



Tropentag, September 10-12, 2025, hybrid conference

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## Evaluation of new forage legume varieties for dissemination in Vietnam

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### Abstract

Livestock production in Vietnam, continues to be constrained by low productivity, largely attributed to seasonal feed shortages, dependency on low quality forages and crop residues. While forage legumes offer high-quality, protein-rich feed for livestock, and provide additional benefits such as enhancing soil fertility, availability and access to high quality, drought tolerant varieties remain limited.

This study evaluated the adaptation to biotic and abiotic stresses, biomass yield, disease incidences and nutritional quality of four forage legume accessions from Thailand - *Crotalaria juncea*, *Crotalaria ochroleuca*, *Lablab purpureus*, *Clitoria ternatea*, and one local check - *Mucuna pruriens* to identify suitable options for dissemination in Vietnam. Field trials were conducted over two seasons (wet and dry) at the Ba Vi Cattle and Forage Research Center - Hanoi.

The results revealed significant differences among the evaluated legume varieties. *Crotalaria juncea* exhibited rapid growth, high yield (29–25 t/ha fresh biomass) and crude protein (CP) content of 13.9–15.9, whereas *C. ochroleuca* yielded the highest biomass yield (38 t/ha) despite slower growth, achieving high CP content of 19.5–20.4%. *Lablab purpureus* showed strong growth and yield (26–32.5 t/ha) and high CP content (19.7–22.6%), comparable to *Mucuna pruriens*, which yielded 22–34.8 t/ha with CP content (18.9–24.1%). *Clitoria ternatea* struggled with poor germination and weed competition, resulting in significantly lower biomass productivity (5.8 t/ha), but maintained high CP content (18–21.7%). Pest incidences were minimal, with pod-borers and aphids observed in some *Mucuna* plots.

The findings highlight the potential of *C. ochroleuca*, *L. purpureus*, and *C. juncea* as viable forage options to provide protein-rich feed sources, mitigate seasonal feed shortages and enhance livestock productivity. We recommend reassessing *Clitoria ternatea* as a) performance was limited by germination, b) is perennial addressing other niches, very high quality and high digestibility. Following this study, the evaluated legume accessions have been registered with the Ministry of Agriculture and Environment, for circulation in Vietnam and permitting dissemination. This study offers promising solutions for high quality forage options in forage-scarce regions of Vietnam. Further on-farm trials across diverse agroecological zones are recommended to assess adaptability and enhance adoption among smallholder farmers.

**Keywords:** Adaptation, dissemination, feed shortages, forage legumes, livestock productivity