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Agricultural Outlook Forum
U.S. Department of Agriculture

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The Safflower Co-existence Working Group

Don Emlay



Arcadia
B I O S C I E N C E S

The Safflower Co-existence Working Group

USDA 87th Agricultural Outlook Forum

GLA Safflower – What it is.

**A conventional safflower variety genetically engineered to contain
70% gamma linolenic acid (GLA)**

It is visually indistinguishable from conventional safflower in the field

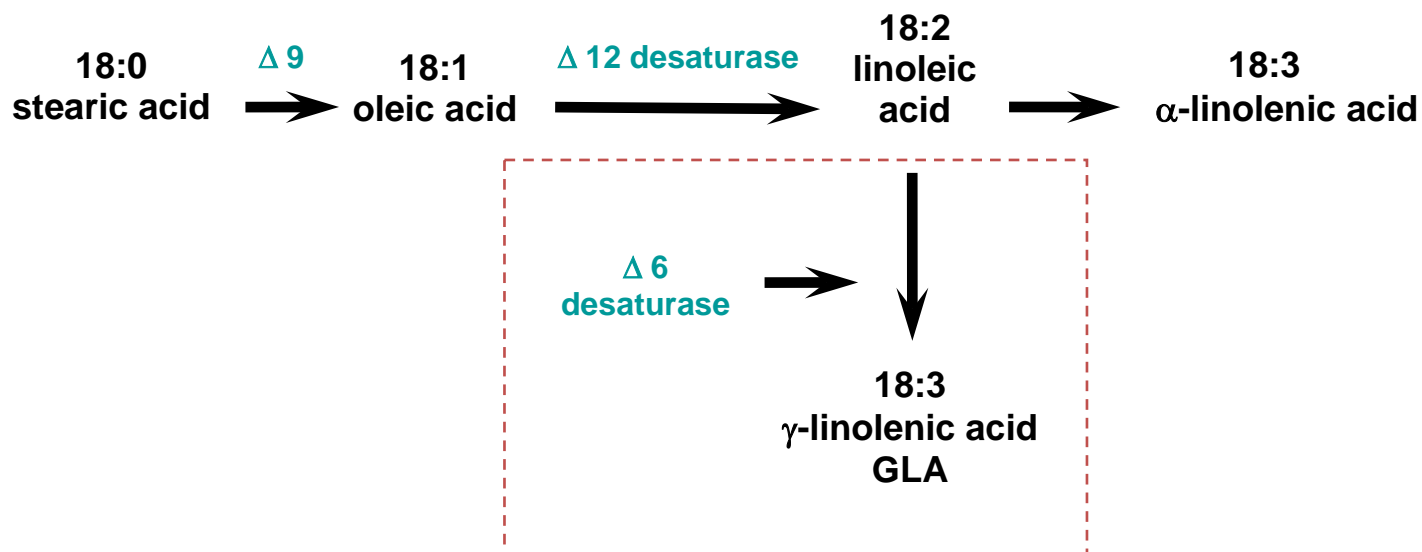
Conventional Safflower



GLA Safflower



The Genetic Engineering Part



Fatty Acid Comparison

Fatty acids (%)	Common name	SONOVA 400	Oleic Safflower Oil	Linoleic Safflower Oil
16:0	palmitic acid	7.1	5.1	7.3
18:0	stearic acid	2.1	1.9	2.7
18:1	oleic acid	35	80.3	13.4
18:2	linoleic acid	12.2	11.4	74.9
18:3 GLA	gamma-linolenic acid	41.7	0	0
18:3 ALA	alpha-linolenic acid	0.2	0	0.2
20:0	arachidic acid	0.6	0.5	0.4
20:1	gadoleic acid	0.3	0.5	0.2
22:0	behenic acid	0.4	0.4	0.3

- ④ Sold as SONOVA 400
(400 mg GLA per gram oil)
- ④ Completed the FDA New
Dietary Ingredient process
November 25, 2009
- ④ Used alone in capsules and
in blends with flaxseed
and fish oils



Why Safflower

- ④ A good starting fatty acid profile
- ④ Transformable
- ④ A minor oilseed crop
- ④ Reduced demand for safflower oil and reduced acreage over past 18 to 20 years
- ④ Safflower growers interested in an alternative

Farms and Acreage

Crop		Farms	Acres
Safflower	California	255	47,550
	USA	766	164,003
Alfalfa Hay	California	3,587	986,982
	USA	290,726	20,244,497
Corn (grain)	California	606	189,965
	USA	347,760	86,248,542

Source: USDA NASS Census of Agriculture 2007

🌱 GLA safflower is a Specialty Crop

- All growing contracted and managed by Arcadia
- Planting seed, growing, harvested grain and finished product production managed by Arcadia
- All under an Identity Preservation System
- The derived commercial product is a Dietary Supplement

The Identity Preservation System

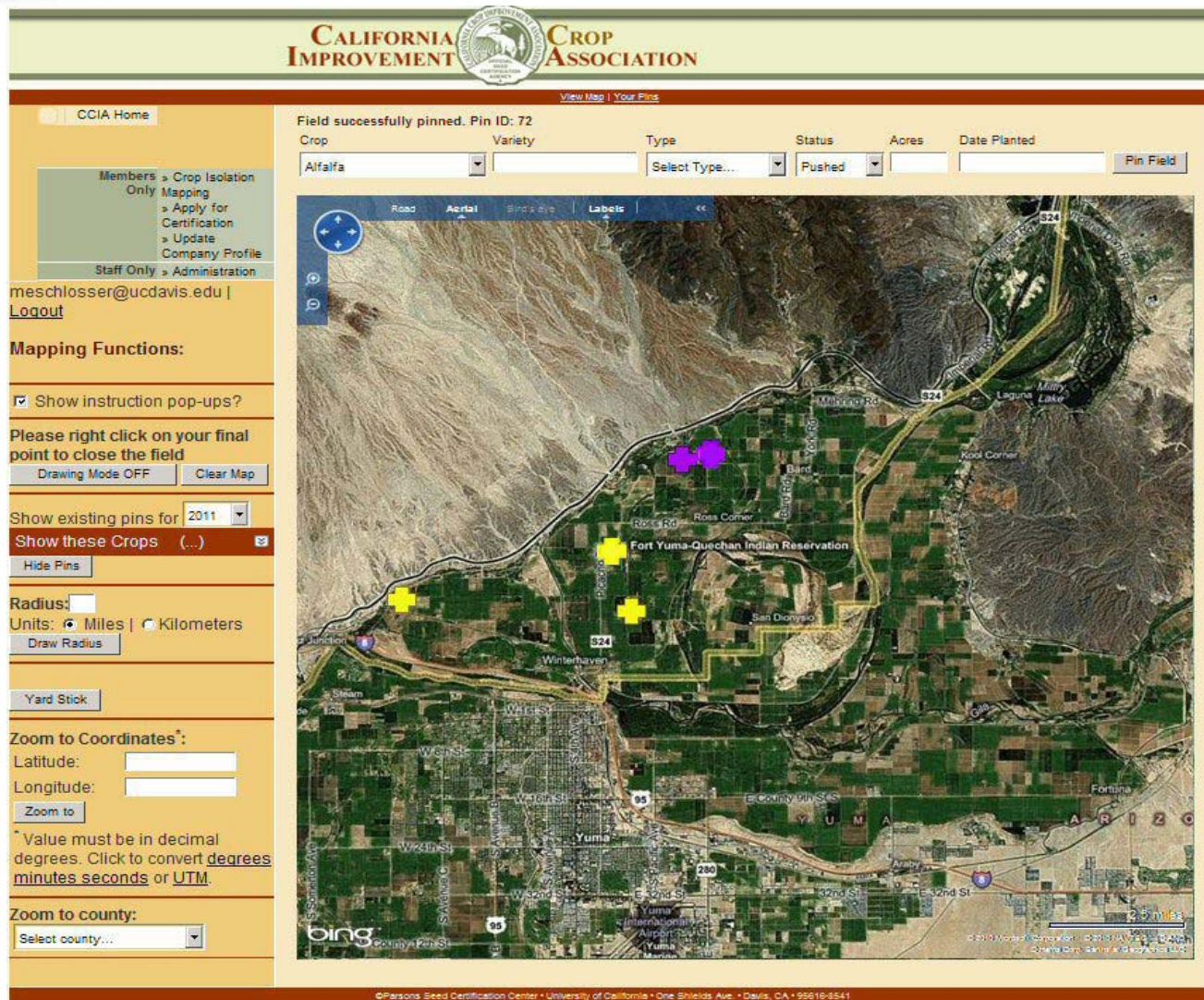
- ④ Critical Control points are identified
- ④ Standard Operating Procedures (SOP) are in place for all crop and product management activities with the focus on preventing a loss of containment
- ④ Forms are used to record actions associated with the SOPs – including confirmation of the activity and verification
- ④ Systems are audited
- ④ SOPs are modified as necessary to ensure the efficiency of the system

The SCWG - How it Came About

- ① In 2006 following a USDA Notification for field trials with GLA safflower, a California seed and oil company expressed concern about ensuring the identity of their safflower oil market
- ① Through discussions with the USDA, California safflower growers and agricultural organizations, we determined that a forum for interaction and information sharing could resolve the concerns
- ① In 2007 the Safflower Co-existence Working Group was officially formed as a sub-committee within the California Seed Association

SCWG – How it Works

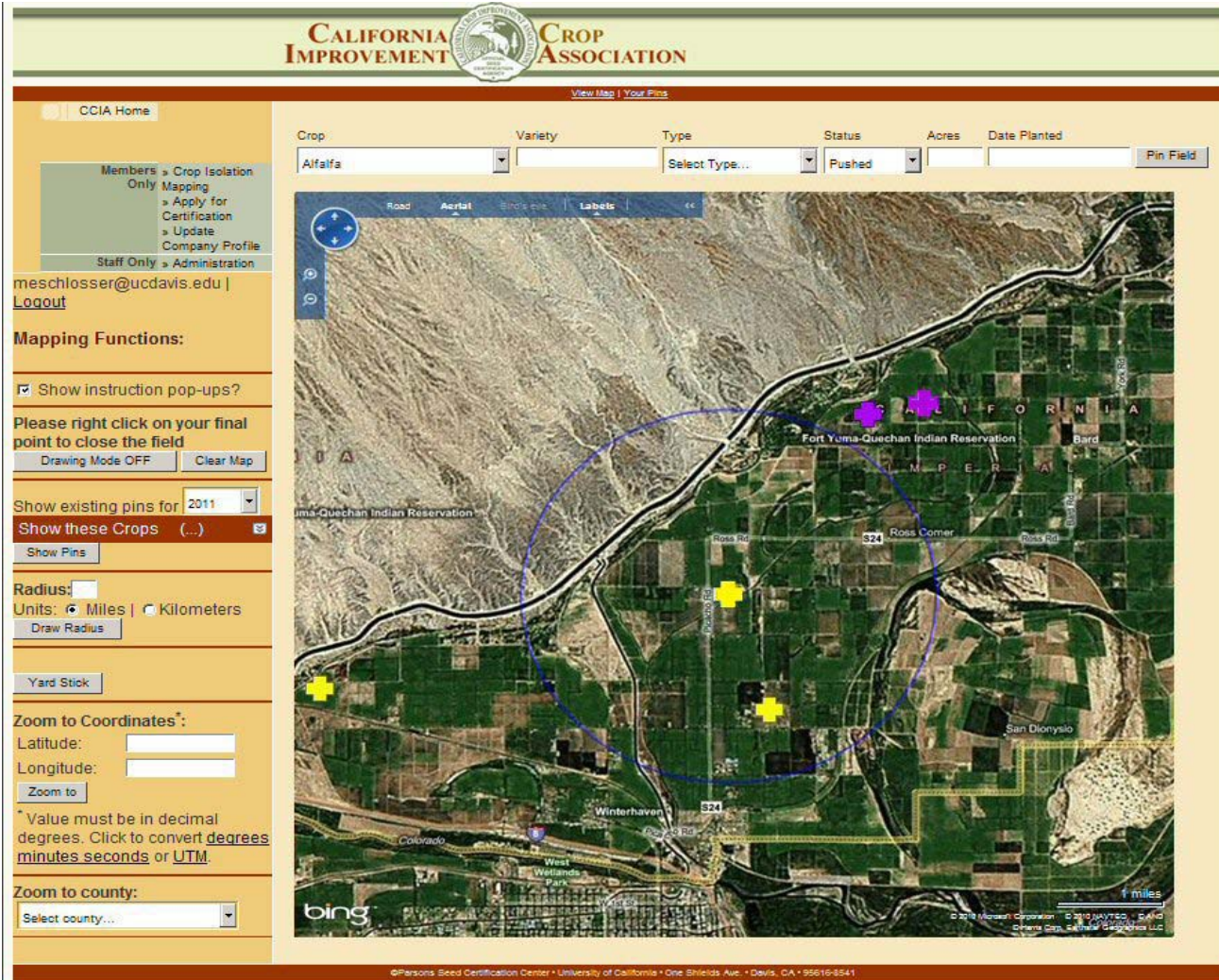
- ④ Meet as often as needed but at least annually in advance of safflower planting
- ④ Arcadia identifies all field trial and production areas and maps them through the California Crop Improvement Association “pinning” system
- ④ If there are issues or concerns about locations, these are addressed through the SCWG



All pins are displayed

YOUR pins will be yellow

Pins for Arcadia GLA Safflower are purple



The circle represents the desired Isolation Zone – 2 miles

- ④ GLA safflower is a Specialty Crop
 - All growing contracted and managed by Arcadia
 - Planting seed, growing, harvested grain and finished product production managed by Arcadia
 - All under an Identity Preservation System
- ④ A defined and controlled growing region
- ④ Processed in a facility certified for food grade vegetable oils
- ④ The derived product, SONOVA 400, is a dietary supplement with no food uses

Why Co-existence Works with Safflower

- ① Our target production area was California
- ① Safflower production is limited to a defined area
- ① A small number of growers
- ① GLA safflower is grown under Identity Preservation
- ① Contracting with growers, we can identify production locations well in advance of safflower planting time
- ① All planned GLA production locations can be mapped with the locations identified to all members of the SCWG

Where Can this Process Work?

- ④ It can be applied to smaller acreage specialty crops.
- ④ It can be used with a commodity crop during the pre-commercial stages of development.
- ④ Applied at a local or county level with the cooperation of Agricultural Commissioners, growers, farm groups and individual growers
- ④ Communication and decisions that are science based