

## **Release Of Alfalfa Genetic Stock “SAFE” That Provides Biocontainment Of Transformed Traits**

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Sterile Alfalfa For Experiments (SAFE) was released by the Wisconsin Agricultural Experiment Station in August, 2002. SAFE is a source of the sterile flower-less mutant originally named cauliflower head. The mutant behaves as a single recessive gene that segregates in the homozygous condition at a very low frequency in some alfalfa cultivars. Brouwer and Osborn (1997) reviewed the literature and mapped the trait. They referred to the trait as “uni” because it is phenotypically similar to the uni trait in *Pisum* (Hofer et al. 1997). Moreover, research is ongoing to determine whether the pea and alfalfa genes are orthologues (Hofer et al. 2001).

The source of the sterile uni mutant was a plant from cultivar ‘Blazer XL’ that segregated ca 35normal: one uni when selfed. The trait was crossed and twice backcrossed into the cultivar ‘Columbia 2000’. Bulk pollen from different Columbia 2000 plants was used in the crosses to minimize inbreeding. SAFE is intercross seed of backcross progeny that are simplex for normal (Uuuu). The germplasm in SAFE is about 87.5% Columbia 2000, and 12.5% Blazer XL. SAFE segregates about three normal:one uni, and the normals all are heterozygous for uni.

Biocontainment is achieved by using normal segregates that are heterozygous, to backcross uni into any desired transformed line. Alternatively, the transformed trait could be backcrossed into the SAFE genetic background. Then, plants co-segregating for the transformed trait and the sterile mutant are selected. Selected sterile plants expressing the transformed trait then can be vegetatively propagated by cuttings for production of the transformed trait with no risk of gene flow.

A sample of 100 seeds of SAFE will be sent upon request of the seed, and agreement to recognize the source of the trait when it is used in the development of new stocks. SAFE will be placed in the USDA Plant Introduction system so that it will be available after the current supply is depleted. Send requests to E. T. Bingham, 1575 Linden Drive, University of Wisconsin, Madison, WI 53706. Email: ebingham@facstaff.wisc.edu

### References Cited

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Hofer, J, L Turner, R Hellens, M Ambrose, P Matthews, A Michael, and N Ellis. 1997. *Current Biology* 7: 561-587.

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