

THE EFFECT OF AN AUDIBLE BIRD SCARER ON THE PRESENCE OF REED COCKS (PARPHYRO PORPHYRO) IN RICE FIELDS

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ABSTRACT: All over the world, birds cause extensive losses to agricultural crops. In order to protect these crops and to send away the birds, some different materials and methods such as chemicals, treatments, colored lights, flash and audible scarers are used. It is possible to see many studies about chemical methods in the literatures, but there is not enough research on audible bird scarers. Therefore, an audible solar powered bird scarer was designed, manufactured and tested on the behaviour of reed cocks (Parphyro porphyro) which are pests and roosted near the rice fields (paddy) where they eat newly seeded rice, in this experimental investigation. The scarer was tested about two weeks during November, 2007. Alarm calls of reed cocks was selected for the test of the scarer. Alarm calls of reed cocks played through loudspeaker were seen effective in that they temporarily scared reed cocks. However, reed cocks no longer responded to these alarm calls after the period of 7 days. It is concluded that the present arrangement of scarer was seen inefficient.

Keywords: Bird damage; Audible bird scarer; Alarm sound; Reed cocks.

SESLİ BİR KUŞ KOVUCUNUN ÇELTİK TARLALARINDA BULUNAN SAZ HOROZLARI (*Parphyro porphyro*) ÜZERİNE ETKİLERİ

ÖZET: Dünya'nın her yerinde kuşlar, tarım ürünlerine büyük zararlar vermektedir. Bu ürünleri korumak ve kuşları alandan uzaklaştırmak için kimyasallar, renkli ve parlak ışıklar ve sesli kuş kovucu gibi değişik materyal ve yöntemler kullanılmaktadır. Literatürde, kimyasal metotlarla ilgili çok sayıda çalışmaya rastlamak mümkün olmakta ancak sesli kuş kovucularla ilgili yeterli çalışma bulunmamaktadır. Bu nedenle bu deneysel çalışmada, güneş enerjisiyle çalışan sesli bir kovucu tasarlanmış, üretilmiş ve çeltik tarlalarının yakınında tüneyip taze başakları yiyerek zarar veren saz horozları (*Parphyro porphyro*) üzerindeki etkileri araştırılmıştır. Kuş kovucu, Kasım 2007'de iki hafta boyunca test edilmiştir. Kuş kovucu sesi olarak saz horozlarının alarm (tehlike ikaz) sesi seçilmiştir. Hoparlörden verilen saz horozu alarm sesinin, kısa süreliğine geçici olarak saz horozlarını korkutarak verimli olduğu görülmüştür. Ancak, saz horozlarının 7 günden daha uzun periyotta bu seslerden etkilenmediği anlaşılmıştır. Sonuç olarak bu düzenlemenin ve yöntemin verimli olmadığı görülmüştür.

Anahtar Kelimeler: Kuş zararı; Sesli kuş kovucu; Alarm sesi; Saz horozu.

1. INTRODUCTION

Rice (paddy) is an important economic crop in Bafra Region, Samsun, Turkey, with approximately 700 ha in production and a value of about \$20 million in 2007. Birds give damage to this agricultural crops during different cultivating periods as in many countries in the world. This situation reduces the agricultural outputs and quality of products (Avery et al., 2005; Sağlam and Onemli, 2005; Summers, 1985; York et al., 1999). Birds damage to rice fields situated in Bafra Region was about equal to 90 ha in production and a value of approximately \$3 million in 2007. It is obviously seen from these values that the bird damage to this crops is a major problem for rice growers in Bafra Region. In addition, damage is not uniformly distributed, but is localized nearby reed cocks roosts area. Growers have employed scaring methods such as shooting and propane exploders to alleviate damage, but few believed these methods to be effective. The current method of choice is scaring by shooting, which is expensive and provides questionable level of protection against reed cocks. Although the majority of growers use shooting, annual losses to reed cocks damage are estimated at 90 ha of planted rice.

In order to protect agricultural areas against bird damage, some studies about mechanical and chemical fighting methods have been made up to now. For instance, it was reported in the literatures that the effect of 50% anthraquinone and 75% methiocarb, methiocarb, caffeine, garlic extract, physical barriers such as net or acrylic fibres, distress calls of birds, human bird scarer and colored lights on birds were studied (Avery et al., 2005; Bruggers and Ruelle, 1982; Mason and Linz, 1997; Tobin et al., 1989; Vickery and Summers, 1992; York et al., 2000). From the results of these works, it can be said that the most effective method is the physical barriers such as nets and fibres for agricultural areas. However, the use of properly mounted and maintained nets is expensive, costing from US \$1000 to over US \$3000 per ha. (Bruggers and Ruelle, 1982). Besides, we could not see another alternative method or study about the effect of alarm sounds (voices or calls) of harmful birds in the literatures during our search. Therefore, a solar powered audible bird scarer was designed, manufactured and tested on the behaviour of reed cocks which are pests and roosted near the rice fields where they eat newly seeded rice, in this experimental investigation.

2. MATERIALS AND METHODS

The designed and manufactured bird scarer mainly consist of a photovoltaic (PV) panel (BP Solar SX20M and dimensions: 41.5x50 cm), dry-cell battery, converter, MP3 player, amplifier and a loudspeaker (8Ω, 30 W) (Figure 1). Photovoltaic panel converts solar beam radiation into DC electricity during the day. Battery is charged by PV and the electricity stored in this device. The alarm calls was loaded to MP3 by using a PC. The amplifier increase the signal level (alarm calls level) for loudspeaker. The working voltage of battery, amplifier and speaker is 12V, but the MP3 needs 1.5V. In order to reduce the voltage from 12 to 1.5V for MP3, a converter was used.

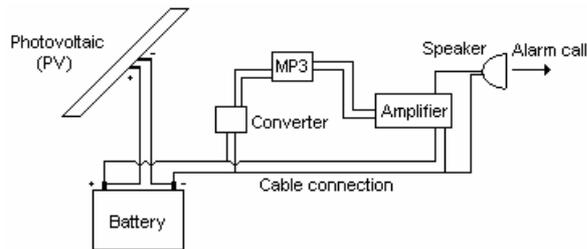


Figure 1. Schematic presentation and components of the bird scarer.

The study was conducted in rice fields area (paddy area) given in Figure 2, where reed cocks nearby roosts and located in Bafra Region, Samsun, Turkey. Firstly, to define the most effective play and pause periods of the loudspeaker, many series preliminary studies were made during one week. Besides, in order to understand the resistant or sensitive level of reed cocks against scarer, the scarer was tested about two weeks during November, 2007 on more than 50 birds. The number of left and remained birds in rice fields were counted during the alarm calls played throughout loudspeaker to determine the effect of the scarer on birds.

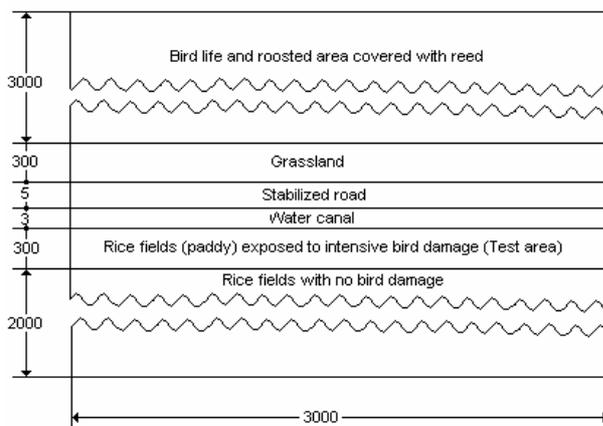


Figure 2. Rice field and reed cocks life and roosted area in Bafra Region, Samsun, Turkey (All dimensions are in m).

3. RESULTS AND DISCUSSION

Defined from one week preliminary studies, most effective play and pause periods that are 1 min play and 6 min pause was selected for experiments. The rice field area that has an about 300 m diameter was chosen as a test area. The test area was affected by the alarm calls of reed cocks through loudspeaker during experiments. In order to define the effectiveness of the solar powered audible bird scarer, the number of birds comes to test area (paddy fields) during test periods was counted.

As a result, it was seen during tests that birds had more effort to realize the source of the sound when the speaker play, before moving away. If it is possible for birds to see clearly the speaker, they prefer not to move (fly) away. In addition, alarm calls of reed cocks played through loudspeaker were seen effective in that they temporarily scared reed cocks. However, reed cocks no longer responded to these alarm calls after the period of 7 days. It is concluded that the present arrangement of scarer was seen inefficient.

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