

Susceptibility of eucalyptus species and clones to gall wasp, *Leptocybe invasa* Fisher and La Salle (Eulophidae: Hymenoptera) in Karnataka

In India, plantation of *Eucalyptus* spp occupies about 8.0 million ha. *Eucalyptus* spp have been planted on a large scale by many paper industries for commercial purpose. It played important role in economic and social development of India. *Leptocybe invasa* Fisher & La Salle a gall inducing wasp on several *Eucalyptus* spp was first reported from Mandya district of Karnataka in the year 2001 (Anonymous, 2001). Subsequently it was reported in a few pockets of Tamil Nadu and Karnataka (Jacob *et al.*, 2007). In Karnataka the pest has been reported to attack 25 lakh eucalyptus seedlings in the nurseries of two major paper and rayon industries. More than 20,000 ha of two years old eucalyptus have already been affected by gall formation in southern states of India (IFGTB, 2007). Eucalyptus plantation industry in India depends on few clones to meet their demand for paper production. Clones are all seriously damaged by *L. invasa* in many nurseries and young plantation and it is becoming increasingly difficult to find seedlings to establish new plantation. Hence, there is an urgent need to screen a wide range of eucalyptus clones for resistance to *L. invasa*. This article reports on the susceptibility of four clones of *E. camaldulensis*, two clones of *E. grandis* and one clone of *E. urograndis* and one of *E. pellita* to *L. invasa* in the nursery.

One year old seedlings of totally seven clones of commercial species and one eucalyptus species of eucalyptus were obtained from West Coast Paper Mills Ltd., Dandeli, Uttara Kannada district, Karnataka (Table 1). These seedlings were raised in root trainers filled with vermiculite under mist chamber

condition. Later, established seedlings were exposed for natural infestation by gall wasp outside the mist chamber. Seedling population was observed for formation of fresh galls on each seedling. Observation on for number of fresh galls on top, middle and bottom was recorded both on petiole and stem in 20 plants in each clone/seedling population. The data were generated for six months at monthly intervals and the mean of all observations is presented in table 1. Data were subjected to analysis of variance with three replications to compare clones for gall formation and other traits. The severity of the damage caused by *L. invasa* was determined as damage index (DI) as shown below.

No gall=Healthy seedling

Low=6-10 galls/plant

Moderate=11-20 galls/plant

Severe=>21 galls/plant

Leptocybe invasa is capable of infesting and forming galls on all seven clones and one species screened. The resistance of eucalyptus clones to the pest differed greatly. Among the commercial clones, only one clone GR-330 of *E. grandis* recorded minimum number of galls/plant (9.90) with low damage index. Two clones from *E. camaldulensis* viz., DLD-31 (15.20), DLD-10 (16.60), one clone SA-2 (15.70) from *E. urograndis* and *E. pellita* (14.50) recorded moderate incidence.

Table 1: Screening of commercial eucalyptus clones against *Leptocybe invasa*

Sl.No.	Eucalyptus species	Clone ID	Mean No of galls/plant			Severity	Damage Index (DI) galls/plant
			Petiole	Stem	Mean		
1	<i>E. camaldulensis</i>	DLD-31	23.00	7.40	15.20	Moderate	11-20
2	<i>E. camaldulensis</i>	DLD-10	24.60	8.60	16.60	Moderate	11-20
3	<i>E. camaldulensis</i>	D-2	37.00	8.20	22.60	Severe	>21
4	<i>E. camaldulensis</i>	IFGTB	34.60	7.20	20.90	Severe	>21
5	<i>E. grandis</i>	GR-283	35.60	7.80	21.70	Severe	>21
6	<i>E. grandis</i>	GR-330	12.20	7.60	9.90	Low	6-10
7	<i>E. urograndis</i>	SA-2	23.20	8.20	15.70	Moderate	11-20
8	<i>E. pellita</i>	-	21.60	7.40	14.50	Moderate	11-20
CD (0.01)		2.46		1.60	-	-	-
SEm±		0.85		0.37	-	-	-
CV (%)		7.20		5.10	-	-	-

Severe incidence of 20.90, 21.70 and 22.60 was recorded by IFGTB (*E. camaldulensis*), GR-283 (*E. grandis*) and D2 (*E. camaldulensis*), respectively (Table 1). Mandel *et al.* (2004)

observed few host species susceptible to *L. invasa*. Thu *et al.*, (2009) observed variation in the susceptibility of provenances of *Eucalyptus* sp. Variation among the clones is promising for breeding for resistance and long term control.

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