



A SYSTEM FOR MEASURING
SUSTAINABLE PERFORMANCE
THROUGHOUT THE SPECIALTY
CROP SUPPLY CHAIN.

Stewardship Index for Specialty Crops

Tools to measure the efficacy of sustainability practices.

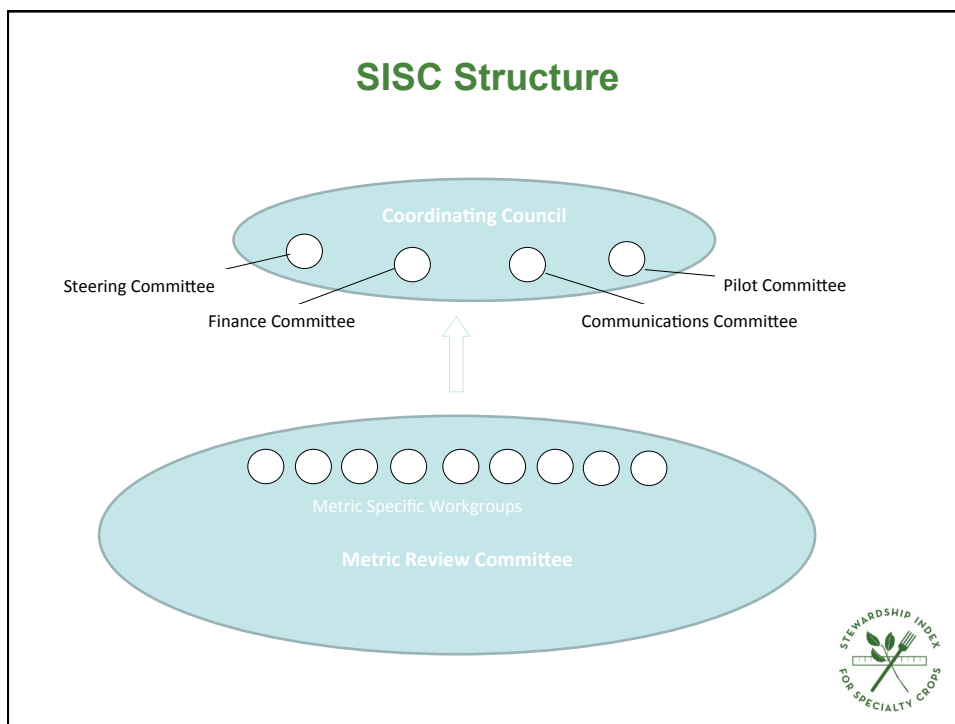
Larry Jacobs *Coordinating Council Member*
Founder: Del Cabo / Great African Food Company
International GLOBALG.A.P. Conference Abu Dhabi 2014



Stewardship Index for Specialty Crops

- Transparent **multi-stakeholder** initiative and process.
- Develop and maintain **open source** metrics to measure sustainability performance for specialty crops.
- **Outcome-focused** for growers to benchmark, compare, and communicate their own performance.
- **A yardstick** for measuring sustainable outcomes over time, **not a standard**.





Stewardship Index Coordinating Council

Growers and Grower Trade Associations

Community Alliance with Family Farmers, Jacobs Farm / Del Cabo, Farm Fresh Direct, Georgia Fruit and Vegetable Association, National Potato Council, United Fresh Produce Association, Western Growers Association

Buyers and Trade Associations

California Sustainable Winegrowing Alliance, Campbell Soup, Compass Group, Del Monte Foods, Markon Cooperative, Produce Marketing Association, Sodexo, Unilever, Wal-Mart

Environmental and Public Interest Groups

American Farmland Trust, Natural Resources Defense Council, The Nature Conservancy, Washington State University, Sustainable Conservation, The Willamette Alliance

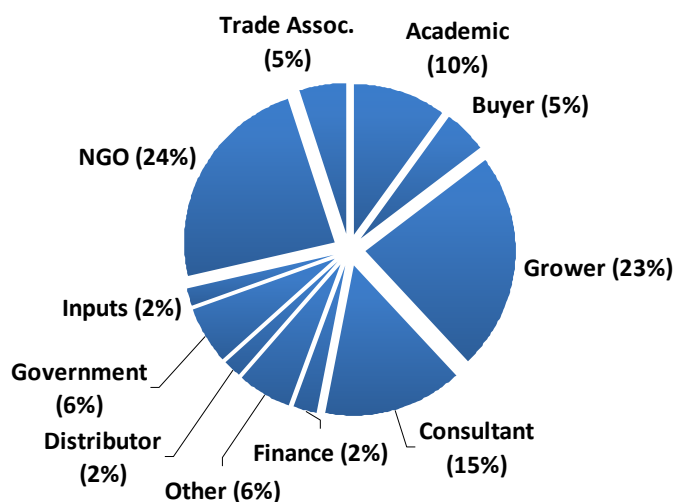


Metrics Review Committee Members

(From March, 2010 - ~425+ today)

Agriculture and Life Sciences Inst.	Defenders of Wildlife	Lodi Winegrape Commission	Synergy Integrators
American Farmland Trust	Del Monte Foods	Magnanimus Wine Group	Syngenta
Apple Leaf LLC	Delta Institute	Manomet Center for Conservation	Teamsters
ARAMARK	Dept. of Revenue and Smith Farms	Musco Family Olive Co.	Terrien Consulting (to the wine industry)
ARES - Institute for Responsible Agribusiness	Dixon Ridge Farms	National Grape Cooperative	the nature conservancy
B & B Ag Consulting	Driscolls Strawberry Associates	National Potato Council	The Organic Center
BAL Associates	E. J. Gallo Winery	Natural Logic, Inc.	The Packard Foundation
Bayar CropScience	Earthbound Farm	Natural Resources Defense Council (NRDC)	Top 10 Produce
Bon Appetit Management Co Fdn	Environment Canada	NFREC-Quincy Univ. of FL	Trillium Asset Management Corp
Business for Social Responsibility	Environmental Defense Fund	Oregon Wine Board	Tufts University
C & R Orchards	Environmental Strategy Innovations	Organization	two tons per acre
CA Dept. Food and Agriculture	FAO	Ovis and Vitis Vineyard	UC Berkeley
Cal/EPA Dept. of Pesticide Regulation	Farm Fresh Direct LLC	Pacific Southwest Container	UC Davis SAREP
California Agricultural Water Stewardship Initiative	Fetzer Vineyards	Pactiv	United Fresh Produce Association
California Association of Winegrape Growers	Food & Agriculture Organization	PeppiCo	University of California - Davis
California Farm Bureau Federation	Food Alliance	Pesticide Action Network	University of California Santa Barbara
California Grape & Tree Fruit League	Food Fundamentals	Pesticide Research Institute	University of Illinois, Urbana-Champaign
California Institute for Rural Studies	FreshSense LLC/Tastco Cooperative	Potatond Produce, L.L.C./Green Giant Fresh	University of Maine Cooperative Extension
California Institute for Rural Studies	Full Circle Connect	Prairie Ventures	University of Nebraska Lincoln
California League of Food Processors	Glades Crop Care, Inc.	Prairie View A&M University	US EPA
California Rural Legal Assistance	Global Environmental Ethics Counsel	Procacci Brothers Sales Corporation/Santa	US EPA Region 9
California Specialty Crops Council	Great Valley Center	Produce Marketing Association	US EPA Region 9 Pesticide Program
California Strawberry Commission	Green Mountain Coffee Roasters	Pulse Canada	USDA NRCS
California Sustainable Winegrowing Alliance	Green Mountain College	PureSense	USDA/CSREES
California Tomato Farmers	Green Seal	Purfresh	UW- Madison
Calvert Group, Ltd.	Grow My Profits LLC	Raemelon Farm	Wake Forest University School of Medicine
CCOF	Growers Alliance Corporation	Responsible Source	Wallace Center at Winrock International
Center for Agricultural Partnerships	H. Brooks and Company	Rio Farms	Wallendal Supply Inc
Center for Agroecology & Sustainable Food	HJ Heinz	Sambrallo Packaging	Wal-Mart Stores, Inc.
Center for Reflection, Education and Action	IFCO Systems, N.A.	Sam's Organic Acres	Walter P Rawl & Sons, INC
Central Coast Vineyard Team	International Crane Foundation	Scientific Certification Systems	Washington State Horticultural Assoc.
Cirrus Partners, LLC	International Labor Rights Forum	SGS North America Inc.	Water Stewardship, Inc.
Colorado Potato Administrative Committee	International Labor Rights Forum (ILRF)	Sodexo	Wegmans Food Markets
Community Alliance with Family Farmers	INTI	Stermit Growers	Western Growers Assn.
Constellation Wines	Investor Environmental Health Network	Sterman Masser Inc.	Wild Farm Alliance
Cooper Land Corp.	IPM Institute of North America Inc.	Sun-Maid Growers of California	Willard Bishop, LLC
Cornell University	Jacobs Farm / Del Cabo	SureHarvest	William Blackburn Consulting, Ltd.
Cranberry Institute	Just Harvest	Sustainable Food Lab	Woodland Produce
Cultivo Consulting	Karp Resources	Sustainable Harvest	World Bank
Cultural Technology	Kennedy/Jenks Consultants	Sustainable Supply Consulting	World of Good Development Organization
Curry & Company	Leonardo Academy	Sustainamatics	World Resources Institute
Davenport Orchards, Vineyards and Winery	Leopold Center for Sustainable Agriculture	SustainBlz/Global Health & Safety Initiative	World Wildlife Fund
David Katz & Associates	Liberty Fruit Co., Inc.	Sylvatica, UQAM, CIRAI	

Metrics Review Committee Groups



Pilot Participation

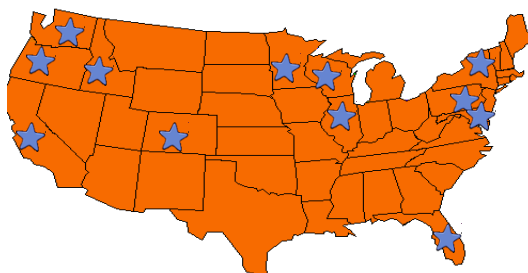
- Pilots conducted in 2010, 2012 & 2013 seasons
- 500+ growers in 23 crops in 12 states

Processing tomatoes	Fresh market tomatoes	Winegrapes
Raisin grapes	Peas	Citrus
Broccoli	Cabbage	Carrots
Leafy Greens	Green Beans	Herbs (fresh)
Onions	Potatoes	Sweet Corn
Almonds	Walnuts	Berries
Pome Fruit – Apples, Pears	Stone Fruit – Apricots, Cherries, Peaches	

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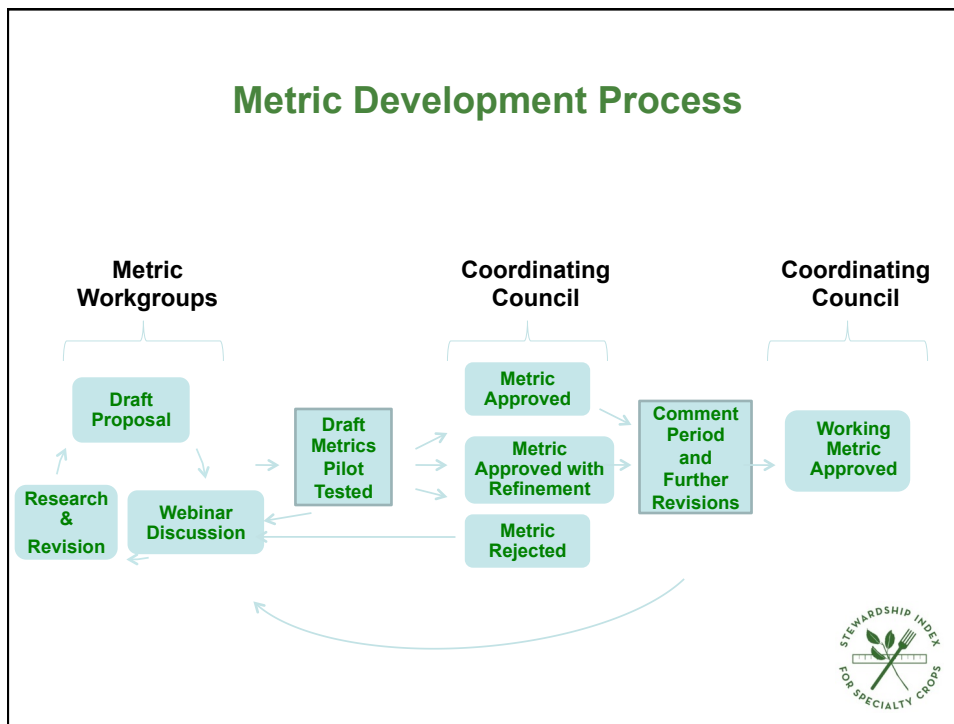
Pilot Participation - Geography



California	Oregon	Washington
Idaho	Colorado	Minnesota
Wisconsin	Illinois	New York
Pennsylvania	Florida	New Jersey

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Efficiency is a win-win for growers and environment

Version 1.0 Working Metrics developed through multi-stake holder collaborative process:

- Applied Water Use Efficiency
- Energy Use
- Nitrogen Use
- Phosphorus Use
- Soil Organic Matter

Two metrics in development:

- Biodiversity
- Greenhouse Gases

Metrics are being converted to metric units in response to The Sustainable Consortium (TSC) alignment with SISC metrics.



Applied Water Use Efficiency

Applied Water Use Efficiency is Total applied water to produce a crop divided by crop yield.

*Simple Irrigation Efficiency is planned = Water applied to crop compared to need.

Applied Water Use Efficiency	Acre-inches applied water Tons of product harvested
<p><i>Notes:</i></p> <ul style="list-style-type: none"> - Applied water: Total ground and surface water applied. - The same land area (an acre, a field of known size) should be used to quantify both acre-inches applied and tons of product harvested. - Includes all irrigation events from the end of the previous harvest to the current harvest. - For educational purposes, metric can also be presented on a per acre basis as: Acre-inches applied water/acre planted 	

Energy Use

Fuel and electricity direct energy use + Indirect energy use to produce fertilizers divided by crop yield.

Allocation Tool available for growers to determine fuel and electricity used on farms with multiple crops.

Energy Use	Total BTU Ton of product harvested
<p><i>Notes:</i></p> <ul style="list-style-type: none"> - Total BTU: Direct energy (fuel + electricity) + indirect energy (energy utilized to produce fertilizers) - Direct energy is collected on a harvest to harvest timeframe. A tool is provided to help allocate to specific crops where that is not known. - Embedded energy includes only the inputs used from the end of the previous harvest to the current harvest. - For educational purposes, metric can also be presented on a per acre basis as: Total BTU/acre planted 	



Nitrogen Use

Synthetic and organic fertilizers, nitrogen dissolved in irrigation water and fixed by leguminous crops divided by crop yield.

Nitrogen Use	<u>Pounds N added to system</u> Ton of product harvested
<p><i>Notes:</i></p> <ul style="list-style-type: none"> - <i>N inputs include:</i> - <i>N applied synthetic + N applied organic + N applied irrigation water + N fixed leguminous crops</i> - <i>Includes all fertilization events from the end of the previous harvest to the current harvest (non-cash cover crops applied to subsequent cash crop).</i> - <i>For educational purposes, metric can also be presented on a per-acre basis as:</i> Pounds N added to system /acre planted 	

Phosphorus Use

Approach different from Nitrogen because Phosphorous tends to accumulate in soils, does not move with water nor form a gas and is the amount of Phosphorous added above the amount recommended divided by crop yield.

Phosphorus Use	<u>Pounds P added – Pounds P recommended</u> Ton of product harvested
<p><i>Notes:</i></p> <ul style="list-style-type: none"> - <i>Pounds P added includes total synthetic and organic P applied</i> - <i>Pounds P recommended is the agronomic recommendation received with results of soil P test (based on P available in soil, cropping history, and production plans)</i> - <i>Includes all fertilization events from the end of the previous harvest to the current harvest.</i> - <i>For educational purposes, metric can also be presented on a per acre basis as:</i> (Pounds P added – Pounds P recommended)/acre planted 	




Soil Organic Matter

Total Organic Carbon (TOC) divided by the soil's potential to store organic carbon as modeled using USDA's Soil Management Assessment Framework (SMAF).

*Recognized need for future versions to be useable internationally.

Soil Organic Matter	Soil Organic Matter Soil Organic Matter Potential
<p>Notes:</p> <ul style="list-style-type: none"> - Soil organic matter requires lab test. Soil organic matter potential is calculated using the USDA Soil Management Assessment Framework - Multiple samples are combined by first calculating the score for each sample, then averaging scores. However, in this situation, attention should be paid to range as well as average. - Lab results for TOC should be obtained at least every five years, but may be done more frequently. 	

On-Farm Metrics & Data Elements

Water Use Applied water Crop ET	Soil & Nutrients Soil Organic Matter Nitrogen Use Phosphorous Use	Pesticides Application info Product Rate
Air Quality/Energy Equipment usage Pesticide usage Fuel & Electricity	Waste Harvest yields Waste items Waste streams	Biodiversity Vegetation types Weed cover Crop mgmt practices
Human Resources Employee hours Wages Accidents Retention	 <p>STEWARDSHIP INDEX FOR SPECIALTY CROPS</p> <p>A SYSTEM FOR MEASURING SUSTAINABLE PERFORMANCE THROUGHOUT THE SPECIALTY CROP SUPPLY CHAIN.</p>	



Envisioned Benefits

- Identify cost reduction opportunities.
- Reduce duplicative sustainable reporting systems.
- Provide data for backing marketing claims.
- Frees users to innovate best practices.
- Recognizes high performers or improvement over time – all can participate.
- Can be applied to many specialty crops.
- Highlights problems while reducing need for future regulations.



Universal Metrics For Whom

Data that can be filtered by crop and region facilitates meaningful like-to-like comparisons:

- For farmers to identify opportunities for improvement by using core set of universal metrics.
- For policy makers and NGOs concerned with resource conservation and protection a core set of universal metrics assures data integrity to guide policies and decisions.
- For buyers concerned with the sustainability of who their products are produced by using the same yardstick to measure sustainable practices and improvement.





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Questions?

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