Management of White Grubs in Forest Nurseries

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Abstract: In Michigan, the most important white grub pests of nursery seedlings are European chafer beetle (*Rhizotrogus majalis*) and June beetles (*Phyllophaga* spp.). If damage is observed and white grubs found, beds can be protected from future damage with imidacloprid applied as Discus™ or Marathon® once per year in June or July.

Keywords: white grubs, forest nurseries, pest management

Introduction

Forest nursery seedlings are sometimes damaged by white grubs feeding on the roots. C-shaped white grubs are the larval stage of scarab beetles (Family Scarabaeidae) (Figure 1). In Michigan, most of the damage is caused by either European chafer beetle (*Rhizotrogus majalis*) or June beetle (*Phyllophaga* spp.) grubs (Figures 2 and 3). European chafer is now spread throughout the lower peninsula of Michigan to the latitude of Midland, MI. It has also been found in several locations north of Midland, including Traverse City and Alpena. Because we lack the proper natural enemies to keep populations of European chafer under natural control, it may become abundant in some areas, causing substantial damage. In several nursery fields, blue spruce (*Picea pungens*) and arborvitae shrubs (*Thuja occidentalis*) up to 61 cm (24 in) tall have been so severely damaged that 25% of the shrubs were lost.

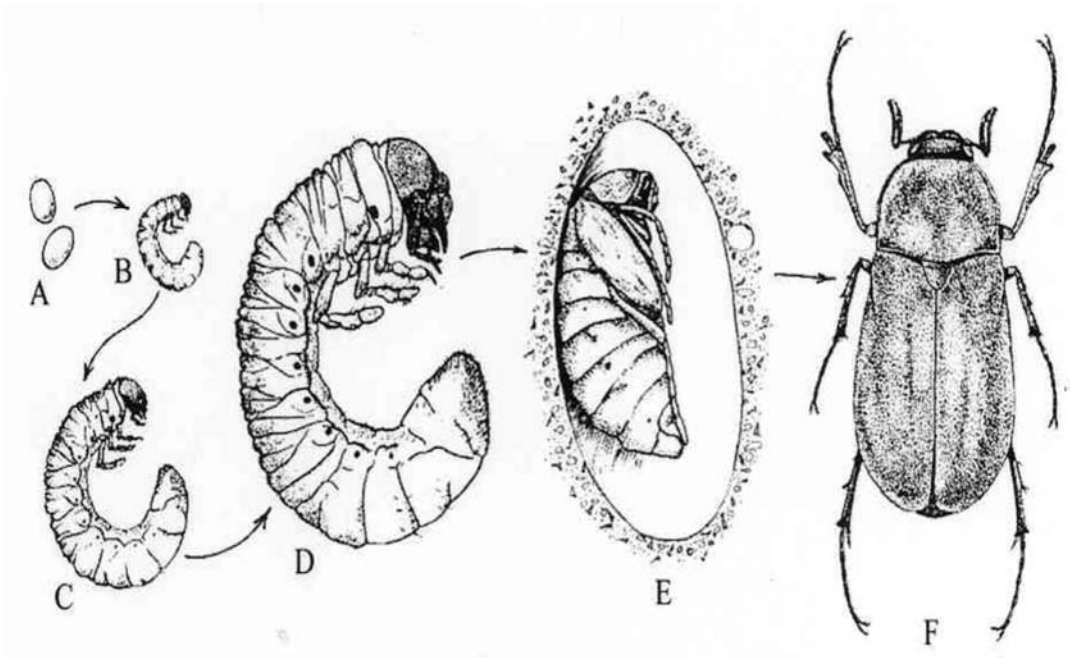

Figure 1. Life cycle of a scarab beetle (Family Scarabaeidae): A) eggs; B) first instar grub; C) second instar grub; D) third instar grub; E) pupa; F) adult scarab beetle.

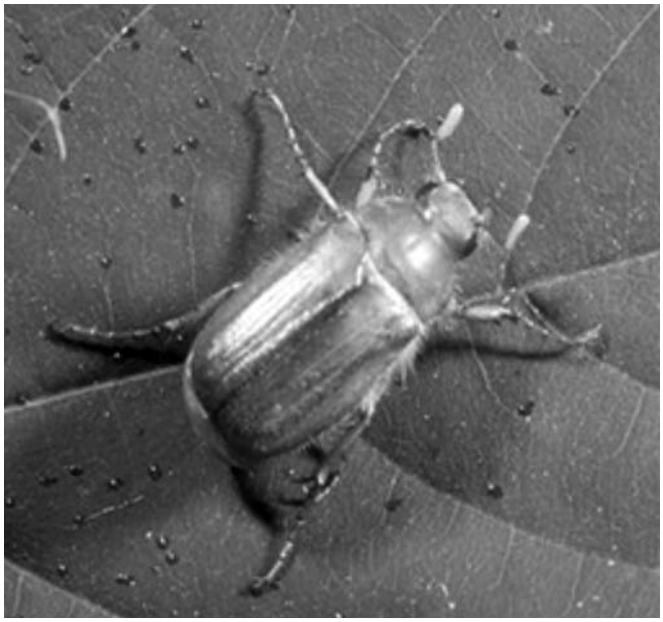

Figure 2. European chafer beetle (*Rhizotrogus majalis*).

Similar damage can be caused by June beetle grubs anywhere in Michigan. The damage caused by June beetle grubs, however, is more sporadic from place to place and year to year because we have natural enemies that keep populations under control.

Management

Forest seedling growers are urged to scout for white grubs by pulling-up seedlings and examining the roots and surrounding soil whenever plants wilt and die. If white grubs are found, the damage can be prevented the next year by applying imidacloprid as Discus™ or Marathon® in June at the labeled rate.

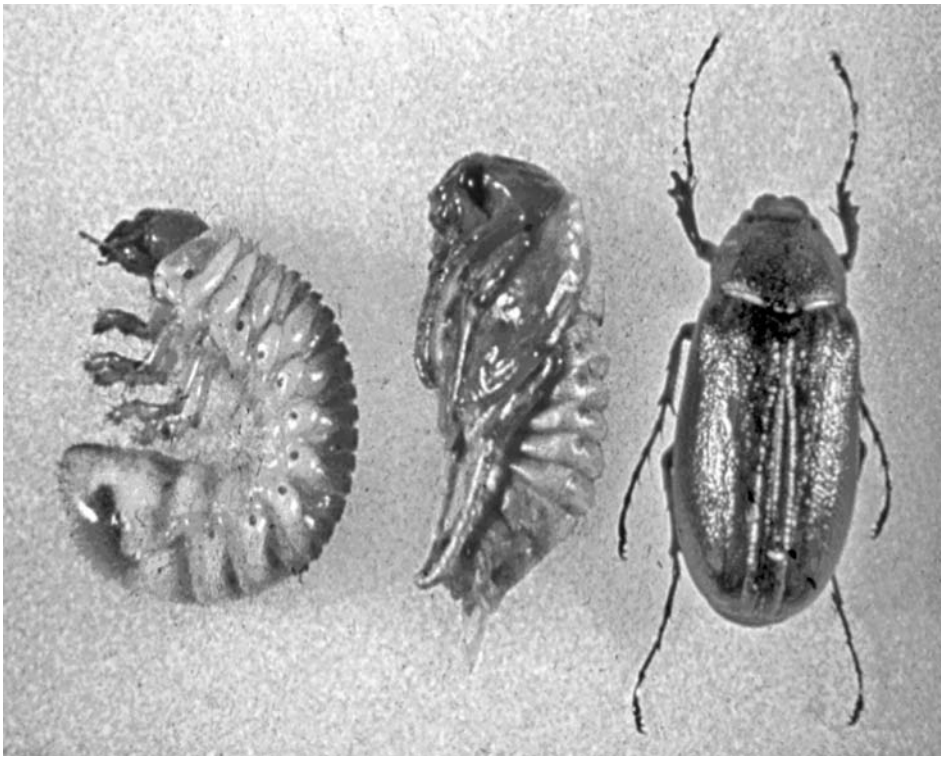

Figure 3. Grub, pupa, and adult June beetle (*Phyllophaga* spp.).