**Subject : Proposal for Ph.D. degree**

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**Title : Bio-ecology and controlling study of acorn insect pests**

**in some localities of Erbil Governorate – Kurdistan**

**Region**

**Justification  
Our ability to understand the dynamics of forest insect outbreaks is limited by the lack of long-term data describing the temporal and spatial trends of outbreaks, the size and long-life span of host plants, and the impracticability of manipulative experiments at relevant temporal and spatial scales. Population responses can be studied across varying site and stand conditions, or for a few years under somewhat controlled circumstances, but it is difficult to study temporal variability for species that outbreak only two or three times a century. Fortunately, dendrochronology enables us to explore decadal- and century-scale outbreak dynamics at spatial scales ranging from within-tree to continental. Evidence of past insect defoliation can be identified, dated, and sometimes quantified using variations in the width and morphology of annual growth rings in trees because of the importance of forest trees, especially fruit trees important economically and medically, such as Oak trees with green seed trees, and other plant families, these trees are susceptible to insect attack, particularly harmful Oak trees and corn insect pests, such as acorn eater insects. The injurious pests of Oak orchards could be classified into three groups based on economic damage and distribution in Kurdistan. The first group contains the major pests which are distributed throughout the main Oak-producing areas and usually cause significant loss in Oak yields by either attacking Oak leaves, fruits, or twigs.**

**First Article:**

**A- The field survey processes of the pest:  
 In this study the survey is done in some forest trees region in Erbil region with some nearby sites, its better three well-known sites of forest trees, as follows:**

**1- Selecting ten fruitful trees per region randomly.**

**2- Taking samples weekly in the late summer from the sprouting randomly.**

**3- Samples are taken indistinctly, moving around the tree and taking**

**ten corns from each tree.**

**4- Collect data during this study and determine the regions in which**

**the insects adapted to it.**

**5- Define and diagnose the species of infected studied trees with corn insect**

**pests.  
 6- Controlling environmental factors (temperature, humidity, rain, winds)**

**during the field survey to determine the time of pest appearance and its**

**abundance then disappearing from the environment.**

**7- Recording all this data in a special form containing insect species, pest stages**

**and sampling times is the form of field assessment of insect injuries.**