

NON -TECHNICAL ABSTRACT:

With a renewed interest in identifying alternatives to petroleum based fuels, considerable effort has been focused on utilizing plant-derived bio-fuels. Unfortunately much of these efforts have been focused on utilizing food-feed stock as a source material for bio-fuel production (e.g. corn to ethanol, etc.). This has not been without impact as significant portions of the harvest was now redirected towards biofuels rather than food-feed processing, altering availability and subsequent pricing. Recent focus has now been redirected towards identifying non food-feed plants as a biofuel source (e.g. Switchgrass, Algae, etc.). The Physic Nut, an extremely drought tolerant non-edible plant native to the sub-tropical regions of the Americas has significant potential to meet this demand. Oil produced within its seed can be utilized directly in diesel engines. Efforts to propagate this plant in California are in its infancy, primarily due to the relatively long establishment period for mature seed producing plants. The objective of this study is to utilize micropropagation (*in vitro*) technologies for the rapid large-scale propagation of seed producing aged plants. Such methods can then be utilized for conventional and transgenic breeding efforts necessary for introduction of this species as an ecologically- and economically-sound crop for California's drought stricken Central Valley. Doing so has the potential to provide a regionally-produced alternative to traditional petroleum-based fuels, supporting increased demand while providing alternative cash crops for this drought effected region.