Institute of Environmental Studies and Research
Ain Shams University

# ECOLOGICAL – TOXICOLOGICAL STUDY ON HARMFUL AND USEFUL BIRDS IN EGYPTIAN CROPS

THESIS

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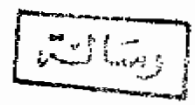

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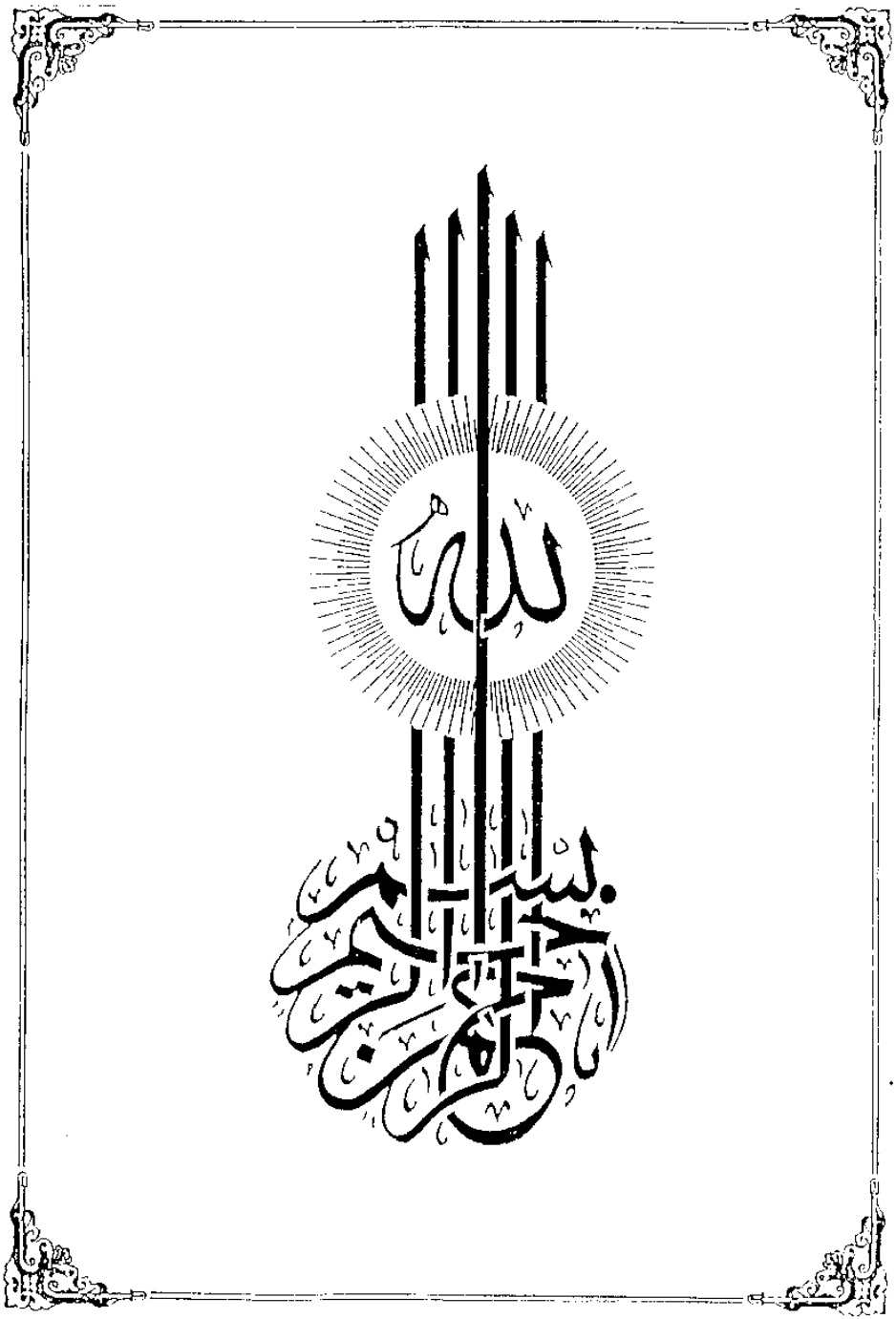

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# INTRODUCTION

# INTRODUCTION

Birds damage thousands tons of cereal grains worth million of pounds annually in Africa. Birds depredation in agricultural crops are not new but they are increasingly in conflict with man's interests. Losses of East Africa alone exceed U.S. $ 15 M annually (Elliot and Beasley, 1979; Kitonyo and Allan, 1979; Bruggers, 1980).

In a country like Egypt, with a limited cultivated area, food insufficiency is the major problem that faces the overgrowing human population. The Egyptian Govern - ment started to solve this problem by the reclamation of desert lands

Recently in Egypt, the house sparrow, Passer domesticus niloticus is considered the most economic vertebrate pest in the agricultural land, particularly in the newly reclaimed areas.

El-Deeb (1991) recorded that the birds damage to repinning stage of wheat, horse beans, barley, sunflower and sorghum reached to 20.68, 2.76, 1.50, 21.03 and 35.60%, respectively and the highest birds damage was occurred at the newly reclaimed areas. Other bird species damage field crops, vegetables and fruits during the different stages of plant, such as crested lark, Galereda cristata and starling, Sturnus vulgaris.

The dangerous of these harmful bird species is due to their gregarious habits, large numbers and distribution pattern(Bruggers, 1980).

The successful protection of a crop from excessive loss to bird in any particular situation will depend, to a large extent, on the quality of the information available on that situation. Regular monitoring of such events as weather, cropping practice, natural vegetation cycles, noxious bird populations, and crop damage levels will usually enable bird damage control specialist to choose the method of protection best suited to the situation with a minimum of trial and error (Michal and Raymond, 1987).

To alleviate this problem, the efficacy of bird control techniques should be tested as a part of integrated crop protection (ICP) research programmes and conducted under different agroecosystems (Mark et al., 1989).

In this context, priority should be given to the methods which have the least impact on ecosystems, stability and natural balance (Paul et al., 1981).

The selection of a pesticide in concrete conditions depends on the specific composition of the pests,

the state and the density of their population. Avicides must be safe for the environment and for nontarget species. Also, pests of agricultural crops must be considered with a view to the harm they cause to crop. The harm depends on when the pests appear, their number, and the stage of development of the crop.

The present investigation includes the following:

1. Ecological studies on noxious and beneficial birds at newly reclaimed area of El-Nubaria.
2. Toxic, anaesthetic and repelling effects of some chemicals on noxious (house sparrow) and beneficial (pigeon, Columba livia domestica) birds.
3. The stability of certain avicides coated on grains under different conditions using biological methods.
4. Avicide residues in bird blood and crops.
5. Biochemical response of house sparrow birds to the tested avicides.

# REVIEW OF LITERATURE

# REVIEW OF LITERATURE

## I. Ecology:

### I.1. Survey of beneficial birds:

#### I.1.a. White wagtail, *Motacilla alba*:

Larmuth (1973) reported that, spring migration begins in February and continue to mid - April, large flocks or white wagtail were occasionally noted. One exceptional observation made from a ship of the Egyptian Mediterranean coast, was an estimated "one million" migrating white wagtails which passed on an evening in the last week of March, 1962. The next morning the ship's deck was littered with thousands of white wagtail birds.

Goodman *et al*. (1989) mentioned that, white wagtail abundant passage migrant and winter visitor throughout the country from early October to late April. In winter, these species were common throughout country, with small numbers present in remote desert areas with sparse vegetation or near human settlements. In Eastern Desert, small flocks are often found associated with domestic animal hers.

I.1.b. Cattle egret, Egretta ibis:

Raw (1921), Koeing (1928) and Meinertzhagen (1930) mentioned that, around the turn of the twentieth century cattle egret was thought to be almost extinct in Egypt due to want on hunting but after legal protection was enacted and enforced, they recovered in numbers. Also, they mentioned several large colonies in Southern Nile Delta, without giving exact localities.

Bulman and Beale (1944); Elliot and Monk (1952) and Tuck (1961) stated that, small numbers of cattle egret were regularly recorded throughout the year along the entire Red Sea coast, generally near human settlements.

Goodman et al. (1989) reported that, there were several cattle egret breeding colonies in the Southern Nile Delta, near Suez, in Fayium, and throughout the Nile Valley. In the past decade, this species has declined in numbers in the greater part of the Nile Delta, which appears to be the result of local extensive use of pesticides. However, the number of colonies in the Nile Valley and in the Fayium seems to have increased. Also, they reported that, the cattle egret was observed throughout the year in the Nile basin but was distinctly