

customers. In addition, Dr. Zale is waiting for the USDA SCRI citrus call for proposals which is expected in Spring 2016 to see which areas the federal government has given priority for funding.

Obj. 5- Biolistics transformations

Biolistic transformations are being pursued as time and resources permit. During the quarter, the facility continued to successfully transform both immature and mature citrus with biolistics and demonstrated that the protocol is reproducible. As a result, the lab can now offer plant production using biolistics as a transformation alternative.

Significant Meetings/Conferences/Publications

During the quarter, Dr. Zale, et.al. completed a manuscript that was submitted to Plant Cell Reports describing biolistic transformation of immature citrus rootstock, never previously reported in the literature. Biolistic transformation to produce transgenics will augment those produced with *Agrobacterium*.

Obstacles Encountered

As the facility moves forward there are a number of issues and challenges that have been identified and are being addressed with support from the MCTF Steering Committee:

- Continue to increase the number of high quality genetic constructs for evaluation by the facility.
- Leverage the knowledge and experience of Dr. Pena (IVIA Spain) to continue to increase transformation efficiencies of the facility.
- Take measures to ensure a stable supply of healthy, viable rootstocks, including a steady supply of disease free rootstock seed. During the quarter sour orange and Volkameriana seed were purchased for the growth room because seed of preferred rootstock varieties were sold out. It remains to be determined if these varieties perform well in the growth room.
- Securing external financing through grants and charges to customers remains an ongoing challenge.

Breakthroughs:

Successful biolistic transformation of immature or mature citrus has not previously been reported. This will be an important technology to transform citrus without pest sequences, which might lessen regulatory hurdles.

Other Information:

Funding for MCTF is provided in Project 15-045C, which expires 6/30/2016. MCTF's mission is to develop protocols for mature transformation of citrus that can be used to incorporate genes of interest, when available, into Florida cultivars. Through MCTF, CREC will generate the first mature sweet orange transformants with development protocols adjusted in the lab and in the growth room for Valencia and Hamlin.

MCTF remains an important element of the overall pipeline encompassing both conventional breeding and genetic transformation, from inception, to field testing, to scale-up and delivery to growers. MCTF's role in this overall process is tied to deliberations of the CRDF knowledge mapping exercise for HLB host resistance or tolerance, and associated efforts to develop side-by-side field testing of the most promising candidates and delivery to Florida growers.