

EVALUATION OF NEMATODE RESISTANCE IN LABLAB

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Background. Lablab (*Lablab purpureus*) is a drought tolerant summer annual legume that is used throughout the tropics as a forage, hay and green manure crop. Lablab is a tap-rooted forage legume that can be grown in diverse environments with minimum rainfall (10 to 15 inches during growing season). Lablab can be grazed, cut as hay, or grown in mixtures with corn or sorghum and harvested as silage. This tropical forage legume is highly palatable and readily consumed by cattle as a grazing or hay crop. The potential for using lablab in Texas forage-livestock production systems and as supplemental browse for white-tailed deer has been investigated recently at multiple TAES locations. An evaluation and breeding program is in place at TAES Overton to develop new, improved lablab cultivars for Texas. Root-knot nematodes (*Meloidogyne incognita*) are a harsh pest of warm-season forage legumes, with infestations on susceptible host plants causing severe damage to root systems. Host plant resistance is the best control measure for root-knot nematodes.

Research Findings. Experiments were conducted in 2004 and 2005 to evaluate the reaction of lablab to root-knot nematode (Starr isolate 98-1). In 2004 ten lablab breeding lines and Iron and Clay cowpea (*Vigna unguiculata*) were grown in the greenhouse at College Station and inoculated at 20 (?) days after germination with 10,000 eggs per plant. The lablab lines were arranged in a RCB design with eight replications. The growth media was washed sand and peat (%/%) ?? amended with a complete nutrient solution. The plants were grown for 60 days after inoculation and the experiment was terminated. The roots were carefully washed to remove growth media and scored on a scale of 0 to 5 for galling, with the score 5 indicating a severely galled and damaged root system. The root systems were drained, blotted dry and weighted. Nematode eggs were extracted, counted and recorded as eggs per gram of root fresh weight. In 2005, six lablab breeding lines were reevaluated at Overton, using the same techniques as outlined above (data not shown). The lablab cultivar Rongai and Iron and Clay cowpea were included as checks.

In 2004, average gall scores ranged from 1.3 to 4.7 for Iron and Clay cowpea and TX41-97, respectively. Average nematode egg production ranged from 410 to 33,639 eggs per g root fresh weight for Iron and Clay cowpea and TX41-97, respectively (Table 1). The best lablab line was TX35-03 with a 2.3 gall score and relatively low egg production. One plant of TX35-03 was noted with no galling and only 26 eggs per g of root fresh weight. In the 2005 reevaluation,

TX35-03 was again the best lablab line with a gall score of 1.1. In the 2005 study, Rongai had the most severe galling of all the lines evaluated.

Application. Variation for resistance to root-knot nematodes exists in lablab and efforts are in progress to develop new cultivars with this trait. The lablab cultivar Rongai is highly susceptible to southern root-knot nematode.

Table 1. Evaluation of galling and nematode reproduction on lablab and cowpea inoculated with southern root-knot nematode.

Plant Line	Gall Score	Egg Production eggs/g root fresh wt.
Iron & Clay	1.3 f	410 d
TX 35 - 03	2.3 e	6696 dc
TX 98 - 2	3.0 de	20381 b
TX 47 - 97	3.6 cd	18855 b
TX 98 - 1	3.7 cd	20062 b
TX 98 - 3	4.0 bc	13285 bc
TX 32 B - 98	4.0 bc	19128 b
TX 18 - 97	4.2 abc	18065 b
TX 1B - 98	4.2 abc	18118 b
TX 33 - 03	4.6 ab	21630 b
TX 41 - 97	4.7 a	33639 a

Means followed by the same letter are not significantly different ($P < 0.05$).

Gall score was rated on a scale of 0 to 5, where 5 = severe galling.