Research Journal of Agriculture and Forestry Sciences _____ ISSN 2320-6063
Vol. **3(1),** 12-15, January **(2015)** *Res. J. Agriculture and Forestry Sci.*

Efficacy of different Physical Barriers around Maize crop to control Wild Boar (*Sus scrofa*) at Southern Telangana zone, Telangana State, India

Vasudeva Rao V[1]., Sudhakar C[2]., Ravinder Reddy V[1]., Naresh B*[1] and Venkateswarlu P[1]
[1]All India Network Project on Vertebrate Pest Management, PJTSAU, Hyderabad-500030, INDIA
[2]Agricultural Research Station, Tandur, INDIA

Available online at: www.isca.in, www.isca.me
Received 18th September 2014, revised 29th October 2014, accepted 7th November 2014

Abstract

In recent years, wild boar (Sus scrofa) causing enormous damage to the agricultural crops at various stages, that is mainly due to the over exploitation of their natural resources and non availability of preferred dietary items. This resulted in to sever man-animal conflict. The present study highlighted the use of different physical barriers to control the wild boar entry in to the agricultural fields and minimize the crop damage and also to reduce the man-animal conflict.

Keywords: Wild boar, management, maize crop, physical barriers.

Introduction

Agricultural production in India is mainly affected by insect pests, plant diseases, and weed plants to a greater extent. In the recent times mammals with special reference to rodents, wild boars, blue bull and monkeys started gaining pest status and in certain cases a huge damage is being encountered due to some of these vertebrate pests. Among them, wild boar has become regular menace for farmers in major crops resulting into enormous damage. Unlike other pests, which generally attack during a particular stage of the crop, cause damage right from seedling to till the maturity of the crop[1,2]. The basic reason for such unexpected abrupt raise in their populations can be attributed in escalating rate of deforestation, which is otherwise are the natural habitats of those species. Deforestation also resulted in the decline of Tigers, Panthers, Wild dogs, Wolf, and Jackal, which are the natural predators for wild boars[3], thereby indirectly contributing to the phenomenal raise in the wild boar populations. Over exploitation of forest resources by the mankind forced wild boars out of their natural habitat and compelled them to depend on cultivated crops such as Rice, Maize, Sorghum, Pulses, Oil seeds, Fruits and Vegetables. The damage caused by wild boar is more alarming than their actual feeding in the crop. Wild boar damage is more pronounced in crop fields which are in close proximity with adjoining forests areas.

Along with rice and sorghum, maize is one of the important food crops in Telangana state. Due to high nutritious value which is used in most of the food products apart from using as food it is also used as dhana in poultry industry, fodder for cattle and as raw material in many industries, after getting importance from World Trade Organization (WTO) it got exporting capacity. It is mainly rain fed, every year which is cultivated approximately 2 to 4 lakh hectares. In this state which is highly cultivated in Karimnagar, Adilabad, Nizamabad, Warangal, Medak, Rangareddy and Mahabubnagar districts.

Wild boar is a major problematic species in the agricultural crops in many parts of India[4]. It raid crops and utilises the agro-ecosystem for food. Presently the wild boar populations are fragmented and relatively isolated. Some of these isolated populations became locally abundant and depended upon agricultural crops. Besides agricultural crops, it causes damage to ground vegetation, orchards, forest plantations and possibly acts as carrier of some infectious diseases. As a result, there has been increasing trend in the human–wild boar conflict throughout the country. Consequently, people have developed antagonistic attitude towards the wild boar and which is adversely affecting the conservation efforts. The problem of crop damage by wild boars has been widely reported from Rajasthan and Madhya Pradesh[5,6]. This paper presents the findings and mitigation strategies of our study to prevent the wild boar damage in Telangana state.

Until now farmers have used many different traditional measures for damage prevention on cultivated crops by wild boar, with the aim of searching for proper solutions to preventing damage, we conducted field experiments at various maize fields, in which tested different physical barriers against wild boar and also to prove the effectiveness of various physical barriers with the intention to reduce damage due to wild boar.

Material and Methods

The field experiments were conducted at Agricultural Research Station, Tandur (17.227161 N, 77.586547 E) and College farm Rajendranagar (17.321524 N, 78.409289 E) for four years (from 2010 to 2014) during both *Kharif* and *Rabi* seasons. Randomized block design was employed with three types of

physical barriers as treatments viz., Barbed wire fence, Chain link fence and Circular razor wire fence. At both the study areas, all the three barriers were placed around maize crop as follows; Barbed wire fence: Erecting of barbed wire around the field in three rows with first row is at the height of 1 foot from the ground. This is highly effective in preventing wild boars from entering into the cropped area (figure-1). Chain link fence: It is an easy most effective way of fixing a barrier which is more durable in nature. Chain link meshes of 3 feet height can be fixed around the crop by maintaining a distance of 1 ft away from the crop (figure-2). Circular razor wire: The iron wire fixed with sharp razor blades at regular distance is kept 1 ft away from the cropped area as border by farming circular rings (figure-3). The blades caused serious damage to the wild boar which tries to enter into the field. This not only prevents the animal to enter into the field but also scares away other animals. The entangled animal makes alarm calls which deter away the other wild boars thereby saving the entire crop without any damage.

Figure-1
Barbed wire fence around the Maize crop

Figure-2
Chain link fence around the crop

Figure-3
Circular razor fence around the crop

Results and Discussion

All the three treatments were repeated in different years of study both in *kharif* and *rabi* and the yield data was significantly high in circular razor wire plots followed by chain link fence plots and barbed wire plots. The year wise data for the three treatments showed variations in yield and the results are as follows, During the year of 2010 – 2011, by using circular razor wire plot yielded 1112 kg/ha during *kharif* and 1234 kg/ha during rabi, followed by chain link fence plot 869 kg/ha, 892 kg/ha during *Kharif* and *Rabi* and barbed wire fence plot yielded 848 kg/ha during *Kharif* and 911 kg/ha during *Rabi* season, when compare to controls 233 kg/ha (*Kharif*) and 311 kg/ha (*Rabi*) at college farm of Rajendranagar. At ARS Tandur also during the year 2011 – 2012 similar yield trends were noticed in the effectiveness of the treatments. The circular razor wire plot yielded 2267 kg/ha during *kharif* and 2383 kg/ha during *rabi*, followed by chain link fence plot 2057 kg/ha, 2208 kg/ha during *kharif* and *rabi and* barbed wire fence plot yielded 1939 kg/ha during *kharif* and 1781 kg/ha during *rabi* season, against control plot 233 kg/ha during *kharif* and 311 kg/ha during *rabi*. The subsequent years also showed higher yields in the plots where circular razor wire was used (table-1).

The percent increase of yield by using the various treatments during the *kharif* season showed highly significant as compared to the control, by using circular razor wire (30.9%), increase in yield was noticed followed by chain link fence (27.9%), barbed wire fence (27.4%) than control plot (13.8%) (figure-4). During the *rabi* season also circular razor wire showed high percent increase in yield levels (30.6%), followed by, chain link fence (28.7%), barbed wire fence (26.6%) against the control plot (14.2%) (figure-5). Among the various physical barriers used for the controlling of wild boar during the both seasons, combining all the years of study circular razor wire plot showed significant increase in percent yield (30.8%), followed by chain link fence (28.3%), barbed wire fence (27.0%) and the control (14.0%) (figure-6).

Table-1
Effectiveness of different management methods in control of wild boar in Maize crop during the study period

Treatment	2010-11		2011-12		2012-13		2013-14	
	Kharif	***Rabi***	***Kharif***	***Rabi***	***Kharif***	***Rabi***	***Kharif***	***Rabi***
Barbed wire	848	911	1939	1781	1049	1045	964	1067
Chain link	869	892	2057	2208	1066	1069	911	1008
Circular razor wire	1112	1234	2267	2383	1193	1195	859	717
Control	233	311	823	908.5	786	780	573	558
CV	22.1	29.3	7.77	13.33	8.94	10.7	24.9	20.8
CD	321	365	213.2	354	150.94	165.21	370	314

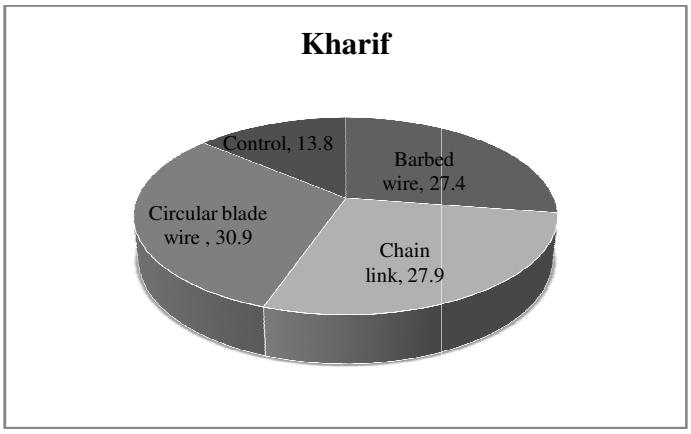

Figure-4
Efficacy of different physical barriers to control wild boar damage during *kharif* season

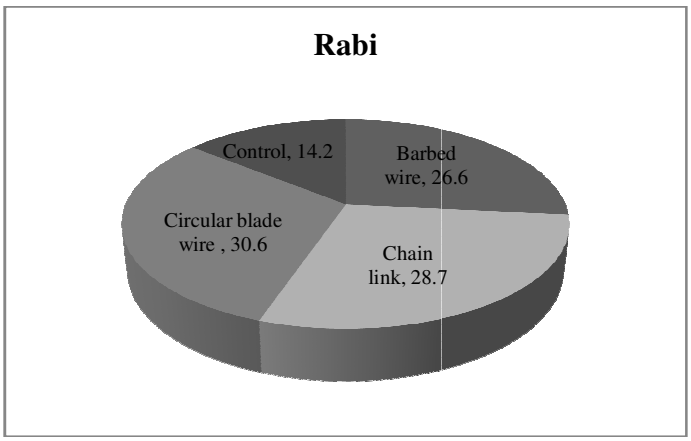

Figure-5
Efficacy of different physical barriers to control wild boar damage during *rabi* season

Conclusion

The maize fields are protected successfully from the wild boar attack, by using all three physical barriers during the study period. The circular razor wire was very effectively controlled the wild boar entry and extent of damage as compared with others. By use of circular razor wire the crop yield was increased to the extent of 30.8 % when compared with the control plot. Apart from the wild boar, these physical barriers are also helps in avoiding other wild animals and domestic cattle entering in to the agricultural fields. The cost involved in installation of this circular razor fence per acre will be approximately around Rs. 19000. While the other physical barriers cost ranges between 8000 to 11000 rupees.

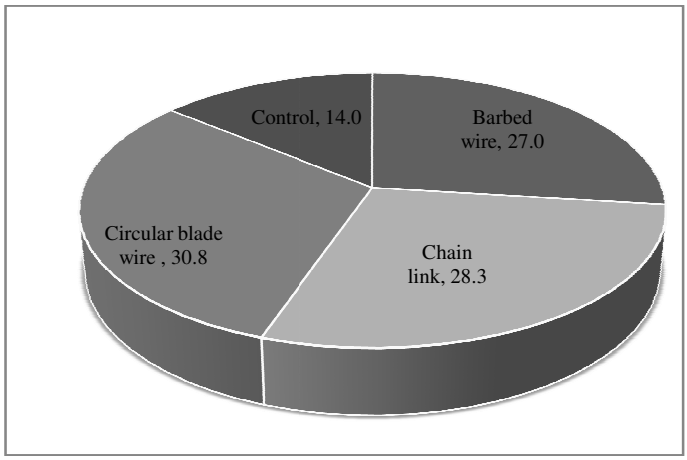

Figure-6
Efficacy of different physical barriers to control wild boar damage in maize during study period

Acknowledgement

The authors are sincerely extend their thanks to ICAR for providing financial support. Our thanks are also to Professor Jayashankar Telangana State Agricultural University, Hyderabad for providing necessary facilities during the field work.

References

1. Roberts T.J., Mammals of pakisthan, London : Ernest Benn **(1977)**

2. Shafi M.M and Khokhar A.R., Some observations on wild boar (Sus scrofa) and its control in sugarcane areas of Punjab, *Pakisthan journal of the Bombay Natural History Society*, **83**, 63-67 **(1986)**

3. Moreira J., Rosa L., Lourenço J., Barroso I and Pimenta V., *Projecto Lobo; Relatorio de Progresso, 1996.*

(Cofinanciado pela U.E. – Programa Life). Ministério do Ambiente e dos Recursos Naturais; Instituto de Conservação da Natureza. Parque Natural de Montesinho, Bragança (Portugal). 61, **(1997)**

4. Chauhan N.P.S., Barwal S.K and Kumar D., Human–Wild Pig Conflict in Selected States in India and Mitigation Strategies, *Acta Silv. Lign. Hung.,* **5**, 189-197 **(2009)**

5. Chauhan N.P.S and Rajpurohit K.S., Survey of Animal Damage Problem in and around protected areas and managed forests: Phase-I Madhaya Pradesh, Bihar and Orissa - A Report, Wildlife Institute of India, Dehradun, **(1993)**

6. Chauhan N.P.S and Rajpurohit K.S., Survey of Animal Damage Problem in and around protected areas and managed forests: Phase-II Uttar Pradesh, Rajasthan and Himachal Pradesh, **(1996)**