Report

Introgression of pest and disease resistance genes from wild species into cultivated peanut lines and varieties.

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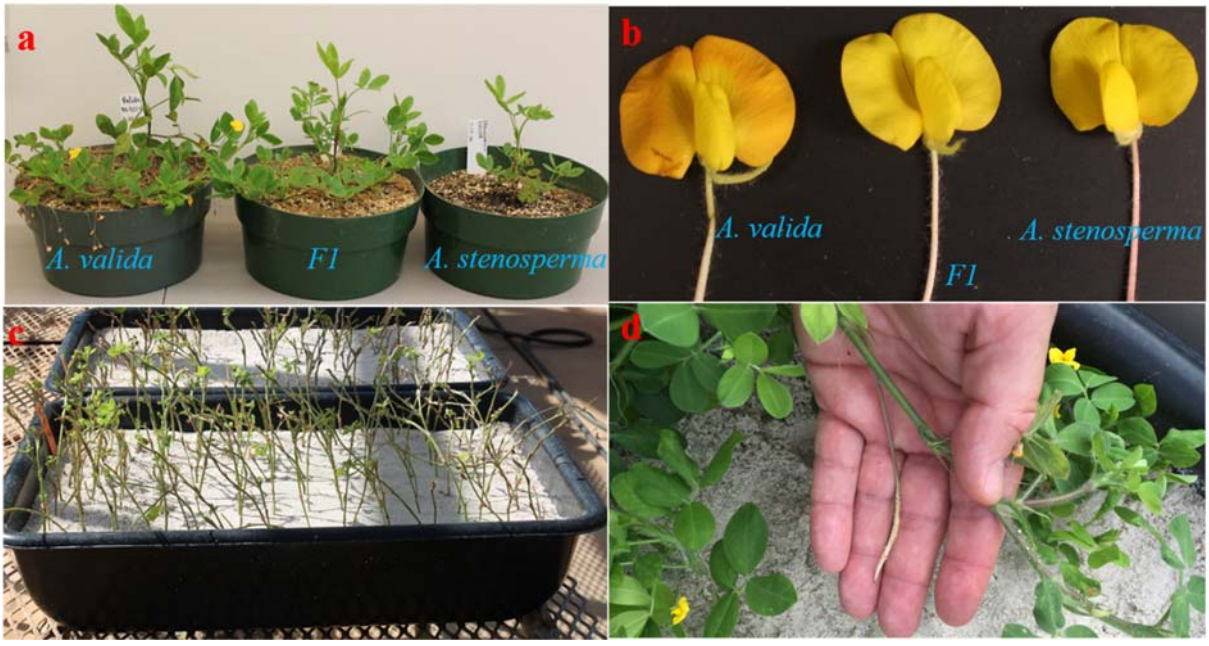
The goal of this project is to use exotic genetic material to move new genes into peanut cultivars to address real-world issues. We are starting with wild peanut ancestors that have desirable traits and 're-creating' peanut to begin to provide access to new sources of disease and pest resistances. We are also using previously created materials and exotic peanut materials to find molecular markers linked to disease and oil quality traits and then to package all these traits into lines that can be tested and used by breeders. All this work is done in close collaboration with the Holbrook and Ozias-Akins groups at Tifton. We aim that i) that the materials are being tested in breeder's field plots and ii) that the markers developed are practical and increase selection efficiency.

We have created over 20 diploid hybrids and managed to re-create eight peanut compatible resistant lines. Some crosses are being done to insert wild resistance-containing DNA fragments of the wild species into elite peanut varieties.

Below is a figure showing the 're-creation' of peanut from wild ancestors. This is a labor-intensive process and these early plants are very fragile and have to be treated like babies.



Plants (a) and flowers (b) of two diploid wild peanut species and the F1 diploid hybrid. The flower of F1 and male parent is yellow and the female parent has orange flower. F1 cuttings treated with colchicine were maintained in trays filled with white sand for several months (c). One peg has emerged from treated cuttings that suggested successful chromosome duplication of diploid hybrid peanut (d).