PN-ABE-759
65459

VERTEBRATE PEST CONTROL PROJECT

Food Security Management
Post-Harvest Management Component

WILD BOAR AND RODENT DAMAGE TO WHEAT IN FAISALABAD DISTRICT

TECHNICAL REPORT NO. 3

May 1986

U.S. Agency for International Development
Denver Wildlife Research Center

Pakistan Ministry of Food and Agriculture
Pakistan Agricultural Research Council

National Agricultural Research Centre
Islamabad, Pakistan

WILD BOAR AND RODENT DAMAGE TO WHEAT IN FAISALABAD DISTRICT, PAKISTAN

By Ejaz Ahmad*, Mohammad Hafiz Khan** and J.E. Brooks*

Abstract: Wheat fields in Faisalabad District were inspected for damage by wild boars and rodents at harvest. Using road transects, a total of 103 fields was selected and checked in three tehsils, Faisalabad, Samundri and Jaranwala. Wild boar damage was observed in 31 fields, ranged from 0.5% to 80% and averaged 3.0% within the district. Rodent damage was noted in 71 fields, ranged from 0.5 to 22.5% and averaged 2.04% overall. Both rodent and wild boar damage was evident in 20 fields, indicating the different pest species can coexist. The combined rodent/wild boar damage of 5.04% indicates a potential yield loss of wheat in Faisalabad District of 25,600 mt based upon 1983 wheat production. The value of the loss would be Rs. 40.96 million based upon 1983 market prices for wheat. Similar damages can be extrapolated to the other districts of Punjab where irrigated wheat, wild boar and rodents all occur and the potential annual losses in production could equal Rs. 404 million.

1. INTRODUCTION

Wheat is the main grain crop grown in Pakistan, where the annual crop production has ranged from 10.8 to 12.4 million metric tons (mt) in the last 5 years. Much of the crop production occurs on irrigated lands in the Punjab and Sind. Every year the wheat crop in Punjab is subject to the attack of several vertebrate pest species, mainly the two rodent species, the lesser bandicoot rat, *Bandicota bengalensis*, and the short-tailed mole rat, *Nesokia indica*. The wild boar, *Sus scrofa*, also is a pest of wheat fields, where it hides during the day, making bedding areas in the field interiors and thus damaging the crop through trampling, direct consumption and by rooting activities. The damage by

---

* Vertebrate Pest Control Project, Food Security Management, National Agricultural Research Centre, Islamabad, Pakistan.

** Department of Entomology, University of Agriculture, Faisalabad, Pakistan.

rodents to the Pakistan wheat crop has been documented by the staff of the Vertebrate Pest Control Laboratory, Karachi (Fulk et al. 1980). They found that damage to the 1978 and 1979 wheat crops in NWFP, Punjab and Sind averaged around 3.5% each year and that B. bengalensis was the most serious pest in the irrigated areas of the Punjab where this species occurred. The damage by wild boar to the wheat crop in Pakistan has not been assessed previously but is of concern to the wheat farmers in the Punjab. Accordingly, to gain information on the importance of this pest species to wheat production, we undertook damage assessments (by both rodents and wild boar) in Faisalabad wheat fields just at the time of harvest.

2. METHODS AND MATERIALS

Wheat fields, both before and after harvest, were examined for the presence of rodent burrows and rodent-cut wheat stems and for evidence of wild boar activities (foot prints, bedding areas, trampled wheat, rooting, eaten stems and panicles). Wheat fields were selected by means of road transects, stopping approximately every 6 km and inspecting 4 to 5 fields at each stop, especially trying to contact farmers working in the wheat fields to obtain supplementary information by interview. Fields were visually inspected and the approximate area covered with rodent burrow mounds as a percent of the total field area was estimated by two observers. Usually all, or almost all, wheat stems are cut within a distance of 0.5 to 1 meter from all burrow mounds or openings (Poche' et al. 1982). Likewise, areas that had been trampled,

rooted or eaten by wild boars were also estimated as to percent area within the total field area. A total of 103 wheat fields was checked in this way in three tehsils of Faisalabad District: Faisalabad, Samundri and Jaranwala, in late April 1986.

3. RESULTS

The damage assessment percentages and number of infested fields are summarized in Table 1. Damage either by wild boar or rodents or both was observed in 81 fields (78.6% of the total). Rat damage was evident by finding stems cut from 4 to 15 cm above ground, usually with the cut edge blackened from moldiness and

Table 1. Damage by Wild Boars(*S. scrofa*) and rodents (*B. bengalensis* and *M. indica*) to Wheat in Faisalabad District, April 1986. (A total of 103 fields was examined).

	Wild Boar	Rodents	Total
No. of fields with observed damage	31	71	81
Ranges of damages (%)	0.5-80	0.5-22.5	-
Average damage (%)	3.00	2.04	5.04
Fields with both wild boar and rodent damage	20	20	-

drying. The areas surrounding the burrow mounds were usually totally or almost totally cut in this manner. Wild boar damage was of several kinds: the animals had made bedding areas in the field interiors by wallowing and then spreading cut stems to make a mat to rest upon (Fig. 1 and 2), stems were often trampled into the ground; ground surfaces were laid bare due to wallowing and rooting activities and stems were eaten, cutting them from 20 to 40 cm above ground. This kind of cut stem was easily differentiated from those cut by rodents.

Fig. 1 Bedding or resting places of wild boar in standing wheat crop.

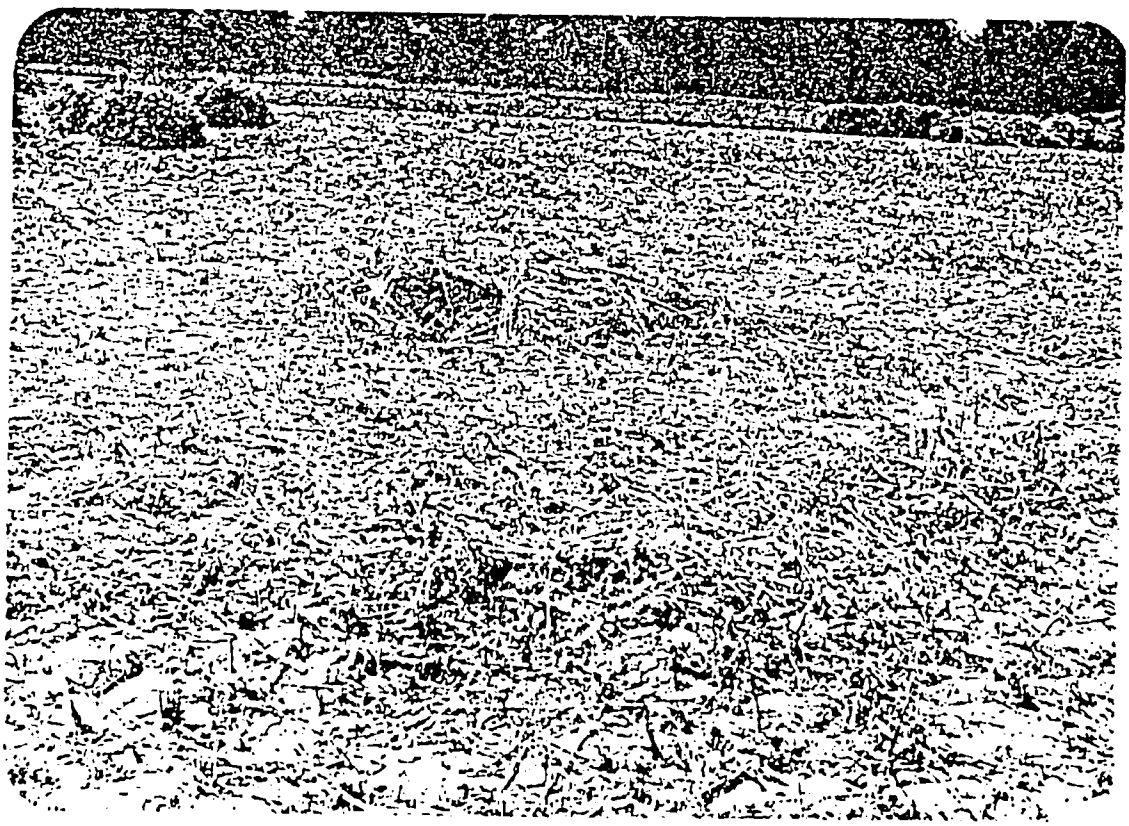

Fig. 2 Resting places of wild boar seen after harvest.

The intensity of damage caused by wild boars and rodents in the 103 examined fields is given in Table 2. Wild boar damage in the 31 infested fields averaged 9.95%; two fields were seen where the damage was estimated as an 80% loss of the standing wheat crop. Rodent damage in the 71 infested fields averaged 2.96%; very few fields had suffered more than 5% damage (only 6). The

Table 2. Damage intensity caused to wheat fields by wild boar and rodents.

Damage level (%)	Wild boar	Rodents
None	72	32
0.5-2.0	15	45
2.1-5.0	4	20
5.1-10.0	5	2
10.1-20.0	4	3
20.1-50.0	1	1
>50	2	0

fact that rodents had infested 71 of the 103 fields (68.9%) indicates that potential rodent damage is a serious problem faced by many farmers every year in their wheat fields. This degree of rodent infestation in wheat was also reported by Poché et al. (1982) in Bangladesh.

4. DISCUSSION

While wild boar damage was observed only in 30% of the fields, it was more severe where it did occur than was rodent damage, which was seen in 68.9% of all fields. This is due, in part, because wild boars use the fields as small groups of 4 to 6 animals, and thus are much more likely to cause intensive damage. In one field, for example, upto 21 resting places were counted. Several farmers reported that wild boar sows were seen with

piglets, some numbering as many as 18 in one group.

While most of the wild boar and rodent damage took place pre-harvest, some damage was observed to the wheat bundles after harvest. In at least 5 fields, the wild boars had attacked the bundled wheat and partially destroyed some of the bundles. Rodents, likewise, burrow under bundled wheat and continue eating wheat panicles until the time of threshing.

The combined wild boar and rodent average damage to wheat of 5.04% makes these pest species of economic importance to wheat production in Faisalabad District. The 1983 wheat production in Faisalabad was 486,400 mt (Agric Statistics of Pakistan 1983). If we assume that 5% was lost to rodents and wild boar before harvest, then the potential total production should have been 512,000 mt, a loss of 25,600 mt. Similar losses could be expected in other irrigated wheat-growing districts in Punjab, such as Gujrat, Gujranwala, Sialkot, Sheikhapura, Lahore, Kasur, Okara, Sargodha, T.T. Singh and Sahiwal where wild boar and rodents both occur. Here, the combined wheat production in 1983 was 4,324 million mt (Agric. Statistics of Pakistan 1983). The potential production could have been 4,551 million mt, or a potential loss of 227,000 mt. Added to losses in Faisalabad, this represents a potential loss of 252,600 mt, worth Rs. 404 million at the 1983-84 prices of wheat (Pakistan Economic Survey 1983-84). Certainly, the development of practical methods of vertebrate pest control that small landholders can use to cut these pest losses is more than justified.

5. ACKNOWLEDGEMENTS

This work was supported with funds provided by the U.S. Agency for International Development under the project "Food Security Management, Vertebrate Pest Control, FASA IPK-0491-P-IF-5017-01". We also thank the Pakistan Agricultural Research Council and the National Agricultural Research Centre, Islamabad, for providing office and laboratory space for the project.

6. REFERENCES CITED

Agricultural Statistics of Pakistan. 1983. Pakistan Ministry of Food, Agriculture and Cooperatives, Food and Agriculture Division (Planning Unit), Islamabad.

Fulk, G.W., M.T. Akhtar, S.A. Salam and A.C. Smiet. 1980. Rodent Damage to the 1978 and 1979 Wheat Crop in Pakistan. Pakistan J. Agric. Res. 1(1):19-23.

Pakistan Economic Survey, 1983-84. Ministry of Finance and Economic Affairs, Islamabad.

Poche, R.M., M.Y. Mian, M.E. Haque and F. Sultana. 1982. Rodent Damage and Burrowing Characteristics in Bangladesh Wheat Fields. J. Wildl. Manage., 46:139-147.