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INCIDENCE OF WHITE GRUBS IN TEAK NURSERIES IN MADHYA PRADESH

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ABSTRACT: White grub, immatures of the insect family Scarabaeidae cause damage to roots and rootlets in forest nurseries and agricultural sectors. In case of severe infestation, there is fair possibility of damage on large scale, if proper management is not practiced. The data on incidence of teak seedling mortality and grub density due to white grubs was recorded from affected nurseries from different Agroclimatic Zones (ACZs) in different Standard Meteorological Week (SMW) in Madhya Pradesh. Such state-wide data on the distribution of scarabaeid pest (white grubs) based on ACZs has not been reported earlier, which will facilitate development of effective management practices.

KEY WORDS: *Chafer Beetles, forest nurseries, Melolonthinae, SMW, teak seedlings,*

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The immature stage (white grub) of the scarabaeid insects are one of the most notorious and tough-to-control insect pests of many agricultural (Yadav and Sharma, 1995) and forestry crops, including the most valuable timber tree species like teak in forest nurseries (Kulkarni, 2010, 2017; Kulkarni *et al*., 2006, 2007, 2009) in India. Their soil inhabiting and root feeding behavior damages the roots and rootlets. Beetles (adults) are also cause of concern because of defoliation caused not only on plants of agricultural importance (Yadav & Sharma, 1995; Bhawane *et al.*, 2012), but also on economically important forest tree species (Kulkarni *et. al*., 2007, 2009). In forestry, grubs are of more concern with regard to the damage caused (Kulkarni, 2017) to forestry seedlings. In central India (mainly in Madhya Pradesh and Maharashtra) several reports are available on occurrence of white grub incidences in forest nurseries (Pathak *et al*., 1995; Joshi, 2001; Ahmad *et al.*, 2016; Ahmad and Kulkarni, 2017). However, this is the first comprehensive report on distribution pattern of scarabaeid (white grubs) and teak seedlings mortality in forest nurseries falling under ACZs in Madhya Pradesh state.

MATERIALS AND METHODS

Selection of forest nurseries

In all, 26 forest nurseries falling under 9 Agroclimatic zones in the state of Madhya Pradesh were surveyed during 25th SMW to 42nd SMW (mid June to mid October) all through the years 2014 to 2016 and recorded the density and incidence of white grubs in teak forest nurseries (Table 1). The criteria for selection of forest nurseries included:

a. Agroclimatic zone-wise location of the forest nurseries.

b. Total nursery area and presence of nursery stock/ production during the period, for determining the major or minor status of the nursery.

c. Presence of teak seedlings as major nursery stock in the nursery during the period of work.

d. General history of incidence of white grubs in the nursery, based on discussion with the concerned nursery manager and State Forest Department officers, related enquiries received from them requesting remedies and observations recorded from time to time.

Assessment of incidence

The incidence of white grubs was recorded in randomly selected 20 number of nursery beds in different sectors/ plots following the general survey method (Bakshi, 1977; Rudinsky, 1979) adopted by other workers (Garg *et al*., 2005; Kulkarni *et al.,* 2007, 2009). On the basis of characteristic symptom of wilting (due to white grubs) damaged and unaffected (healthy) seedlings were counted following the method used for similar kind of observations recorded and reported by Kulkarni (2006), Kulkarni *et al.* (2007, 2009).