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# NEW SUMMER FORAGE LEGUMES FOR TEXAS

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**Background.** Research is in progress with several different summer forage legumes for Texas livestock and wildlife production systems. A tropical forage legume that would grow and persist as a companion species in warm-season perennial grass (WSPG) pastures would open new possibilities in Texas and southeastern US forage-livestock production systems. Current cultivars of forage cowpeas (*Vigna unguiculata*) and lablab (*Lablab purpureus*) can be established in WSPG pastures but will not live as perennials or reseed under Texas conditions. Creeping vigna (*Vigna parkeri*) is a small vining legume with prostrate stems that root at the nodes. Creeping vigna is currently used in subtropical pastures in Queensland and New South Wales, Australia. Under tropical conditions, this legume is a perennial, but exact cold tolerance and winter survival in Texas is unknown. Creeping vigna also produces hard seed that can build a soil seed reserve and allow regeneration from seed. Genetic variation for root-knot nematode resistance and agronomic traits are generally unknown for this new forage crop.

There is potential to develop new cultivars of creeping vigna that will grow as a companion forage legume in Texas WSPG pastures and persist as either perennials or reseeding annuals. Evaluation of the available germplasm is needed as an initial step in this process.

**Research Findings.** Twenty plant introduction lines of creeping vigna were obtained from the Australian Tropical Crops and Forages Collection, Queensland, Australia and three additional lines obtained from the International Livestock Research Institute, Addis Ababa, Ethiopia. A greenhouse experiment was designed to evaluate the reaction of this germplasm to root-knot nematode. Twenty-five plants of each creeping vigna line were started in the greenhouse on May 17, 2005 using washed sand as the growth media. The seed were inoculated with cowpea inoculum and the pots were fertilized with a low nitrogen nutrient solution and the plants grown for 40 days prior to nematode inoculation. Twenty plants from each line were inoculated with 10,000 eggs of *Meloidogyne incognita* (Starr isolate 98-1) on June 10, 2005 and five non-inoculated plants were reserved as controls. Growth of creeping vigna in this experiment was variable and generally slow with many plants showing nitrogen deficiency symptoms. This experiment was terminated early on August 10 due to premature death of many plants. The root systems were washed free of sand and examined for nodulation and nematode galling. The results are shown in Table 1. No lines of creeping vigna were identified with root-knot nematode resistance and nodulation varied by line from no nodules to normal.

**Application.** More research is needed to ensure normal nodulation of this set of creeping vigna germplasm and to re-evaluate root-knot nematode reaction.

Table 1. Nodulation and nematode reaction for twenty-three lines of creeping vigna.

| Seed Source | Line Number | Nodulation | Root-knot nematode reaction |
|---|---|---|---|
| Australia | 1 | EF | susceptible |
| Australia | 2 | INEF | inconclusive |
| Australia | 3 | NO | inconclusive |
| Australia | 4 | NO | inconclusive |
| Australia | 5 | NO | inconclusive |
| Australia | 6 | EF | susceptible / variable |
| Australia | 7 | INEF | inconclusive |
| Australia | 8 | NO | inconclusive |
| Australia | 9 | EF | susceptible |
| Australia | 10 | NO | inconclusive |
| Australia | 11 | INEF | inconclusive |
| Australia | 12 | INEF | inconclusive |
| Australia | 13 | NO | inconclusive |
| Australia | 14 | NO | inconclusive |
| Australia | 15 | NO | inconclusive |
| Australia | 16 | NO | inconclusive |
| Australia | 17 | EF | inconclusive |
| Australia | 18 | INEF | susceptible / variable |
| Australia | 19 | NO | inconclusive |
| Australia | 20 | NO | inconclusive |
| Africa | 1 | NO | inconclusive |
| Africa | 2 | NO | inconclusive |
| Africa | 3 | NO | inconclusive |

EF = normal, effective nodulation
INEF = ineffective nodulation, no nitrogen fixation
NO = no nodulation