



## Rose-ringed Parakeet: The Most Notorious Agricultural Avian Pest

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### INTRODUCTION

The rose-ringed parakeet (RRP) is also popular as the ring-necked parakeet with two subspecies native to Indian subcontinent (*P. krameri manillensis* and *P. krameri borealis*) and two subspecies native to the central sub-Saharan African subcontinent (*P. krameri krameri* and *P. krameri parvirostris*). The bird causes significant damage to agriculture, including fruits, grains, oilseeds and the ornamental plants. It roosts near the human infrastructures in large flocks resulting in human health concerns such as disease transmission.

### Impact on natural resources and human health concerns

Invasive species of any organism pose a serious threat to the native ecosystems in form of aggression, competition, predation or disease. Birds including RRP are potential hosts of diverse pathogenic microorganisms causing viral (psittacine circovirus, avian bornaviruses, avipoxviruses, paramyxoviruses) and bacterial (avian psittacosis, erysipelas, pasteurellosis) diseases and vectors of these disease transmissions to humans.

### Rose-ringed parakeet and Agriculture

RRP is a potential threat to small as well as large-scale agricultural production throughout the globe both in native and invasive ranges. The species impact the seed (e.g., pearl millet, corn and sunflower) and fruit crops (e.g., date palm, mango, guava, papaya and passion fruit) negatively. Small populations of the bird have less impact on the agricultural areas; however possibility and extent of damage to agricultural production increases as the population increases. Generalised diet and feeding habits of the bird increases the severity of the crop damage. The crops are damaged at inflorescence, seed or grain bearing and maturation stages severely. Damage to fruits is high during their pre ripening and ripening stages.

## Management Methods

A single management method is never effective in controlling the avian crop damage. Integrated methods enhance the effect of one another. For example, frightening devices usually are much more effective when they are used in combination with habitat modification tactics (like reduction in loafing habitat) to reduce the attractiveness of any site. Apart from these, fertility Control, exclusion, trapping, shooting and use of toxicants and repellents are some other means of avian pest control.

### Habitat Modification

Plants or structures used for loafing or roosting by the bird should be eradicated when possible. Decoy e crops may be helpful in reducing the depredation to high-value crops. Fields closest to roosting and loafing sites are best for planting decoy crops. Anti-perching tools like wire barriers, sharp spikes, coils, electrified fencing and pastes or gels) are helpful in creating uncomfortable surface for roosting which will discourage RRP's perching.

### Frightening Devices

Frightening devices generally include mirrors, lasers, reflecting ribbons, streamers, gas exploders, hawk eyes, flagging, distress calls, predator effigies, bioacoustics calls (raptor calls, barking dogs and human noise) and dead parrot effigies which modifies the bird behaviour and dispirit the birds from feeding, nesting and roosting in and around the crop fields.

## Exclusion

Exclusion refers to physical blocking of a bird's access and is an important tactic of damage management. Exclusion via netting although a labor-intensive and costly practice but can be used to effectively protect the crops and the roosting trees. Damage to corn crop is reduced when the cobs are covered with the help of plastic bags which may be due to difficulty in cob detection, difficulty in tearing the bags, inability to select the best cobs and alternative food availability nearby.

### Toxicants and repellents

Anthraquinone and Methyl anthranilate are the avian repellents registered currently by the EPA. Methyl anthranilate (MA) is registered for foliage application which is an irritant to the. Although very few field efficacy research studies are available, the repellent has been used to foliage in cereal grains, pome fruit, stone fruits, berries, etc. Anthraquinone (AQ) leads to nausea in birds which feed on the treated food, leading to a learned avoidance in a variety of species.

### Trapping and shooting

Trapping and shooting, however illegal, is used to eradicate the avian agricultural pests in many areas. RRP's, for example, have been trapped successfully in their native Pakistan using a modified crow trap (PARATOP) in agricultural crop fields. A modified Yunick trap was found effective against invasive RRP in urban areas, Spain.