

Introduction

Hairy indigo is an annual warm-season legume native to Africa and Asia, and it is naturalized in Florida (Figure 1). The species is known to have hard seeds, a trait that can be beneficial in perennial pastures, where self-seeding is desirable. However, the reseeded ability might pose problems as a cover crop in annual crops due to interference with crop management and harvest.

Baltensperger et al. (1990) released 'Flamingo' hairy indigo, a soft-seeded cultivar, for use as a summer cover crop, silage, hay or grazing. Flamingo was initially selected from an individual plant introduction from the USDA germplasm system (PI 213523).

Materials and Methods

Breeder Flamingo seed was used as the base population. In total, 43 genotypes were used for germination tests, including Flamingo selections, USDA plant introductions and a wild check collected in Alachua county (Figure 1). In order to reduce bias due to seed source, seed stocks were increased in a greenhouse at the UF/IFAS Forage Breeding and Genetics Lab (Figure 2). Seed was harvested, dried at room temperature, threshed and placed for germination. A RCBD design with three replications was used for germination tests, and 20 seeds were sown in each petri dish. Seedlings were counted 3 and 7 days after planting to determine hard-seededness. Data was analyzed using ANOVA followed by Waller-Duncan t-test.

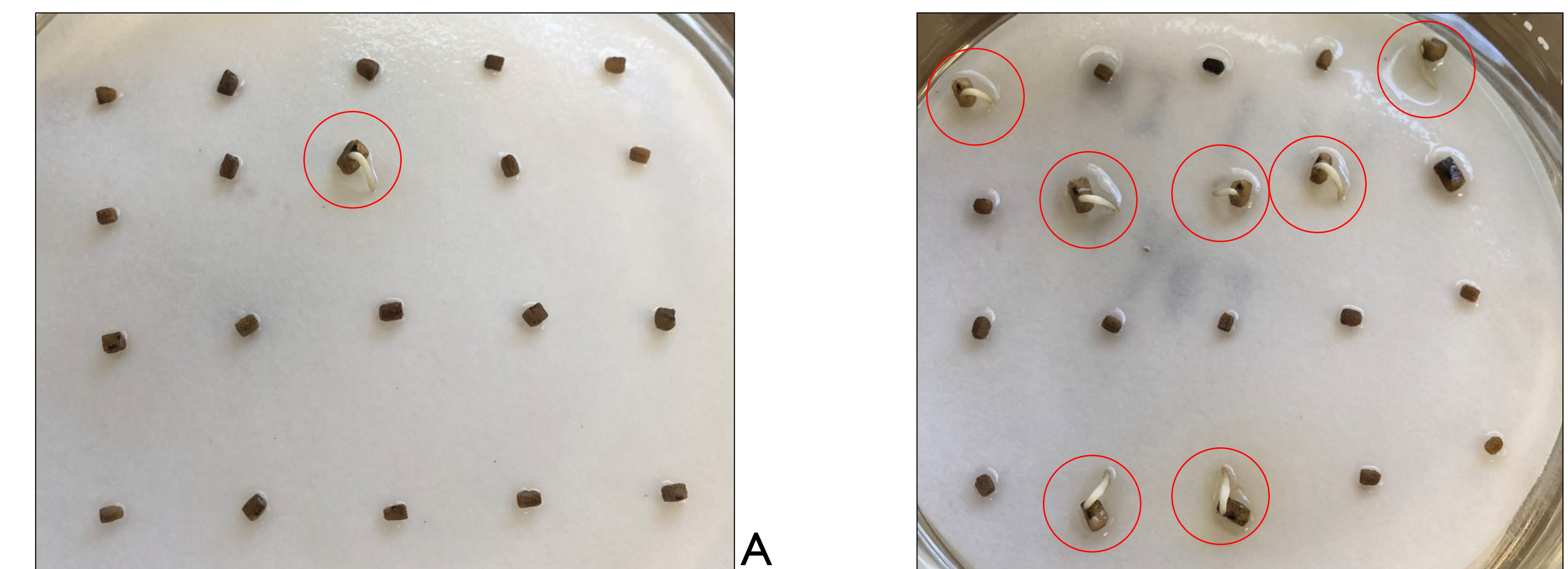


Figure 4. Hard-seededness in hairy indigo: genotype with high hard-seed levels (A), and genotype with low hard-seed levels (B).



Figure 1. Hairy indigo naturalized in Florida. A wild population in Alachua county flowers in September (A) and seed matures in October (B).

Results and Discussion

Germination tests run for 7 days revealed that hard-seededness ranged from 35% to 100% in our hairy indigo population. As expected, the naturalized population collected in Alachua (HI-Alachua) had 89% hard-seed. Several PIs and Flamingo selections had higher hard-seed percentages than the wild check. On the contrary, 4 genotypes had lower than 50% hard-seededness, including selections from Flamingo and PI 213523 (Figure 3).

Conclusions

The cultivar Flamingo was originally selected for soft-seededness; however, large variation still exists in the original breeder's seed stock (Figure 4). The lowest hard-seededness (34.6%) level identified in this study still need to decrease in order to use these germplasm as cover crop. Flamingo and PI 213523 seem to have potential for improving soft-seededness in hairy indigo.

Objectives

This study was conducted to determine hard-seededness in hairy indigo, and identify plants exhibiting soft-seededness to use them in breeding.



Figure 2. Hairy indigo seed increases at the UF/IFAS Forage Breeding and Genetics greenhouse.

Hard-seededness (%)

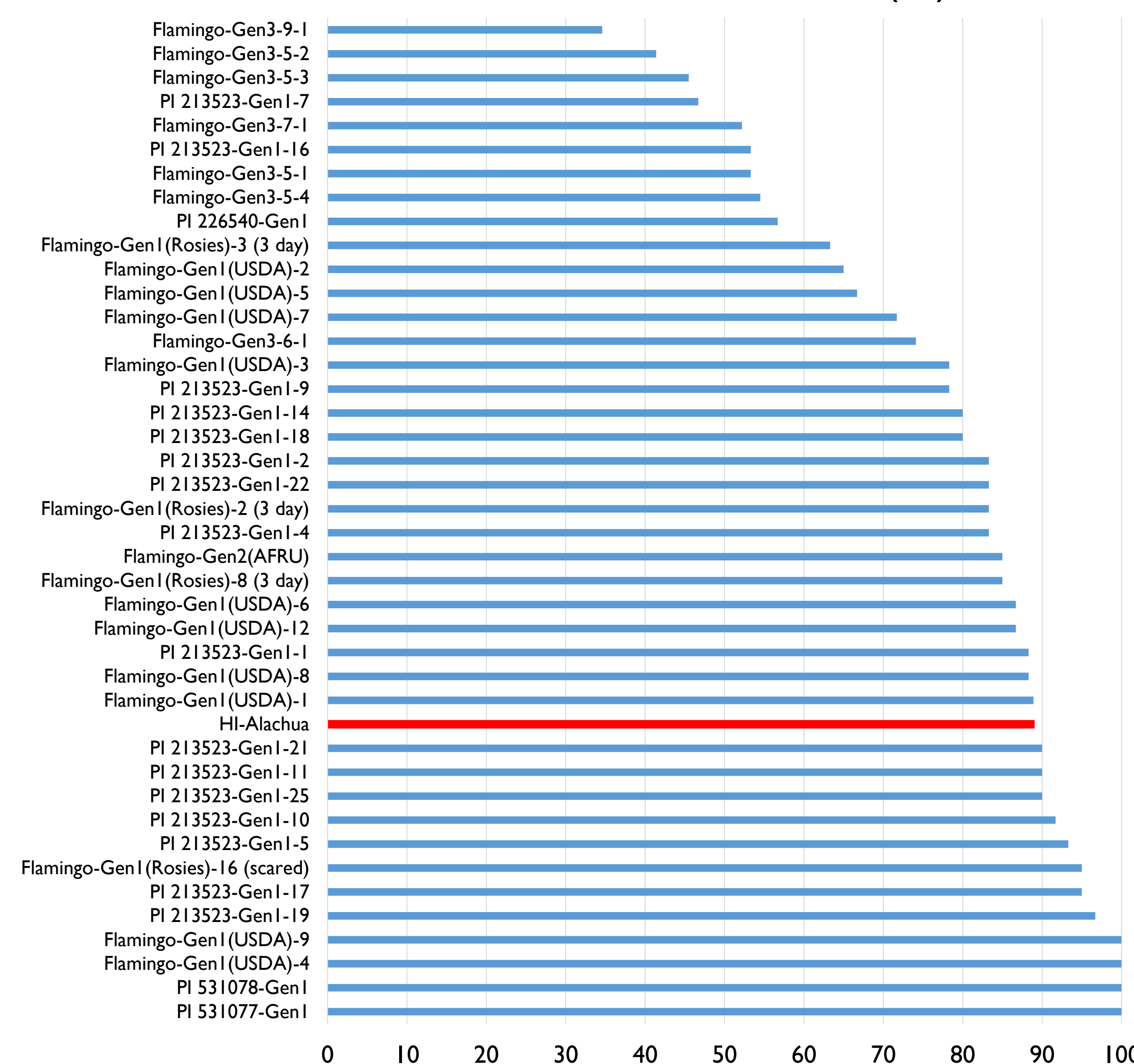


Figure 3. Variation in hard-seededness (%) present in hairy indigo germplasm.

Future work

Seedlings that germinated 3 days after planting from genotypes with significantly lower hard-seededness were selected for generation advance. These plants are grown under greenhouse conditions to allow seed production and future germination tests (Figure 5).



Figure 5. Hairy indigo seedlings selected from soft-seeded genotypes.