PRODUCTION OF HERBICIDE TOLERANT STRAWBERRY THROUGH GENETIC ENGINEERING

Alison Morgan*, Charleen Baker

DNA Plant Technlogy Corporation, 6701 San Pablo Ave., Oakland, CA 94608

Proposed chemical alternatives to methyl bromide for strawberry nursery and fruit production fields have inadequate herbicidal components. Once MeBr availability decreases, the need for hand weeding and its associated costs are expected to increase substantially using these chemistries unless an alternative method of weed control is available.

We are developing through genetic engineering, strawberry varieties that are tolerant to glyphosate, the active ingredient in Roundup® herbicides. This will allow the use of Roundup® for weed control in strawberry fields.

Weed control has been achieved in a number of crops through the introduction of a gene for glyphosate tolerance. Glyphosate inhibits EPSPS (enolpyruvylshikimate-phosphate synthase), a key enzyme in the aromatic amino acid pathway. The introduction of a mutant form of EPSPS that is tolerant to glyphosate has allowed field level applications of Roundup® to engineered corn, cotton, canola and soybean. We have introduced the mutant EPSPS gene into a number of strawberry cultivars, including Camarosa through Agrobacterium-mediated transformation. The plants are currently being screened for vegetative and floral tolerance to commercial levels of Roundup®.