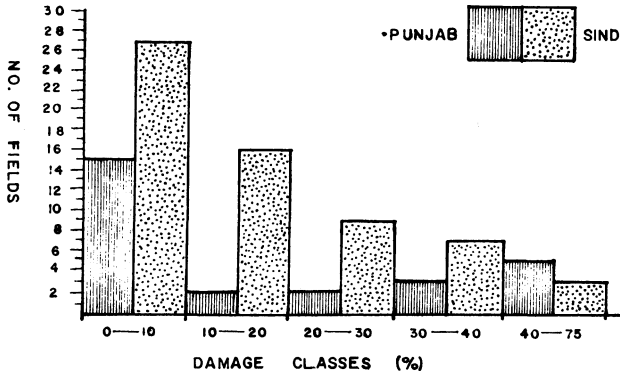


FIGURE 1. Frequency distribution of parakeet damage to sunflower in Pakistan in 1981.

On the average, for each four hectares, one hectare of sunflower crop was examined for damage. Those fields where sunflower heads were in the early stages of development were not sampled. In each field the heads were examined at random. From the selected field, 10 rows were picked randomly and marked with masking tape. Then, within each row, heads were examined after walking 10 paces starting at the edge of the field. The extent of damage to each head was determined by a visual estimate similar to that used by Dolbeer (1975). Damage to each head was estimated in classes of 0, 25, 50, 75, or 100% loss of seed due to parakeets; it was then calculated as cumulative percentage for individual fields.

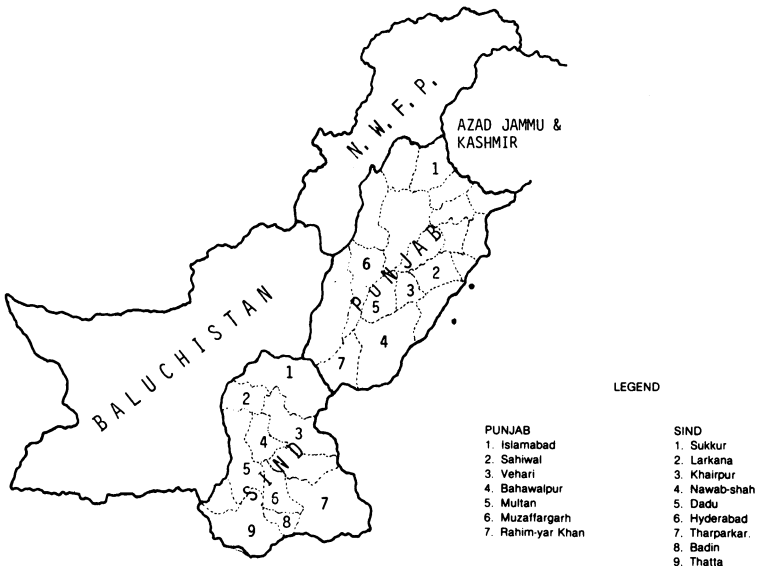


FIGURE 2. Sunflower growing areas surveyed in spring, 1981.

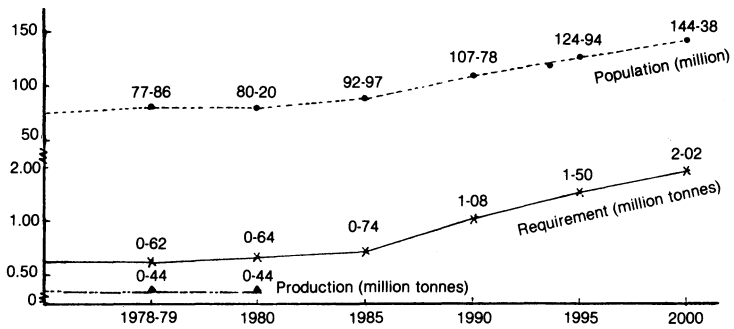


FIGURE 3. Present production and projected population and requirement of edible oil until 2000 A.D. (Adopted from A. Muhammad and A. R. Khan, 1981).

RESULTS AND DISCUSSION

The survey data have been summarized in Table 1. In the seven districts of Punjab, the damage ranged from 5-23.28% with an average of 11.72%. The majority of the fields surveyed were located in the canal-irrigated areas; only eight fields were sampled from the rainfed area (Islamabad district) where the damage was as high as 71.43% with mean average of 38.29%. The damage to sunflower heads in the irrigated land ranged from 1.0-47.05%, with a mean average of 7.21%. In the three districts of Sahiwal, Vehari and Multan, the major sunflower growing areas, the incidence of damage was low because these locations were visited at the early flowering stage. Therefore, only those fields which looked susceptible to damage or where bird activity was observed were sampled.

TABLE 1. Results of parakeet, *Psittacula krameri* (Scopoli), damage to sunflower spring crop, 1984.

Province	District	Total area surveyed (ha)	No. of fields sampled *	Damage range (%)	Average damage (%)
Punjab	Islamabad	4.0	8(3.2)	13.64-71.43	38.29
	Sahiwal	6.47	4(1.6)	1.0 - 2.2	1.06
	Vehari	4.0	2(0.8)	1.01 - 1.03	1.02
	Multan	10.0	3(1.2)	1.0 - 1.02	1.01
	Bahawalpur	4.0	2(0.8)	6.18 - 8.33	7.25
	Rahimyar Khan	3.0	3(1.6)	1.01-47.05	16.25
	Muzaffar-Garh	10.0	3(1.2)	5.55-35.71	16.65
MEAN/AVERAGE			5.0	23.82	11.72
Sind	Shikarpur	4.0	2(0.8)	13.09-15.78	14.43
	Larkana	13.0	6(2.4)	2.15-31.66	19.66
	Khair pur	2.4	1(0.4)	0.0 - 3.37	3.37
	Nawab Shah	4.0	2(0.8)	24.59-38.18	31.38
	Dadu	2.5	1(0.4)	0.0 - 6.17	6.17
	Hyderabad	22.0	11(4.4)	3.29-12.85	7.37
	Mirpur Khas	25.0	10(4.8)	6.02-45.0	18.54
	Badin	40.0	6(2.4)	6.09-32.20	27.20
Thatta	87.0	9(4.4)	7.59-55.0	21.35	
MEAN/AVERAGE			6.98-26.69	16.61	

* In parentheses is the total area (ha) of the fields sampled.

Bashir (1979), while conducting Avitrol trials to prevent sunflower damage by parakeets in Multan district of Punjab, observed 26% damage out of 600 heads examined; the parakeets had consumed about 30% of the standing crop. Again in 1981 Bashir (1981) recorded damage of 8-11% at six experimental sites before Avitrol application. Though this sample was small, it still gave some indications of the severity of the problem. Toor and Ramzan (1983) estimated average loss of about 22% to sunflower by the rose-ringed parakeet in the Ludhiana area (East Punjab, India). The sample size was one acre.

In Sind province the damage recorded was higher than in the Punjab. Nine districts

were surveyed, all in the canal irrigated areas. The damage ranged from 7-27%, with an average of 16.6%. Thatta and Badin districts were the areas where maximum crop land was surveyed. The climate of this area of the Lower Indus Region is very suitable for sunflower cultivation. Also maximum fallow land is available in spring for this oil seed crop.

Frequency distribution of parakeet damage is shown in Figure 1. The majority of the fields (46.6%) had 10% damage or less, while less than 10% of them had 40-75% damage. More damage was recorded in Sind (16.61%) than Punjab (11.72%). The damage to heads is actually greater, as indicated by interviews and discussion with the farmers who reported more than 50% damage in certain areas of Multan, Vehari, Sahiwal, and in the rainfed district of Islamabad.

The pattern of sunflower head damage by rose-ringed parakeet is similar to that of the monk parakeet (*Myiopsitta monachus*) in Uruguay (Mott, 1973). They perch on the head and reach over the edge to remove the seeds, which they hull before eating. Unripened heads are also damaged by the birds, causing the seeds to fall on the soil. The authors observed that parakeets are attracted to taller heads which mature earlier than others. More damaged heads were recorded in outer rows of the fields. This was also observed by Besser (1982), who recorded 38.9% and 5.9% damaged heads of the spring crop in the border and the central rows of the fields respectively. The damage period ranged from three-six weeks depending on crop conditions in certain areas or even in a specific field.

ESTIMATE OF ECONOMIC LOSSES

The economic losses were calculated to determine the seriousness of the problem and to justify control operations by the concerned governmental agencies and GCP:

Average loss per acre	=	14.16%
Production of sunflower (per acre)	=	555 kg
Quantitative loss per acre	=	79 kg
Price of sunflower seed (40 kg)	=	US \$13
Monetary loss per acre	=	US \$26
Based on 1983 acreage figures, the total economic loss in Pakistan	=	US \$1.95 million

Bashir (1981) calculated 118 kg/acre loss of sunflower seed near Umerkot where the bird pressure was heavy. He estimated this loss based on the daily and weekly damage capability of rose-ringed parakeet as 67.5g and 472g respectively. This represents about 70% more damage than that of monk parakeet (47.67 g/day) measured in Uruguay by De Grazio and Besser (1975). Such losses are serious and are greater than depredations from other avian species documented from many other areas of the world (DeGrazio, 1978).

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