International Journal of Multidisciplinary Research and Development

IJMRD 2015; 2(2): 32-36
www.allsubjectjournal.com
Received: 15-01-2015
Accepted: 05-02-2015
E-ISSN: 2349-4182
P-ISSN: 2349-5979
Impact factor: 3.762

V. Vasudeva Rao
All India Network Project on Vertebrate Pest Management, Pjtsau, Hyderabad-500030, India.

B. Naresh
All India Network Project on Vertebrate Pest Management, Pjtsau, Hyderabad-500030, India.

V. Ravinder Reddy
All India Network Project on Vertebrate Pest Management, Pjtsau, Hyderabad-500030, India.

C. Sudhakar
AICRP on Safflower, ARS, Tandur, PJTSAU, India.

P. Venkateswarlu
All India Network Project on Vertebrate Pest Management, Pjtsau, Hyderabad-500030, India.

D. Rama Rao
All India Network Project on Vertebrate Pest Management, Pjtsau, Hyderabad-500030, India.

Correspondence:
B. Naresh
All India Network Project on Vertebrate Pest Management, Pjtsau, Hyderabad-500030, India. India.

Traditional management methods used to minimize wild boar (*Sus scrofa*) damage in different agricultural crops at Telangana state, India

V. Vasudeva Rao, B. Naresh, V. Ravinder Reddy, C. Sudhakar, P. Venkateswarlu, D. Rama Rao.

Abstract
Crop damage by wild animals is a severe problem in most of the areas all over India. Field surveys showed that on an average 36% of the crop were damaged by wild animals. We investigated the nature and extent of human-wild boar conflict in southern India. Damage to agricultural crops by wild boar was enormous and widespread. They fed on all phenological stages, especially vulnerable stage of the crop. Damage to *Zea mays, Arachis hypogea, Sorghum vulgare, Oryza sativa,* some pulses and vegetables crops were ranged between 10-75%, 5-56%, 5-30%, 10-35%, 5-20%, 10-30%, respectively in southern Telangana areas. The incident of damage was very high in crop fields adjacent to forest areas, this resulted into direct conflict between people and wild boar. The present study enlists the various Indigenous Traditional Knowledge's (ITKs) used by the local people to control the Wild boar.

Keywords: Wild boar, crop damage, management, eco friendly methods

1. Introduction
The wild boar (*Sus scrofa*) is one of the most widely distributed large mammals and distributed in North Africa, Europe and Asia (Heptner *et al.* 1966) [1]. Agricultural production in India is mainly affected by insect pests, plant diseases, and weed plants to a greater extent. In the recent times fauna mainly consisting of mammals with special reference to rodents, wild boars, blue bulls 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 (Tisdell, 1982) [2]. Unlike other pests, wild boar generally causes damage right from seedling to till the maturity of the crop (Roberts, 1977; Groot-Bruinderinck *et al*. 1994) [3, 4]. 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 (Moreira, 1997) [5]. Deforestation also resulted in the decline of Tigers, Panthers, Wild dogs, Wolf, and Jackal, which are the natural predators for wild boars (Khokhar & Rizvi, 1998) [6], there by 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 & Vegetables. Besides agricultural crops, it causes damage to ground vegetation, orchards, forest plantations and possibly acts as carrier of some infectious diseases (Chauhan *et al.* 2009; Schley & Roper, 2003) [7, 8]. The damage caused by wild boar is more alarming than their actual feeding in the crop. Over 400 species of plants have been recorded in the wild boar's diet, among which, 40 species were crop plant (Chauhan & Rajpurohit, 1993) [9]. Wild boar damage is more pronounced in crop fields which are in close proximity with adjoining forests areas. Wild boar is a major problematic species in the agricultural crops in many parts of India, raid crops and utilises the agro-ecosystem for food and shelter (Chauhan *et al*, 2009) [7]. Presently the wild boar populations are fragmented and relatively isolated. Some of these isolated populations became locally abundant and depended upon agricultural crops. 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 (Chauhan & Rajpurohit, 1996; Mason 1893) [10, 11].

Many researchers have worked on population, behaviour and biology of wild boar (Groot-Bruinderinck *et al.* 1994; Mason 1893, Brander 1923, Ali 1927, Morris 1929, Rao 1957, Schaller 1967, Santaipillai & Chambers 1982, Prater 1980, Tiwari 1985, Shafi & Khokhar 1986, Ramachandran *et al.* 1987, Ramdas 1987, Ahmed & Samant 1989, Ahmed, 1991) [4, 11-24]. Little or no attention has been devoted to agricultural damage and wildlife management. This paper presents the findings and mitigation strategies of farmers to prevent the wild boar damage in Telangana state.

2. Materials and methods

The study was conducted from 2011 - 13 at various agricultural fields of Telangana state. The study was initiated with interviews with the people asking whether they have come across Wild boar at locations where their agricultural activities are carried out and if wild boar problem exists the parameters like at which stage of the crop the damage has occurred, during what time of the day damage intensity is high, and the traditional methods which are being used to deter the wild boar were recorded.

3. Results and discussion

Several ITKs are being employed by the farming community to ward off wild boar in different innovative ways. Some of such effective ways, practiced by local people were scientifically evaluated and validated for efficiency and economic feasibility. The following are the sum of such methods which are being recommended through AINP on Vertebrate Pest Management.

4. Spraying of local pigs dung solution

Territoriality is very high in wild boars which are being exploited under this method. The dung collected from local pigs will be made into solution and should be sprayed on soil to the width of 1 ft around the crop. This will confuse wild boars with a false assumption of entering into the territory of other pigs; there by their movement will be prevented to avoid territorial conflict. For sustained affectivity it is desirable to go 2-3 sprays with 7 days interval between each spray. This method is effectively control the wild boar up to 50% (Figure 1).

Fig 1: Spraying of dung solution of local pigs around crop

5. Human hair as deterrent

Wild boar with poorly developed sight and hearing mechanism has to depend on its smell sensory mechanism only for movement as well as locating of food. In this process it moves from one place to other place only by a way of sniffing on the ground there by getting guided in to the desired routes. Spreading of human hair collected from local barber shops is an affective and low cost traditional method being followed by farmers. Technically this indigenous method do have scientific logic which clearly suggest that the human hair in the movement routes of the wild boar gets sucked through nostrils causing severe respiratory irritation. Due to this the wild boar gets totally disturbed and loses its track by making distress calls, which will ward off other wild boars entering into the cropped area. Several farmers are extensively practicing this method in different crops and controlling the damage caused by wild boar to the extent of 40-50% (Figure 2).

Fig 2: Spreading of human hair as thin layer around the crop

6. Erection of used colored sarees

This method also is a farmer's innovation, which has a behavioral background as far as wild boar is concerned. By arranging used sarees of different colors around the crop will make wild boars to assume human presence in the area there by not preferring to enter into such areas. Even though, not feasible in all situations it has some marginal benefit in the areas of human movement. By using this, extent of damage by wild boar can be minimized to the level of 30-55% (Figure 3).

Fig 3: Fixing of used coloured sarees as border around the crop

7. Burning of dried dung cakes

The dried cakes made from local pig dung are burnt in earthen pots. This will ensure slow generation and spreading of smoke during dusk time. The smoke coupled with smell of local pig dung helps in sensitizing wild boar about the presence of local pigs. As a result, to avoid territorial conflict, the wild boars don't prefer to move in such areas and extent of damage by wild boar can be minimized to the level of 35-50% (Figure 4).

Fig 4: Burning of dried dung cakes

8. Arrangement of three rows in "NIWAR" soaked in Kerosene

The NIWAR should be soaked in Kerosene solution for about 2 hrs and will be arranged around the crop in 3 rows by keeping 1 ft distance between rows with the help of wooden poles. Sufficient care should be taken to drain off excess kerosene. The dominating smell of the kerosene does not allow wild boars to identify the crop. This method is generally effective for 10-15 days extent of damage by wild boar can be minimized to the level of 25-45% (Figure 5).

Fig 5: Arrangement of three rows "NIWAR" soaked in Kerosene

9. Arrangements of Coconut ropes soaked in mixture of Sulphur + Pig oil

Arranged of coconut rope in three rows around the crop by keeping 1 ft distance between the rows with the help of wooden poles can be done. Preparation of solution with sufficient quantity of sulphur is mixed with local / domestic pig fat oil is done and that mixture should be smeared on the arranged coconut ropes. This mixture generates the typical smell there by repelling wild boars not to enter into the crop area. For an effective use of this method two such applications should be done with ten days interval in between and extent of damage by wild boar can be minimized to the level of 60-80% (Figure 6).

Fig 6: Arrangements of Coconut ropes soaked in mixture of Sulphur + Pig oil

10. Planting of thorny bushes and xerophytes around the crop

Different xerophytic species like Cacti sp (*Euphorbia caducifolia, E. meriifolia),* opentia sp (*Opuntia elatior*, *O. dillenii)*, Zizipus sp (*Ziziphus oenopolia*, *Z. mauritiana)*, and agave sp (*Agave americana*, *Caesalpinia cristata)* can be planted on the bunds around the crop which will not allow the wild boars due to their thorny in nature. The wild boars after unsuccessful trail of entry get injuries and making alarming calls, which makes the other animals to flee. This method is effectively control the wild boar up to 50-70% (Figure 7).

Fig 7: Planting of thorny bushes and xerophytes around the crop

11. Creation of sounds and light through born fire:

To scare away the wild boars from damaging their crops farmer's employee methods such as using fire crackers, making sounds through local drums, empty tins, making born fires and shouting. This type of methods proven to affective

on community basis in protecting farmers fields from the wild boars and effectively controls the crop damage up to 40-60%.

12. Traditional use of local dogs for scaring away wild boars

In endemic areas of wild boar attacks farmers do follow using of trained dogs on a community basis to scare away the approaching wild boars. In selected cases this method proved to be effective and sustainable. By using this method controls the wild boar damage up to 50% (Figure 8).

Fig 8: Traditional use of local dogs for scaring away wild boars

In other countries such as America or USA wild boars are controlled by hunting, caging and shooting. Poison baits on a large scale are widely used method in Pakistan for managing the wild boars, on the other hand in Bhutan, trained group of farmers in hunting the wild boars. Italy is a country where wild boar menace is kept under check by using sodium mono floro acetate (or) warferin. In several other countries like England, Poland, Russia and Japan it is common to control wild boars by poisoned baits, hunting, shooting, catching, electrocution and translocation. Despite the above methods being effective in Wild boar management none of them are applicable for Indian conditions as wild boars have been listed animal in Schedule III of Wild life protection act 1972. Any method resulting into either intentional or unintentional death of the animal and is directly punishable. In the light of such situations development of wild boar management practices in India need to be strategic, logical, and economical and above all must be legally sound in the light of the wild life protection act.

13. Conclusion

The various ITKs which are employed by the farmers for protecting the crop damage by the wild boar are helping to some extent only. Hence, there is a need for evolving suitable eco-friendly techniques for minimizing the crop damage by wild boars to increase production and productivity of various crops and also reduce the man animal conflict.

14. 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.

15. References

1. Heptner VG, Nasimovic AA, Bannikov AG. Die Saugetiere der Sowjetunion Band I Parrhufer und Unparhufer VEB Gustav Fischer Verlag, Jena, DDR, 1966, 939.
2. Tisdel CA. Wild pigs Environmental Pest or Economic Resource? Pergamom Press, Sydney, 1982.
3. Roberts TJ. Mammals of pakisthan. London: Ernest Benn, 1977.
4. Groot-Bruinderinck GWTA, Hazebrook E, Van der Voot H, Diet and condition of wild boar (*Sus scrofa scrofa*) without supplementary feeding. J Zool Soc Lond 1994; 233:631–648.
5. Moreira J, Rosa L, Lourenço J, Barroso I, 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), 1997, 61.
6. Khokhar AR, Rizvi SWA. Productivity enhancement of rice crop yield through prevention of losses due to wild boars in Pakistan, 1998.
7. Chauhan NPS, Barwal SK, Kumar D. Human–Wild Pig Conflict in Selected States in India and Mitigation Strategies Acta Silv. Lign Hun 2009; 5:189-197.
8. Schley L, Roper TJ. Diet of the wild boar in Western Europe, with particular reference to consumption of agricultural crops. Mammal Review 2003; 33:43-56.
9. Chauhan NPS, Rajpurohit KS. 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.
10. Chauhan NPS, Rajpurohit KS. Survey of Animal Damage Problem in and around protected areas and managed forests: Phase-II Uttar Pradesh, Rajasthan and Himachal Pradesh, 1996.
11. Mason JM. Food of wild boar. J Bombay Nat Hist Soc 1893; 8(3):447.
12. Brander DAA. Wild Animals in Central India. Natraj Publication, Dehradun, India, 1923.
13. Ali S. Moghul emperors of India as naturalists. J Bombay Nat Hist Soc 1927; 32(1):42.
14. Morris RC. Partial disappearance of wild boar *Sus cristatus*. J Bombay Nat Hist Soc 1929; 34(1):245.
15. Rao HS. History of our knowledge of the Indian fauna through the ages. J Bombay Nat Hist Soc 1957; 54:251-280.
16. Schaller GB. The Deer and the Tiger. University of Chicago Press, Chicago, 1967.
17. Santiapillai C, Chambers MR. Aspects of population dynamics of the wild pigs (*Sus scrofa*) in the Ruhana National park, Sri Lanka. Spixiana (Muenchn) 1982; 3(3):239-250.
18. Prater SH. The book of Indian animals. 3rd ed. Bombay Natural History Society, 1987.

19. Tiwari SK, Zoo Geography of India and South-east Asia. CBS Publishers and Distributors, New Delhi, 1985.
20. Shafi MM, Khokhar AR. Some observations on wild boar (Sus scrofa) and its control in sugarcane areas of Punjab. Pakisthan Journal of the Bombay Natural History Society 1986; 83:63-67.
21. Ramachandran KK, Nair PVK. Esa PS, Ecology of larger mammals of Periyar wildlife sanctuary. J Bombay Nat Hist Soc 1987; 83(3):505-524.
22. Ramdas K. Some other mammals in Indian wildlife: Eds. H. Hoefer; S. Israel; T. Sindais and B. Grewal, 1987, 115-131
23. Ahmed BHM Samant. Selection of new habitats by wild boar (*Sus cristatus*, Wagner) due to human interaction in the Radhanagari wildlife sanctuary from the Western Ghats. Proc. Nat. Symp. Animal Behavoiur, 1989, 184-187.
24. Ahmed BHM. Man and wild pigs (*Sus cristatus*) interaction from the western ghats of south Maharastra. Ph.D. thesis, Shivaji University, Kohlapur, 1991.