

Indigenous Knowledge in Crop Protection: The Practice of Palabhuta in Tribal Odisha

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ABSTRACT

Indigenous Technical Knowledge (ITK) plays a vital role in sustainable and eco-friendly crop protection, particularly in tribal farming systems. The present study documents and analyzes the traditional practice of using an effigy locally known as *Palabhuta* for crop protection in the tribal districts of Odisha, with specific reference to villages of Khairiput block in Malkangiri district. The practice is predominantly followed by tribal communities cultivating millets, paddy, pulses, oilseeds, maize, and vegetables under rainfed and terrace farming systems near forest fringes. *Palabhuta* is a farmer-made effigy constructed from locally available materials such as paddy straw, bamboo or wooden poles, earthen pots, cloth, and reflective materials. Installed at 4–5 units per acre and periodically repositioned, it creates visual, auditory, and psychological deterrence against granivorous birds and wild animals, especially monkeys, which cause significant crop damage. Variations such as reflective decorations, sound-producing drums, and symbolic elements like a dummy gun enhance its effectiveness. The practice is cost-effective, easy to adopt, non-toxic, and environmentally safe, making it suitable for resource-poor farmers and farm women. Beyond pest deterrence, *Palabhuta* also reflects socio-cultural beliefs related to protection from theft and evil influences. The study highlights *Palabhuta* as a sustainable, gender-inclusive indigenous innovation that complements modern crop protection approaches and supports climate-resilient, low-input agriculture in tribal regions.

INTRODUCTION

The Bonda, Kandha and Didayi community are an indigenous, Scheduled Tribe of Odisha, primarily residing hill ranges of the Malkangiri district situated in Latitude and longitude coordinates are: 18.343586, 81.882530. They are recognized as Particularly Vulnerable Tribal Groups (PVTGs) in the state. These tribes are poor and less educated population. They cultivate Ragi (finger millet), Suan (little millet), Kodo millet, Niger (*Guizotia abyssinica*) maize, Bajra and paddy, black gram and vegetables in rainfed as terrace farming on the slope of the hill locally called Dongar. They never using chemical fertilizer and pesticides to the crop. They have learnt traditional method of bird scaring from their ancestors to protect their crop from birds and animals. This paper deals with brief account traditional method of crop protection to scare granivorous birds and animals with the help of an effigy (palabhuta).

Presently pest problem to crop is so huge that the sickles of the farmer remain unused. Man depends for his food on agriculture. Insect pest, animals and birds do harm to humans' life in a number of ways, they destroy the food grains and plants from initial stage of seed sowing to seed storage. Farmer was in always pressure to keep the pest under their control. Therefore, getting gain in more grain yield suitable plant protection measure is an important back ground for growing more and more grain. Pesticide application to crops reduces the pest but its residual effect brings soil degradation, health hazards environmental and water pollution. Thus, now day's emphasis given to ITKs and eco-friendly pest management for sustainable crop production. Local folk in tribal areas of Odisha state till today depend on its traditional agriculture and strong in use indigenous technology (ITK) in crop production. They have learnt traditional

methods of bird scaring from their ancestors to protect their crop from depredatory birds. The maximum districts of Odisha come under tribal area where many local traditional practices were made as ITKs for crop protection against bird and animals as pest, mostly the granivorous birds and animals causes the major damages to ragi (finger millet), Suan (little millet), Kodo, Niger, maize, Bajra and paddy and vegetables from sowing to harvest stage and also to the stored produce. Crop fields attract many birds from sowing to grain maturity stage (**Bhalodia et al; 1997**). The birds like Common Peafowl (*Pavo cristatus*), Blue Rock Pigeon (*Columba livia*), Ring Dove (*Streptopelia decaocto*), Red Turtle Dove (*Streptopeli tranquebarica*), Little Brown Dove (*Streptopeli senegalensis*), Rose ringed Parakeet (*Psittacula krameri*), House Sparrow (*Passer domesticus*), House Crow (*Corvus splendens*) and from animals like cow, goat, monkey, fox etc which are bring a major damage in standing crop Predominantly the granivorous birds, cause considerable damage to ragi (finger millet), Suan (little millet), Kodo, Niger, maize, Bajra and paddy and vegetables from sowing to harvesting stage. Among the birds the rose ringed parakeet (*psittacula krameri*) invade crops in flocks and inflict heavy damage wasting much more than what they eat. They feed on pearl millet ear herds in enormous numbers. In company with wearer Bird House sparrow (passer domestic), munia, crows, pigeon & Dove, Indian myna (*Acridotheres tristis*) and Indian Peafowl (*pavo cristatus*) etc. depredate crops inflicting heavy damage in millet crop (**Patel, K.B.; 2008**).

Study Area:

The survey was under taken in Dabuguda, Disariguda and sileiguda village of Khairiput block of Malkangiri village of Odisha.

Materials and Methods:

The perception of respondent both old and experienced farmers reported through PRA, group discussion and field visit were given below.

Result and Discussion:

- Use of effigy locally called palabhuta in pest control somewhat found effective, practiced by farmers and farm women in all tribal districts of Odisha. Farmer easily practiced this low cost palabhuta for avoiding pest to their crop as it is cost effective and simple method for preparation. Farmer use palabhuta in their crop field to save crop from the destruction. Palabhuta are mainly used in the crop field nearer to the jungle areas where large numbers of birds and animal were entered to the field. Farmers generally installed 4-5 no's of palabhuta in one acre land(donger). For more effectiveness, the position of the palabhuta keeps changing after a few day intervals so that birds and wild animals do not get used to it.
- The effigy Palabhuta is nothing but a farmer made ugly structure installed in crop field. It varies in different size and shape. It may be giant like face or animal like structure. It is made up earthen pot with paddy straw and wooden/ bambo stick. The skeleton of palabhuta is made up of low-cost paddy straw installed in field vertically with a wooden pole of a man's height. The earthen pot is made as head of the palabhuta with black hair. The facial appearance of palabhuta designed by different colour the body of palabhuta is covered with a red colour shirt having good reflection. Sometimes farmers were in practice to decorate the body of palabhuta with reflective ribbon /audio cassette rills due to its large reflection of eye sites of the bird and animal entering into the field. This

pala bhut create an illusion of a watchman standing in the crop for animals/ creating the appearance of a man working in the fields.

- It is found that monkey problems in standing crop are predominant in the tribal areas of Odisha. Use palabhuta can restrict the crop damage. An interesting farmers practices found that to avoid monkey, the pala bhut is handled with the duplicate gun. By seeing the gun, the monkey is never entering in the field.
- Sometimes some traditional practices were found by farmer that they handle a drum and a stick fitted with palabhuta. The stick is bind with the rope connected with branches of nearby tree. When the wind is blowing the leaf and the branch is shake with air resulting a big sound inside the drum. Which results avoid entering of animal and birds as the seams the presence of farmer inside the field.
- During the night time it restricts the entry of animals, birds and theft to the field because of they assume the presence of ghost in the field. The farmers having a perception that bumper growth and yield of the crop cannot be fulfil, if it's come attraction of some evil thinking person, that's why they installed palabhuta in the field.

CONCLUSION:

The traditional practice of using *Palabhuta* as an effigy for crop protection reflects the ingenuity, ecological wisdom, and cultural beliefs of tribal farmers and farm women of Odisha. This low-cost, locally available, and easy-to-prepare method has proven to be an effective deterrent against birds, wild animals, and particularly monkeys, which pose a serious threat to standing crops in forest-adjacent areas. The strategic placement of 4–5

Palabhutas per acre and their periodic relocation enhances effectiveness by preventing animals from becoming habituated. The creative use of materials such as earthen pots, paddy straw, bamboo, reflective ribbons, audio cassette reels, and even symbolic elements like a duplicate gun demonstrates farmers' adaptive innovations to local challenges. Additional practices, such as integrating sound mechanisms using drums activated by wind, further strengthen crop protection without harming wildlife. Beyond physical deterrence, *Palabhuta* also embodies farmers' socio-cultural perceptions, including beliefs related to warding off evil intentions, theft, and supernatural fears during nighttime. Overall, the practice of *Pala Bhuta* represents a sustainable, eco-friendly, and gender-inclusive indigenous knowledge system that complements modern crop protection strategies. Recognizing and documenting such traditional practices is essential for promoting climate-resilient, low-input agriculture and preserving the rich indigenous heritage of tribal farming communities.



fig.-1



fig.-2

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