

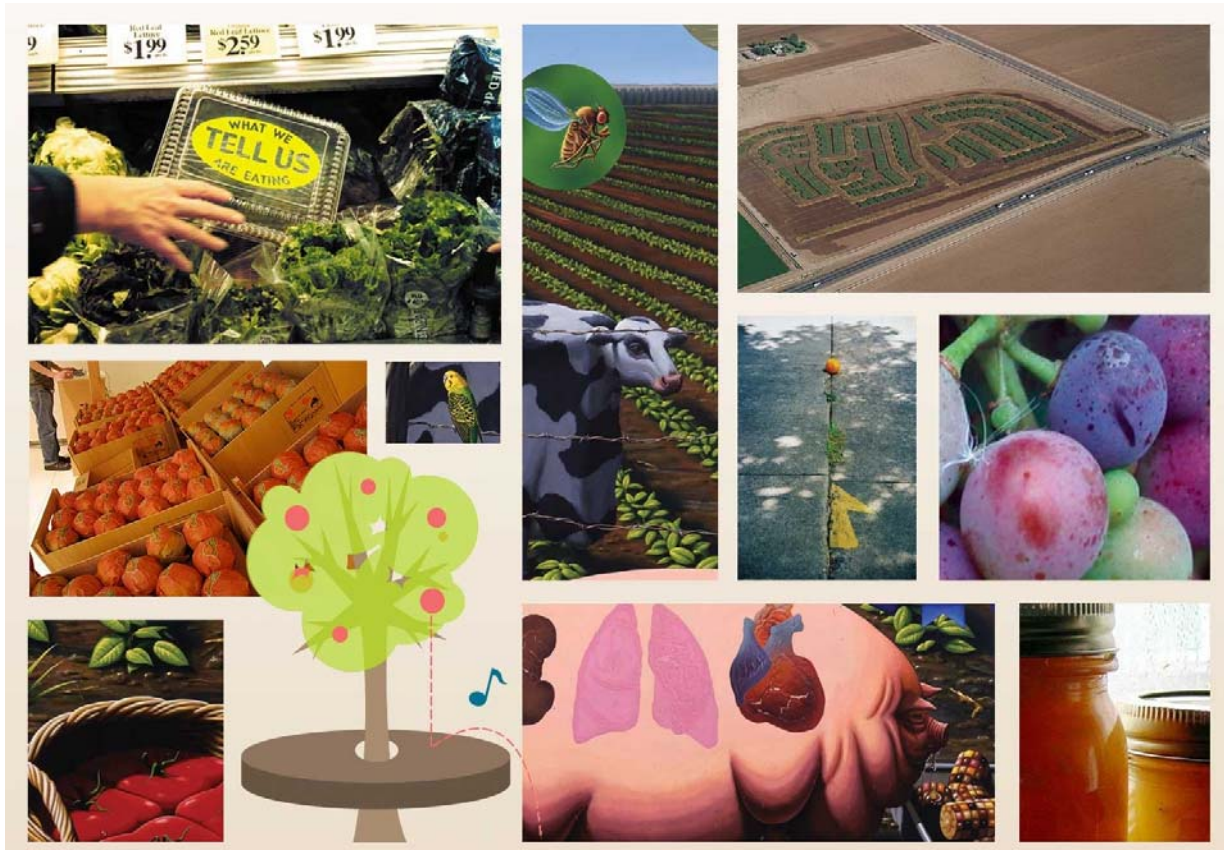


MUSEUM & SCHOOLS PROGRAM

EDUCATOR GUIDE
Kindergarten-Grade 12

HYBRID FIELDS

September 16 – December 31, 2006



Museums & Schools program sponsored in part by:



FOR MORE INFORMATION ABOUT THE EXHIBITION OR EDUCATION PROGRAMS PLEASE CONTACT:

Maureen Cecil, Education & Visitor Services Coordinator:
707-579-1500 x 8 or mcecil@sonomacountymuseum.org

Hours:

Open Wednesday through Sunday 11:00 a.m. to 5:00 p.m.

Admission:

\$5 General Admission

\$2 Students, Seniors, Disabled

Free for children 12 and under

Free for Museum members

The Museum offers free tours to school groups. Please call for more information.

SONOMA COUNTY MUSEUM
425 Seventh Street, Santa Rosa CA 95401
T. 707-579-1500 F. 707-579-4849
www.sonomacountymuseum.org

INTRODUCTION

Hybrid Fields explores our food system through the eyes & minds of 13 artists & collaboratives broaching such topics as genetic engineering, unharvested fruits, how food is grown & where, as well as the general disassociation how food arrives at our table. California Content Standards associated with this exhibition: science – biology, nutrition, geology; history; art. In association with *Hybrid Fields* in the History Gallery is *Fields of Change* an exhibition looking at transitions in Sonoma County agriculture, including farm implements, a map of Luther Burbank’s Experiment Farm in Sebastopol and recent oral histories of Sonoma County Farmers interviewed by local historian and author Gaye LeBaron.

EXHIBITION TEXT

HYBRID FIELDS

16 September–31 December 2006

The Sonoma County Museum is proud to present *Hybrid Fields*, a group exhibition of contemporary artists exploring our food system, in the Main Gallery. This exhibition is a survey of artworks that examine, interpret, and actively engage questions relating to food cultivation, distribution, and consumption. Many of the works were created specifically for this exhibition and reflect the rich resources and the current issues of agriculture in Sonoma County.

In conjunction with *Hybrid Fields*, in the Contemporary Project Space, artists Shada/Jahn—Steve Shada and Marisa Jahn—have created a lyrical installation entitled *Swan Song*, which complements the more informational and sociopolitical content of the works in the main gallery.

And, in the History Gallery upstairs, the Museum features the exhibition *Fields of Change*, highlighting objects, stories, and images of Sonoma County’s agricultural past from the Museum’s Permanent Collection, to provide an opportunity to consider important transitions.

To coordinate these exhibitions, the Museum has joined with a number of local organizations and individuals, including food and land preservation interest groups, wineries, breweries, farmers, and historians. The Museum is grateful to have had the opportunity to work with these partners.

Special thanks go to Museum staff members Patricia Watts, Chief Curator; Eric Stanley, Exhibitions Manager and Historical Collections Curator; and Maureen Cecil, Visitor Services and Education Coordinator.

This exhibition has been generously supported by American Ag Credit, Clover Stornetta Farms; and partially sponsored by Organic Valley Family of Farms.

The Museum would like to thank the following people, businesses, and organizations that have participated to make *Hybrid Fields* possible: AD-Vantage Marketing; Ag Innovations Network; Benziger Family Winery; Beyond the Dream LLC; Bodega Goat Cheese; California Recreation and Parks Department, Sunflower Garden; Center for Tactical Magic; City of Santa Rosa; Colorfolio; Community Foundation, Sonoma County; Community Media Center; Stan Denner; DoEAT; Earth Keeper Produce; Farm Trails; Full Circle Bakery; Gaye LeBaron; GreenMuseum.org; Inkworks Press, Berkeley; Jimtown; KRCB *Mouthful* and *Sonoma Spotlight*; Sue Labouvie; Laloo’s Goat Milk Ice Cream; Leadership Institute for Ecology and the Economy; Lily Films; Luther Burbank Experiment Farm; Love Farms; Meadowsweet Dairy; New College, Ecological Agriculture; *North Bay Bohemian*; Pacific Market; *Plenty* magazine; Dan Markwyn; Occidental Arts and Ecology Center; Preston Vineyard; Quetzal Farms; Russian River Brewery Company; Santa Rosa 4-H; Santa Rosa Junior College Ag Department, Culinary Arts Program, and Shone Farm; SIGN-A-RAMA; Slow Food Sonoma County; Slow Food Russian River; Sonoma County Agricultural Preservation and Open Space District; Sonoma State University Art Department; Sonoma Sparkler; Sotoyome Resource Conservation District; Soyabean Design; Terra Sávia; The LAB, San Francisco; The Beverage People; *The Press Democrat*; Videobrite; Cairenn and Che Voight; Bev Wasson; Wild Hog Vineyard; and XLPrints, San Jose.

HYBRID FIELDS 16 september through 31 december 2006

Alexis Rockman

Carol Selter

Christy Rupp

Free Soil

Free Fruit/Fruta Gratis

JohnKo Systems Unlimited/Old World

Innovations

Laura Parker

Matthew Moore

Rachel Major

Shada/Jahn

Susan Leibovitz Steinman

Temescal Amity Works

Wowhaus

Hybrid Fields is a group exhibition of thirteen contemporary artists and collaboratives, including eight projects that are site-specific. These artists are creating socially engaged art that inhabits a hybrid space where art and life, art and agriculture, converge. Sonoma County is a unique agricultural community supporting small farmers who have raised livestock and a multitude of crops through the years, including apples, hops, prunes, and, increasingly, grapes. As new technologies expand the capacity for producing more food, faster, through mechanization, hybridization, and genetic engineering, questions are being raised as to the environmental and social impact of such practices. The artists in *Hybrid Fields* incorporate humor, metaphor, research, fictive narrative, and intervention to create an expanded context for contemplating how far food travels from the field to the supermarket, the waste of unharvested crops, the conversion of farmland for housing, and the lack of biodiversity that commercial farming brings. Their art creates a context for considering the political and cultural implications of agricultural transformations and, in some cases, provides research-based information that is not likely to be considered in our daily transactions as consumers.

Patricia Watts, Chief Curator

Interventionists

Art made to attach to buildings or to be given away? Edible art for demonstrations or art that appears as a booth at a trade show? This is the art of the interventionists, who trespass into the everyday world to raise our awareness of injustice and other social problems.

—Nato Thompson, curator of *The Interventionist*, MassMOCA, 2004

Many of the works in *Hybrid Fields* are considered to be interventionist by design. They are not meant to last, and what counts is the experience, not the finished product. On this wall you will find four examples of interventionist public artworks created for this exhibition that are sited outside the Museum. They cross over into the “real” world as art that invites public discourse by addressing how food is grown, how food is distributed, and how food is consumed. Two of these works are living sites, where an urban apple orchard and a crop of hops were planted to transform the current environment—both to educate and to inspire new possibilities for growing food. The others are a series of actions and an event performed to socially engage the audience and raise awareness of what is wasted and what is consumed in the food cycle.

Can you find other interventionist works on display inside the Museum?

FRUIT, Sonoma Preserves, New Labels for Genetically Engineered Foods, MEEP, Soil Bar

Agriculture, once the backbone of American existence, may soon turn out to be the cutting edge of scientific development, in order to feed our growing society. Yet it is in this growth where the traditions of the past can be soon forgotten and considered obsolete.



Matthew Moore
GREEN ROOF

Arizona artist and farmer Matthew Moore, a fourth-generation farmer, is the last person in his family to practice farming. The words progress and development create a conflict, which he seeks to resolve through his art. In the installation entitled **Green Roof**, located on top of the green building on the west side of the Museum, Moore is growing hops—the very crop that Sonoma County once depended upon to sustain its growth. Moore states, “These roofs now endanger all of the agricultural practices of the past.”

As housing demands increase, agricultural lands become the new urban frontier. Green Roof is an artistic statement and a practical demonstration of the level of ingenuity Moore feels will be necessary to feed our families as agricultural lands diminish. This intervention invites the public to question how we will grow food in the future. Green Roof is a public display consisting of a custom trellising system that mimics a pitched A-frame roofline with ten large Dutch buckets, in which hops grow hydroponically on an adapted run-to-waste irrigation system.

Although the work was created with permission from the Museum, many may wonder, is it art? Moore’s Green Roof challenges the expectations of traditional art, expanding the praxis to create an unconventional public artwork at an unconventional site.

Propagating and preserving the wild is an act of faith and a testimonial to the beauty, urgency, and utter pragmatism of biodiversity.



Susan Leibovitz Steinman
SWEET SURVIVAL
Urban Apple Orchard II

Susan Leibovitz Steinman constructs urban gardens using recycled materials and invites collaborations with community members and organizations. For Hybrid Fields she envisioned an apple orchard sited outside the Museum entrance. Entitled Sweet Survival, this site-specific work honors a prominent Sonoma County crop that has succeeded over millennia, largely due to its sweetness. On the Museum grounds, five commercially grafted apple trees, mulched with pink quartz, are surrounded by nitrogen fixing wintergreens and planted in a salvaged-door pentagon planter. The design refers to every apple’s interior five-pointed star, its five seed chambers. The exterior landscape mimics a native grass fieldstone meadow.

Sweet Survival is a demonstration for educating passersby and Museum visitors about the genetically diverse seeds that one tree can grow. Steinman invites the public to collect seeds at Museum tasting events,

which she has arranged for local organizations to propagate. The wild saplings that grow from these seeds will be added to the Museum orchard next spring. All trees will be donated locally when the artwork is dismantled.

Sweet Survival is a temporary installation scheduled through 2007.

Collaborators: Susan Getty, "Artist as Citizen" intern from the University of San Francisco; Jim Porter and Sarah Frieberg, Sonoma State University Art Department; Heidi Herrmann and students of the Santa Rosa Junior College Sustainable Agriculture Program; Wendy Krupnick from Santa Rosa Junior College Robert Shone Farm.

With special thanks for apples and apple expertise to: Steve Fowler, Farm Curator, Gold Ridge, Luther Burbank Experiment Farm; David Ulmer, California Rare Fruit Growers, Redwood Empire Chapter; Ben Hurst, Twin Hill Ranch; Larry Stroud; and Terry and Carolyn Harrison.

In a land fertile with possibilities, people are going hungry while produce is left rotting on the ground, or imported from around the world.



Free Fruit/Fruta Gratis
land . . . fruit . . . nourishment . . . community five sites/five actions

Free Fruit/Fruta Gratis is an ongoing collaboration between Pam Bolton and Cindy Cleary, two Sonoma County artists passionate about the co-creative relationship of art and life. Their work is performed outdoors, where they collect locally grown fruit from underutilized rural orchards and backyard trees, and distribute it to urban neighborhoods, where the fruit can be picked up free. At five sites, they perform five actions, marking the sidewalks with an arrow, which leads local residents to the gifts. With these actions they investigate the sociopolitical environment of agriculture. The artists want to know: In an area ripe with produce and fruit, why are people going hungry? How can we regain the sense of nourishment our

communities have lost? What is the relationship between a diverse urban neighborhood and its agricultural surrounds and history?

These actions are designed to trigger curiosity, creativity, and additional acts of generosity in the public realm. The artists position their work somewhere between the realities and the contradictions inherent in the changing agricultural policies of Sonoma County. Free Fruit is an artistic intervention that provides communities a visual and physical metaphor; it is also a potential catalyst for inventing new ways of addressing land use, food, and community.

Gathering at the table we share more than a meal – we share our stories, our struggles, our laughter, ourselves.



WOWHAUS
Tree Trust True

The words trust and true have common linguistic roots in the word tree; this project aims to demonstrate the perennial virtues of tree culture in contemporary life.

Wowhaus, a collaboration between Scott Constable and Ene Osteraas-Constable, intervenes in the public realm, at the interstices of art and design, with *Tree Trust True*. A wind-fallen tree from the artists' property in Sonoma County is transformed into a banquet table and sited on the Museum's east sculpture lawn. Its presence invites the public to relate to the tree table as both a work of art and a site for consumption. During the exhibition, a scheduled feast will take place in which participants are invited to experience a tasting of fruits from local trees. This is performed as a celebration of abundance during the harvest season in Sonoma County—a social interaction or ephemeral event leading to convivial exchange.

A sharing of food and stories, *Tree Trust True* engages members of the public in a social context while educating them about the local bioregion. This intervention asks that its participants examine how much of the day is spent convening with family and friends, sharing a meal and conversation.

IN THE MAIN GALLERY

The horse is already out of the barn, so to speak . . .



Alexis Rockman
The Farm, 2000

Rockman visualizes the hopes and commonly held fears about scientific progress and the wide-ranging effects of human intervention on animal species, ecosystems, and the natural world. In his painting *The Farm*, he explores the iconography of agriculture. The work is devoid of humans, but the anxiety of human influence can be felt everywhere. Past, present, and future states are threaded together here with barbed wire, woven baskets, and DNA. Geometry is a metaphor for agriculture, light for knowledge. Taking cues from the history of the domestication of the pig, the cow, and the chicken, *The Farm* shows how the bodies of these

animals have been—and may one day be—transformed to suit our aesthetic, medical, and gastronomic needs. The flora and fauna of this farm are easily recognizable. They are, at the same time, on the brink of losing their ancestral identities.

The Farm was reproduced for *Hybrid Fields*, with permission granted to the Sonoma County Museum by the artist. It was previously reproduced on an electronic billboard at the corner of Lafayette and Houston streets in New York City in 2000.

Alexis Rockman is a New York–based painter who works on a very large scale and addresses the effects of global warming and biotechnology and their impact on the history and futures of species. He is interested in the history of the representation of nature.

Plants are thought to have evolved fruits in concert with seed-dispersing animals. The animals get to eat the highly nutritious flesh of the fruit, and the plants get to have their seeds deposited (with fertilizer) in new locations. Both parties benefit.



Carol Selter
Fruition, 2006

Included in a larger series entitled *Garden*, *Fruition* is a photographic documentation of plants from food gardens, as they flower and fruit during the culmination of their life cycles. This documentation was created to reveal how a garden can be thought of as a model for the formation of complex dynamical systems by self-organization, resulting in something greater than its group of parts, a *community* of interdependent organisms. Selter photographs plants, insects, fungi, snails, and mites, which are

printed on tiles and placed in a grid to model the players in an ecological system. The installation evokes the idea of home, where the basic functions of eating, drinking, and cleaning also symbolize the order of maintenance on which all life depends in the biological community—the garden as home.

Carol Selter is a photographer from Santa Cruz, California, who has worked for several years as a botany technician. She holds undergraduate and graduate degrees in botany and an MFA in photography from San Jose State University. She is interested in interactions among all organisms.

The science of genetic engineering has changed everything. From now on we'll never know if things we eat are formed from generations of nature's success stories, or a nightmare from a dark closet.



Christy Rupp
New Labels for Genetically Engineered Foods, 2000–01

Currently the federal government does not require the labeling of genetically engineered foods. And increasingly, some USDA Organic-labeled crops are becoming contaminated with genetically modified organisms through cross-pollination. In her series to address this issue, Christy Rupp, acting as an advertising consultant for a fictitious multinational corporation, produces trial balloons for food containers to increase consumer awareness. These anxiety-

producing slogans include: Tell Us What We Are Eating, Genetically Engineered for Your Enjoyment, Greed Beans, This Product Lacks Genetic Diversity, Species Barrier Breakthrough, Stop and Frisk, Tamper Evident Farms, Ignorance Is Bliss Brand, Engineered by Experts to Feed a Hungry Swarm. This corporate branding effort reveals a deep preoccupation with the human need to control nature.

Over the last twenty years, Christy Rupp has addressed the industrial food complex in her art. In 1986 she created a sculpture of a large ear of corn being dragged against traffic in midtown Manhattan. This work, which acknowledged the struggle for food security, was funded by the Public Art Fund. For more information, go to: www.christyrupp.com

When we buy an orange, we are buying much more than the fruit that sits in our hand. The social space that an orange represents links us to labor conditions, environmental impact, global politics, and beyond.



Free Soil: Amy Franceschini

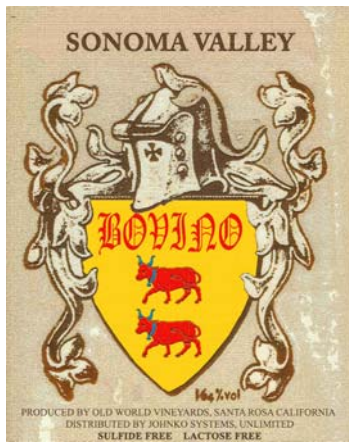
FRUIT, 2006

FRUIT (Fossils of Rural Urban Illusionists Transportation—an open acronym), is an ongoing project that examines current food systems, making visible the production cycle of food we consume. A re-created fruit stand with fake oranges is presented in an art

installation, which provides a context to explore the complex relationships that make up the local and global food systems. Fruit wrappers with graphically illustrated information depicting Sonoma County's agricultural landscape are offered to the public to take away. The goal is that consumers be conscious of the entire life of a product, from production to utilization—not just conscious of what they see in the stores. Every phase of a product's life influences the environment and us. Additional information can be accessed via an online Visible Food campaign.

Free Soil is a collaborative group of artists, activists, researchers, and gardeners with a shared interest in projects that reveal social, political, cultural, and environmental relationships. For more information, go to: <http://www.free-soil.org/fruit>

... blurring the line between scientific fact and fiction by creating realistic, yet false technologies that the typical individual, inundated by the implausible in this information age, has trouble distinguishing from the fantastic advances that occur daily.



JohnKo Systems Unlimited/Old World Innovations
The Sonoma County Mammalian Enology Experimental Pasturelands (MEEP), 2006

Artists John Colle Rogers and Mariel Triggs employ humor as a strategy for addressing agricultural decisions that can shape the future of farming. To examine the current dilemma in Sonoma County of preserving biodiversity in farming, they have envisioned a unique solution that combines both the need for growing grapes for wine production, and the need to preserve lands for livestock farming. They present fictionalized research, staged as a business enterprise, on the lost art of Mouvinte, the wine of the cow, and the Legend of Bovino (dated to the 1100s) from France. Their goal is to resurrect the art of

bovine enology by proposing Sonoma County as an agro-industrial beta testing zone for wine producing cattle (WPC). This humorous and satiric work pokes fun at the possible extremes to which technology can take us, yet it is romantically engaged with the farming traditions of the past.

This proposal does not involve genetic modification but, instead, involves a holistically based process of tendency alteration.

Oakland-based JohnKo Systems Unlimited and Old World Innovations (OWI) intend to pull your leg with a barrage of facts and humor. For more information on these artists, scientists, and sociologists who weave together fact, fiction, and humor to create surreal social satire, go to: www.johnko.biz and www.owiowi.com

Am I expected to eat dirt?



Laura Parker
Taste of Place, 2006

Taste of Place is an art installation that includes a soil bar. Using the metaphor of wine, the participants draw connections from the soil to the food grown in it. At scheduled tastings, the soils of several Sonoma County farms will be juxtaposed with the products grown in them, identifying the individual taste of place (or *terroir*) that each farm embodies. Shelves behind the bar hold wineglasses of soil from previous tastings, showing the diversity of Sonoma County land. Glasses from the various tastings continue to be added to the shelves as more farms and their soils are featured. The taste of Sonoma County is different from the taste of any other place. The concept of *terroir* is quickly being lost in the rapid globalization of agriculture.

Laura Parker is a San Francisco–based artist who also lives part-time in Sonoma County. Her work promotes the farmer as artist and food as art. *Taste of Place* will travel to venues in Australia and France in 2007–08.

When we address food issues from a psychological perspective, meat conjures a range of responses. In its raw form, the muscles from an animal are both repulsive and beautiful.



Rachel Major
Raw, 2006

Although many people eat meat, most have not raised animals for food, nor have they toured a slaughterhouse. Typically, raw meat is purchased in sleek packaging in grocery stores, completely disassociated from the process through which it has traveled to the supermarket. In *Raw*, Rachel Major presents fuzzy abstracted meats placed on shelving, including “Stuffed Pig’s Leg,” “Pork Loin,” and “Turkey Leg,” conceptually simulating a meat market or play room, and transforming these objects depicting raw cuts into something other than what they actually are—toys. Children play with their food for fun, when they are bored or uninterested in eating. Objectifying our food is a social dynamic in which we compartmentalize our thoughts and feelings, in order to distance ourselves from any emotions that connect us to what we consume. Whether due to some unconscious repulsion or sympathy toward the animal, eating meat can evoke a mixed response of attraction and repulsion.

San Francisco artist Rachel Major focuses on food and food issues, culture, and traditions, as well as the social implications surrounding food.

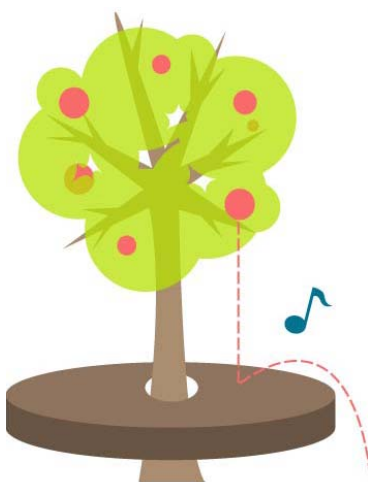
Based, as they are, upon conditions of momentary bounty and surplus . . .



Susanne Cockrell and Ted Purves (Temescal Amity Works)
Sonoma County Preserve, 2006

How do systems of art and cultural production overlay and amplify local experience and traditions? This project asks questions about the nature of people and place as seen through social economy, history, and local ecology. Artists Susanne Cockrell and Ted Purves exhibit home-preserved foods—ranging from jams and pickles to vinegars and salmon jerky—grown, foraged, or hunted, and submitted to the Museum by residents of Sonoma County. Participation is free and will be solicited across the county through newspaper advertisements, email lists, and flyers. The project will culminate in an award ceremony, where the winner will be awarded a cash prize, and the preserve will be accessioned into the Museum’s permanent collection, along with a portrait of its creator.

Susanne Cockrell and Ted Purves of Temescal Amity Works, a three-year project sited in Oakland, California, together create social art projects that investigate the overlay of urban and rural systems upon the lives of specific communities. For more information, go to: www.amityworks.org/scpreserves.html



CONTEMPORARY PROJECT SPACE

Shada/Jahn (Steve Shada and Marisa Jahn)
Swan Song

In conjunction with *Hybrid Fields*
16 September–31 December 2006

Swan Song is a reference to an ancient belief that the mute swan (*Cygnus olor*) while completely mute during its life span, may sing one heartbreakingly beautiful song just before it dies. In contrast to the final dramatics of the mythic mute swan is the silent loss of the fruit that falls from many trees that go unharvested each year in regions of abundance.

Referencing the swan myth, Shada/Jahn created a large percussive musical instrument that wraps around the trunk of a tree—rendering audible the sound of falling fruit. Visitors to this installation are invited to sit and witness the ripening of the fruit as an event, to reflect on the passage of time and on cycles of growth. The inevitable questions—Will the fruit fall while I’m sitting here? Will anything happen?—ultimately invite us to consider our desire for fulfillment. Within the context of *Hybrid Fields*, *Swan Song* reminds us of the way we shape, alter, and hybridize the landscape around us to meet our expectations.

Special thanks to Tom Burchell of Burchell Nursery, and Brian Eby of Eby Alterations.

IN-GALLERY INTERACTIONS/QUESTIONS

Alexis Rockman, *The Farm*, 2005

After viewing *The Farm* students invent a new kind of animal that is from some new (imagined) technology that will yield a desired product (ready made chicken nuggets, a dog that dispenses potato chips).

http://www.viewingspace.com/genetics_culture/pages_genetics_culture/gc_w02/gc_w02_rockman.htm

Carol Selter, *Fruition*, 2006

Students choose one tile and explain why they like it/relate to it. What stage in the life cycle is the plant? How do you know? <http://www.sfsu.edu/~gallery/eco/Selter.htm>

Christy Rupp, *Read the Label*, 2005 <http://www.christyrupp.com>

Students choose one label and explain its meaning.

Free Soil, F.R.U.I.T. ongoing project <http://www.free-soil.org/fruit>

Students read a wrapper from the installation. Ask students to recite information of interest to them. What is the underlying message?

Free Fruit/Fruta Gratis ongoing project

Ask the students how often they eat fruit, discuss why eating fruit is important & why some people do not have access to fresh fruit. Have students come up with some reasons.

JohnKo Systems Unlimited/Old World Innovations *MEEP* <http://www.johnko.biz> and <http://www.owiwi.com>

What would be another way that we could help protect farmland, orchards, or ranches?

Laura Parker, *Soil Bar*, 2006

How many different types of soil are in Sonoma County? What color is the soil where you live?

Matthew Moore, *Green Roof*, 2006 <http://www.urbanplough.com>

Students view *Green Roof* and discuss what types of foods or plants to grow & what new places can we grow them. Ask students: Do you think food tastes different grown in water versus grown in soil?

Rachel Major, *Raw*, 2006

After viewing *Raw* students discuss their experiences with raw meat. How do they view raw meat? Where have you seen raw meat before? Did you know that meat is the flesh of another animal?

Shada/Jahn *Swan Song*, 2006 <http://www.mucketymuck.org>

Have students sit and watch the tree for 30 seconds to 1 minute. Then ask the group what observations they made (it can be about the room, the tree, the artwork, anything).

Susan Leibovitz Steinman, *Sweet Survival*, 2006 <http://www.steinmanstudio.com>

Ask students what their favorite apple product is – applesauce, apple pie, apple butter, dried apple rings, etc. Do you know which type of apple is best for that product? How many different apple varieties are grown in Sonoma County? How many of them can you name?

Temescal Amity Works *Sonoma County Preserve*, 2006 <http://www.amityworks.org/scpreserves.html>

Ask students what preserve they use at home. Do they know someone who makes preserves? If so what food do they preserve?

Wowhaus, *Tree Trust True*, 2006 <http://www.thewowhaus.com>

Student view *Tree Trust True* then share or write their initial reactions to the piece. If they were to create a feast using only foods from trees what would be on the menu?



FIELDS OF CHANGE

Agricultural Selections from the Permanent Collection

Agriculture is intimately tied to how Sonoma County is defined, and today we look with apprehension at certain changes threatening the character of this region—from population growth and urban sprawl, to the decline of historic crops like apples. In retrospect, however, many crops have come and gone, and change has been a constant. The first important cash crop in Sonoma County was potatoes, hastily planted in 1850 to feed the sudden demand from a

multitude of gold seekers—a quick hit, meant to exploit an instant market. Potato cultivation would last several years, but soon other crops were under way as the markets shifted.

Fields of Change highlights objects, stories, and images of Sonoma County's agricultural history from the Museum's collection and provides an opportunity to consider the important changes of the past. Referencing products such as hay, hops, prunes, cattle, and wine grapes, to name a few, the Sonoma County Museum's permanent collection reflects the long, diverse history of county agriculture. The collection includes oral histories from some of those who have owned, operated, or worked the land, collected by local historian Gaye LeBaron.



The Farmers' Story

Sonoma County's coastal valleys were settled in the 1840s and '50s by people who came mostly from Missouri, Kentucky, and Tennessee. They were frontiersmen, and even after the discovery of precious metal in the Mother Lode, they knew that the land was their gold.

Hordes of hungry miners, rushing into northern California, created an immediate need for

commercial agriculture. By the middle of the 1850s, Sonoma County was supplying food for a San Francisco market that could barely meet the growing demand of the population explosion. Crop followed crop: potatoes, grain for the dairy herds, hops, wine grapes, apples, prunes, cherries, berries, and walnuts. Farmers prospered. The story of the growth of the communities of Sonoma County is a story of farmers in a fertile, virgin land.

The legacy of the early farmer has continued in the work of numerous local ranchers and growers, past and present. Their perspective is captured in video histories created by the Community Media Center for the Sonoma County Museum, funded by donations to the Community Foundation of Sonoma County.



Hops

Amasa Bushnell and Otis Allen introduced hops to Sonoma County in 1858. Within a few years, hops generated over a million dollars annually in Sonoma County. During the boom times, particularly the early 1880s, Santa Rosa was a national leader in hop production.

Perhaps more than other crops, the hop harvest had social significance. Because hops are extremely perishable, there is only a brief window for bringing in the crop. This urgency inspired a unique sensibility, and by the end of the nineteenth century, the harvest was a competitive sport, with pickers literally racing one another. Hop

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HYBRID FIELDS

pickers crossed a wide segment of society. Over the years, harvests drew Pomo Indians, Chinese contract workers from San Francisco, Japanese workers from Hawaii, Dust Bowl refugees, housewives, high school students, and entire families into a unique blend of labor and social interaction.

Several factors led to the demise of county hop production in the twentieth century. Prohibition hurt the local market. Prices recovered during World War II but declined again, partly due to changing tastes that favored lighter beers made without hops. A hop-harvesting machine, invented by a Santa Rosa grower in 1939, encouraged a shift to larger operations outside Sonoma County. Finally, root rot and soil problems, exacerbated by new irrigation practices used after World War II, hastened the end of the industry. The last Sonoma County crop was harvested in 1961.

Burbank's Methods

For thousands of years farmers have employed techniques like grafting, cross-fertilization, and selection to improve crops. Luther Burbank, one of history's most prolific horticulturalists, took this well-established agrarian know-how and transformed it into something new.

The son of a New England farmer, Burbank made his way to California in 1875. He settled in Santa Rosa and established himself as a plant breeder and nurseryman. Burbank built his business, developing a prodigious number of new fruits and flowers and improving countless other plant stocks for cultivation. He eventually achieved international fame.

Employing what he described as intuition, Burbank accelerated and guided the natural processes of evolution by selecting and cross-fertilizing plants with desirable traits. It was the scope of his work that set him apart. Burbank imported plant varieties from all over the world and imposed environmental changes to maximize possible plant variations; he also used time- and space-saving techniques that allowed him to experiment on a larger scale than other breeders. To the ancient arts of plant manipulation, Burbank added an industrial sensibility. In essence, Burbank's work represented a melding of the age-old practices of the farmer with a new era of agriculture that included industrial-style efficiency and scale. His work also attracted the attention of early plant geneticists, foreshadowing future transitions in agricultural practice.



The Farmers' Marketing

In the 1870s and '80s, with the development of nationwide rail service, new canning and drying techniques, and refrigerated rail cars, farmers throughout California had the ability to reach distant markets. In order to capitalize on this opportunity, growers in Sonoma County and elsewhere had to develop new marketing strategies.

Far-flung markets meant problems of supply, pricing, perishability, and unpredictable consumer demand. To combat these uncertainties, farmers organized and joined marketing cooperatives. Local growers sent crops to central exchanges that maintained contact

with regional sellers in key markets. With the combination of a central supply house and specific, up-to-date market information, growers had some assurance that their product could be sold under advantageous circumstances and efficiently distributed. Labels, brand names, logos, and advertisements served to make the combined crops of many farmers seem uniform and recognizable to consumers.

In Sonoma County, growers' organizations began with simple associations like the Farmers' Club, organized in Santa Rosa in 1872. The Grange movement arrived shortly thereafter, adding to the farmers' ability to pool influence. By 1900 several local cooperatives had been established, including the Sonoma County Fruit Exchange, which actively targeted distant eastern markets.



From Ranchos to American Farms

Present-day Sonoma County was once part of Mexico's northern frontier, and sprawling cattle ranches, or ranchos, dominated the agricultural landscape. Dramatic changes followed the U.S. conquest of California in the 1840s.

By the mid-1830s, Mexico, independent of Spain, controlled California. The missions had been secularized, their herds, orchards,

Native American laborers, and lands redistributed to build a new *ranchero* (ranch-owning) class in California. Present-day Sonoma County had ranchos scattered over some of the twenty-seven land grants issued by Mexico. Although these ranchos raised some wheat and other crops, their main business was raising cattle for the hide and tallow trade that carried California cowhides by ship to New England and Great Britain, linking the ranchos to a world market. Oxen, along with horses broken to the saddle but not the plow, provided the animal power in this system, and expert horsemanship became the measure of the California *vaquero*, or cowboy.

Rancho-dominated agriculture ended in the U.S. conquest of California during the Mexican-American War of 1846–48 and in the arrival of thousands of men and women during the Gold Rush. Sonoma County was profoundly changed. The 1860 federal census listed 198,702 acres of "improved land" in the county that year. The American belief that land is a commodity to be bought and sold on an open market, joined with an infusion of other agricultural traditions to dramatically increase the number of landowners and to encourage a wide variety of agricultural pursuits. Also, the rapid growth of San Francisco created a vast market that fueled the search for ways to further exploit the agricultural potential of Sonoma County.

SAMPLE CLASSROOM ACTIVITY

READ THE LABEL Genetically Engineered Crops (GE) Artist Christy Rupp’s installation raises questions about what unseen & unlabeled items are in the food we consume. Primarily concerned with GE ingredients Rupp creates “new” labels for food successfully raising questions about how much information we have or don’t have on how food is grown and packaged. This activity gives students an introduction to reading food labels (for both caloric content and ingredients) & introduces questions about where our food comes from & why that is important.

Materials

Pencil

Paper

Food containers (empty)

Paper (w/3 columns) or photocopy worksheet

1. Students bring in three (different) empty food containers from home.
2. Using a piece of paper create three columns, one for each food product (or use worksheet)
3. Students find the following information located on the food labels for each container:
 - a) Calories
 - b) Total Fat
 - c) Cholesterol
 - d) Sodium
 - e) Total Carbohydrates
 - f) Sugars
 - g) Dietary fiber
 - h) Protein
4. Students understand the hierarchy of ingredients as listed on food packaging (i.e. ingredients are listed by amount in product, the first ingredient listed is the primary ingredient contained in the product). Students understand the ingredient list on a food label is the listing of each ingredient in descending order of predominance (from most to least).
5. Students compare and contrast first the caloric contents of each product, then the number of ingredients. Is there a correlation between the number of ingredients and the number of calories? Why?
6. Students calculate the total calories for a “meal” of these three products. Students calculate what percentage of their RDA this “meal” would use (see below – basic percentage: # of calories ÷ your RDA=percent of RDA this “meal” would use.).

Some helpful definitions & info:

- 2,000 calorie diet is what most packaging relies upon as an average (this means an average person consumes 2,000 calories per 24 hour period to maintain function of their body) Go to www.mypyramid.gov to get a plan for calorie needs based on the average needs for given age, gender and physical activity.
- % RDA (Recommended Daily Allowance) = amount of nutrition/vitamins a person should obtain through food consumption
- Glucose = a crystalline sugar $C_6H_{12}O_6$; *specifically*: the sweet colorless soluble dextrorotatory form that occurs widely in nature and is the usual form in which carbohydrate is assimilated by animals
- Fructose = sugar from fruit
- Sucrose = common name “table sugar” (fructose + glucose)
- Food & Drug Administration (FDA) www.fda.gov
- ingredient list information, Center for Food Safety And Nutrition (CFSAN) www.cfsan.fda.gov/~dms/flg-4.html

Further discussion:

Is missing from food product labels? What do you think is missing? What makes reading a food label difficult? Why? Most of the information that appears on food labels is mandated through the Food & Drug Administration (FDA), however, there are no guidelines for what pesticides are used on the plants/ingredients or if the plants were genetically modified/engineered. Using some of Rupp’s food labels (from her installation) as inspiration students create their own cautionary labels for their favorite food. How do these technologies affect our food supply? Discuss the pros & cons. The class can be divided in half and hold a debate. It is often very effective to have people argue the opposite of their opinion to assist them in thinking from another view point.

SAMPLE CLASSROOM ACTIVITY

WHERE OUR FOOD COMES FROM This activity compliments READ THE LABEL activity giving a physical location and understanding of where our food comes from. Several of the artists/installations in HYBRID FIELDS address where our food comes from: *Free Soil*, *Free Fruit/Fruta Gratis*, Rachael Major (*Raw*), and Laura Parker (*Taste of Place*).

Materials

Transportation to locations

Pencil

Paper

1. Take your class to 3 different types of markets:
 - a) major chain grocery store (Safeway, Albertsons)
 - b) smaller locally owned grocery store (Fiesta, Oliver's)
 - c) farmers market (8am-12pm Wednesdays year round, Santa Rosa Veterans Memorial Building) or farm stand/market (Andy's in Sebastopol). Sonoma County Farm Trails www.farmtrails.org has listing of local farm markets
2. Have the students look for specific food groups and what brands are sold.
3. Have students look for locally produced foods.
4. Students select 3 items & record the prices at each market. Students note the price difference between the markets. Which markets have higher prices? What could be the reason (or reasons) for difference in price? Were there any surprise discoveries? What were they? Why were they surprising?
5. Students note the variety of items available at different stores, compare and contrast what types of items are available at different stores and why.
6. Students choose 1 item from each store and calculate the food miles for each of the three items. Food miles start with the place of origin (where the food was grown), calculating the actual miles the food traveled to get to you, including any stops for combining with other foods or packaging.

Additional Activities:

- Visit a farm, ranch or orchard in Sonoma County; ideally be part of a tour of the facility. Students understand the basic workings of the farm, ranch or orchard. See also LAND USE activity (pg. 18).
- Nutrition Plan – Students learn the importance of nutrition and how it affects the function of their bodies, how their bodies use food to create energy to run, walk, play, think, sit, stand, etc. Students create a nutrition plan for themselves based upon their physical activity (they can use www.mypyramid.gov to get a basic idea of caloric needs based on age & physical activity). Students create a sample 1 week menu for breakfast, lunch, snack and dinner including fresh fruits & vegetables and where to purchase them locally.
- Students create an ad for their favorite food based on nutrition – research marketing tactics, ads for other food – what is being “sold” – the food or something else? What makes that product/food desirable?

Further Discussion:

Community Supported Agriculture commonly referred to as a CSA (<http://www.localharvest.org/csa/>) is a way for the food buying public to create a relationship with a farm and to receive a weekly basket of produce. By making a financial commitment to a farm, people become "members" (or "shareholders," or "subscribers") of the CSA. Membership in a CSA is one way to get fresh produce when you cannot grow your own for reasons of time, money, or space. How have CSA's changed farming and the way we view farmers? Canvas Ranch in Petaluma (<http://www.canvasranch.com>) and Laguna Farms in Sebastopol (<http://www.lagunafarm.com>) Orchard Farms in Sebastopol and Tierra Vegetables in Santa Rosa are local Sonoma County CSA's.

SAMPLE CLASSROOM ACTIVITY

HOW TO GROW A HYDROPONIC GARDEN

This activity relates to Matthew Moore's artwork *Green Roof*. Moore's family has been farming for generations but in recent years has been forced to sell off parcels of the farm. In response Moore has been trying to create dialog about farms and has been asking the question: Where will we grow our food in the future? As cities expand and farms give way to roads & housing; alternatives to large fields will have to be found. Moore suggests that hydroponics is one way of addressing this need.

Materials

Hydroponics kit

Water source

Seeds or starter plants

1. Students choose plants for nutrition & preference (lettuce & herbs are easiest and grow quickly)
2. Students understand how plants use nutrients & energy from sun/lamps to create food (photosynthesis).
3. Students understand that the fruits are produced to disperse the seeds of the plant successfully insuring the next generation of the plant will survive.
4. Students study the seasons and how those seasons affect food production.
5. Students understand water use & efficiency. Hydroponics uses a closed water system which is very water efficient.
6. Assign different students to check the system on different days allowing all students access to the system and creating a vested interest. Students are usually very proud of growing something from seed.
7. Students harvest the food & create a lunch from their food.

Intro to Hydroponics:

"Hydroponics is a word describing a cultivation technique where plants are grown without soil. The "official" definition of hydroponics is water (*hydro*) working (*ponics*). It's really not complicated. All the food (minerals) that plants use when they grow in the soil are the same minerals we dissolve in water to feed plants hydroponically. A hydroponic garden or farm needs the same elements as a soil garden or farm: water, food, light, the right temperature, air movement and care."

Excerpt from American Hydroponics www.amhydro.com

Home hydroponics kit manual - N55 http://www.n55.dk/MANUALS/HOME_HYDRO/HOME_HYDRO.html

Living Lettuce Farms <http://www.livinglettuce.com/> commercial hydroponics farm in LA

BetterGrow Hydro <http://www.bghydro.com/> local company selling hydroponics kits

Hydroponics Online <http://www.hydroponiconline.com/> has tutorial information & free stuff section

Further Discussion:

- Have students respond to the question "Where will we grow our food in the future?" Have students imagine new locations for crops to be grown if we no longer have vast acreage for fields. How can hydroponics make these new locations successful?
- Hydroponics can allow people in cities to grow food where they least expect it. How would that benefit the health of people living in cities?
- When food is grown in one place and shipped to another location many resources are used. "Food miles" are a way to calculate the cost and understand how many resources are used to bring your food to you.
- Water is a resource that is finite, meaning there is only a specific amount, no more, no less. Water use is becoming increasingly important as population soars. In Sonoma County water issues are very important due to agriculture, crops and animals need water. With the booming wine industry, and increasing number of vineyards water use. Hydroponics helps with this problem by using the same water and recycling it through the system.
- What might be a consequence to growing food hydroponically?

SAMPLE CLASSROOM ACTIVITY

THE LAND

The Sonoma County Mammalian Enology Experimental Pasturelands (MEEP), 2006 is an installation by John Colle Rogers and Mariel Triggs that uses humor to address land use in Sonoma County, particularly grape growing vs. ranching. Students view the installation then research Sonoma County agriculture and finally create an ad using humor to save agriculture land from being converted to development.

1. Students research a particular area of Sonoma County to discover what historically was grown or raised there; Petaluma-dairy/chickens, Sebastopol-apples, Healdsburg-hops/prunes, Santa Rosa-plums.
2. Students
3. Students choose a type of land (farm, ranch, orchard) to save
4. Research advertisements & tactics used by advertisers:
 - a) How do you make a product seem better than other products?
 - b) Look at an advertisement for your favorite product.
 - c) What is being sold in the ad? The product or a lifestyle? Why do you think that is?
 - d) Analyze the language used. Who is the target audience?
5. Students create an ad/poster to save that land using humor as a tool to persuade the audience.
6. Students present their ad/poster to the class.

Further Discussion:

Historically crops & farms have changed over time. Students discuss what causes these changes and what changes they have encountered in their life time. In the History Gallery Fields of Change explores some transitions in Sonoma County agriculture.

Discuss what products are created from those ranches, farms, orchards (apple orchards=apple sauce, juice, dried & fresh; chickens=for fresh meat, eggs; cows=cheese, milk ; etc.)

Why do you think this land/area was used for that purpose? Students discuss reasons why certain crops or animals were raised in particular areas.

Additional activities:

See also WHERE OUR FOOD COMES FROM activity. Visit a farm, slaughter house, ranch, orchard, packing plant (or use photographs) so students can see with their own eyes where their food comes from. Explain to students what animals are used for the packaged food we purchase at the grocery store.

Cows/steer = beef/steak/hamburger/roast beef

Chicken = chicken strips,

Pigs = bacon, pork chops, sausage

SAMPLE CLASSROOM ACTIVITY

PRESERVES MAKING

Family recipes are culturally significant; every culture eats different foods depending upon availability of local crops. *Sonoma County Preserve* is a community based project created by Susan Cockrell and Ted Purves (Temescal Amity Works) focusing on food collected & preserved by Sonoma County residents. Other artists in Hybrid Fields explore similar issues including: Food Justice (Free Fruit: Fruta Gratis) unharvested orchards and backyard fruit bearing trees; loss of historical crops (Sonoma County - Hops, Apples, Grapes - Susan Steinman, Matthew Moore).

Materials

Pressure canner
Jars & lids
Fruit to use

1. Students choose what type of food to preserve.
2. Students research a find a recipe (or bring in a family recipe) for that food.
3. Divide the ingredients equally amongst the students, the students bring in their portion on the preserve making day.
4. Following the recipe students preserve that food. This is a big project that needs both ample time and space. If those are not available have students discuss the recipes and process of preserving. Ask the class: What was most surprising about the preserve making process?

Two good on-line recipe archives with step by step instructions & photos:

Pick Your Own <http://www.pickyourown.org/allaboutcanning.htm> recipes & info on canning

Lesley's Recipe Archive <http://lesleycooks.tripod.com/canning/canning.htm> with easily printable recipes

Further discussion:

At farmers markets you can find unique products such as locally made preserves, jams and fruit syrups. Canning and preserving used to be common place among the farming communities as a way to save (and use) all of the fruits and vegetables that a farm produces but cannot use or sell that season. Instead of letting that food go to waste some family members, usually women, would preserve the surplus produce for use during the winter months when fruits and vegetables are scarce. Currently as the world becomes a smaller place and as technology advances our ability to ship foods worldwide allowing for fresh produce year round has made the art of preserving and canning a scarce resource. *Sonoma Preserves* by (Temescal Amity Works) wants to address this issue & save the art of canning/preserving foods by preserving homegrown crops. Increasingly this art is viewed as non-essential. Fewer people are interested in learning the process & home preserving could eventually disappear. What is culturally significant about preserving?

All across Sonoma County & the US fruit trees go unharvested – some are commercial and some are private trees. At the same time many American don't have enough to eat and most don't eat enough fresh fruits and vegetables. What can we/you do to change that? How can this be changed? What ideas do you have for unharvested fruits & vegetables?

Historically, farmers did not purchase seeds from a store. Every year they would save the seeds from their crops (this takes a fair amount of time) dry them out and save them for the next year's crop, only purchasing additional seeds as needed. In this way farmers kept the cost of reseeding their fields down and also preserving genetically diverse plants. However, modern technology has created hybridized and genetically modified seeds that can only be used for one crop. The seeds from that crop are not able to be replanted. Seed Saving/Exchange events are gaining popularity. The Occidental Arts and Ecology Center (OAEC) will hold a Seed Exchange at the Sonoma County Museum, Sunday October 29, 2006.

SAMPLE CLASSROOM ACTIVITY

CYCLE OF LIFE: OBSERVING DECAY

Carol Selter's piece *Fruition, 2006*, is a photo documentation of plants from food gardens as they flower and fruit during the culmination of their life cycles. Students learn the life cycle of a plant, understanding the importance of the stages (this can be in the classroom or school garden). Students record through photographs or drawings the life cycle of a fruit or vegetable.

Materials

2 pieces of produce
container for produce
pencil
paper (could be a journal)

1. Purchase or bring in at least 2 pieces of produce to be in your classroom for at least a week.
2. Display the produce in the classroom. Have students evaluate the produce based upon what they see. Students describe each piece of produce.
3. After initial observation find a permanent location for the produce to be for at least one week (1-2 weeks is ideal as the students will experience the full effect of the changes).
4. Students make a hypothesis of what will happen to the produce over the time period.
5. Students keep a journal of daily observations of how the produce changes including drawings or sketches.
6. At the end of the week/time period students present their findings to the class or group – has the hypothesis been proven or disproved?
7. Students write a final report explaining how the activity/experiment either proved or disproved their hypothesis.

Additional Activities:

- Students photograph the produce on a daily basis, taking several photographs from different angles. At the end of the week or two assemble the photographs into a photo-journal depicting part of the life cycle of the produce.
- Students plant a garden in the classroom using seeds and watch the process of seeds sprouting and becoming plants and growing and producing fruits (basil & lettuce work very well).
- Students bring in soil samples from where they live and test them in class. <http://www.outsidepride.com> sells test kits for \$16

Further Discussion:

What changes were the most dramatic or noticeable and why? Which produce lasted the longest? Why do you think that is the case? Has this activity/experiment changed how you view produce? Why?

SAMPLE RELATED CALIFORNIA STATE CONTENT STANDARDS

VISUAL ARTS

1.0 ARTISTIC PERCEPTION

Processing, Analyzing, and Responding to Sensory Information Through the Language and Skills Unique to the Visual Arts

Students perceive and respond to works of art, objects in nature, events, and the environment.

They also use the vocabulary of the visual arts to express their observations.

2.0 CREATIVE EXPRESSION

Creating, Performing, and Participating in the Visual Arts

Students apply artistic processes and skills, using a variety of media to communicate meaning and intent in original works of art.

4.0 AESTHETIC VALUING

Responding to, Analyzing, and Making Judgments About Works in the Visual Arts

Students analyze, assess, and derive meaning from works of art, including their own, according to the elements of art, the principles of design, and the aesthetic qualities.

5.0 CONNECTIONS, RELATIONSHIPS, APPLICATIONS

Connecting and Applying What Is Learned in the Visual Arts to Other Art Forms and Subject Areas and to Careers

Students apply what they learned in the visual arts across subject areas. They develop competencies and creative skills in problem solving, communication, and management of time and resources that contribute to lifelong learning and career skills. They also learn about careers in and related to the visual arts.

LANGUAGE ARTS

WRITING

2.0 Writing Applications (Genres and Their Characteristics)

Students write compositions that describe and explain familiar objects, events, and experiences. Student writing demonstrates a command of standard American English and the drafting, research, and organizational strategies outlined in Writing Standard 1.0.

LISTENING AND SPEAKING

1.0 Listening and Speaking Strategies

Students listen critically and respond appropriately to oral communication. They speak in a manner that

guides the listener to understand important ideas by using proper phrasing, pitch, and modulation.

2.0 Speaking Applications (Genres and Their Characteristics)

Students deliver brief recitations and oral presentations about familiar experiences or interests that are organized around a coherent thesis statement. Student speaking demonstrates a command of standard American English and the organizational and delivery strategies outlined in Listening and Speaking Standard 1.0.

HISTORY / SOCIAL SCIENCE

Grade 1

1.4 Students compare and contrast everyday life in different times and places around the world and recognize that some aspects of people, places, and things change over time while others stay the same.

1.5 Students describe the human characteristics of familiar places and the varied backgrounds of American citizens and residents in those places.

Grade 2

2.4 Students understand basic economic concepts and their individual roles in the economy and demonstrate basic economic reasoning skills.

2.5 Students understand the importance of individual action and character and explain how heroes from long ago and the recent past have made a difference in others' lives

Grade 3

Continuity and Change

Students in grade three learn more about our connections to the past and the ways in which particularly local, but also regional and national, government and traditions have developed and left their marks on current society, providing common memories. Emphasis is on the physical and cultural landscape of California, including the study of American Indians, the subsequent arrival of immigrants, and the impact they have had in forming the character of our contemporary society.

3.2 Students describe the American Indian nations in their local region long ago and in the recent past.

3.3 Students draw from historical and community resources to organize the sequence of local historical

events and describe how each period of settlement left its mark on the land.

Grade 4

California: A Changing State

Students learn the story of their home state, unique in American history in terms of its vast and varied geography, its many waves of immigration beginning with pre-Columbian societies, its continuous diversity, economic energy, and rapid growth. In addition to the specific treatment of milestones in California history, students examine the state in the context of the rest of the nation, with an emphasis on the U.S. Constitution and the relationship between state and federal government.

4.1 Students demonstrate an understanding of the physical and human geographic features that define places and regions in California.

4.2 Students describe the social, political, cultural, and economic life and interactions among people of California from the pre-Columbian societies to the Spanish mission and Mexican rancho periods.

4.4 Students explain how California became an agricultural and industrial power, tracing the transformation of the California economy and its political and cultural development since the 1850s.

Grade 5

United States History and Geography: Making a New Nation

5.1 Students describe the major pre-Columbian settlements, including the cliff dwellers and pueblo people of the desert Southwest, the American Indians of the Pacific Northwest, the nomadic nations of the Great Plains, and the woodland peoples east of the Mississippi River.

1. Describe how geography and climate influenced the way various nations lived and adjusted to the natural environment, including locations of villages, the distinct structures that they built, and how they obtained food, clothing, tools, and utensils.

2. Describe their varied customs and folklore traditions.

Grade 6

6.1 Students describe what is known through archaeological studies of the early physical and cultural development of humankind from the Paleolithic era to the agricultural revolution.

Grade 7

7.10 Students analyze the historical developments of the Scientific Revolution and its lasting effect on religious, political, and cultural institutions.

7.11 Students analyze political and economic change in the sixteenth, seventeenth, and eighteenth centuries (the Age of Exploration, the Enlightenment, and the Age of Reason).

SCIENCE

Kindergarten

Life Sciences: Different types of plants and animals inhabit the earth.

a. Students know how to observe and describe similarities and differences in the appearance and behavior of plants and animals (e.g., seed-bearing plants, birds, fish, insects).

c. Students know how to identify major structures of common plants and animals (e.g., stems, leaves, roots, arms, wings, legs).

Investigation and Experimentation: Scientific progress is made by asking meaningful questions and conducting careful investigations.

a. Observe common objects using the five senses.

b. Describe the properties of common objects.

e. Communicate observations orally and through drawings.

Grade 2

Life Science: Plants and animals have predictable life cycles.

e. Students know light, gravity, touch, or environmental stress can affect the germination, growth, and development of plants.

f. Students know flowers and fruits are associated with reproduction in plants.

Earth Science: Earth is made of materials that have distinct properties and provide resources for human activities.

e. Students know rock, water, plants, and soil provide many resources, including food, fuel, and building materials, that humans use.

Grade 4

Life Science: Living organisms depend on one another and on their environment for survival.

c. Students know many plants depend on animals for pollination and seed dispersal, and animals depend on plants for food and shelter.

Observation and Experimentation: Scientific progress is made by asking meaningful questions and conducting careful investigations.

a. Differentiate observation from inference (interpretation) and know scientists' explanations come partly from what they observe and partly from how they interpret their observations.

Grade 6

Ecology (Life Sciences)

6. Organisms in ecosystems exchange energy and nutrients among themselves and with the environment.

Grade 7

Evolution

3. Biological evolution accounts for the diversity of species developed through gradual processes over many generations.

Grade 8

Structure of Matter

Each of the more than 100 elements of matter has distinct properties and a distinct atomic structure. All forms of matter are composed of one or more of the elements.

b. Students know that compounds are formed by combining two or more different elements and that compounds have properties that are different from their constituent elements.

f. Students know how to use the periodic table to identify elements in simple compounds.

Grades 9-12

Biology/Life Sciences

Genetics

5. The genetic composition of cells can be altered by incorporation of exogenous DNA into the cells

c. Students know how genetic engineering (biotechnology) is used to produce novel biomedical and agricultural products.

Ecology: Stability in an ecosystem is a balance between competing effects.

b. Student know how to analyze changes in an ecosystem resulting from changes in climate, human activity, introduction of nonnative species, or changes in population size.

Physiology: As a result of the coordinated structures and functions of organ systems, the internal environment of the human body remains relatively

stable (homeostatic) despite changes in the outside environment.

a. Students know how the complementary activity of major body systems provides cells with oxygen and nutrients and removes toxic waste products such as carbon dioxide.

Agriculture and Natural Resources Industry Sector Agriculture Business Pathway

A2.0 Students understand the fundamental economic principles of agribusiness and agricultural production:

A2.1 Understand how basic economic factors affect agricultural productins and agribusiness management decisions.

A2.4 Analyze how agriculture uses scarce resources to meet the needs and demands of its consumers.

Agriscience Pathway

C2.0 Students understand the interrelationship between agriculture and the environment:

C2.1 Understand important agricultural environmental impacts on soil, water, and air.

C2.2 Understand current agricultural environmental challenges.

C2.3 Understand how natural resources are used in agriculture.

C2.4 Compare and contrast practices for conserving renewable and nonrenewable resources.

C10.0 Students understand soil science principles:

C10.1 Recognize the major soil components and types.

C10.2 Understand how soil texture, structure, pH, and salinity affect plant growth.

C10.3 Understand water delivery and irrigation system options.

Forestry and Natural Resources Pathway

E3.0 Students understand soil composition and soil management:

E3.1 Understand the systems used to classify soils.

E3.2 Understand the reasons for and importance of soil conservation.

E13.0 Students understand public and private land issues:

E13.1 Understand the differences between publicly and privately held lands.

E13.3 Understand the role of public and private property rights and how they affect agriculture.

Education Pathway

C8.0 Students understand and apply basic principles and practices of good nutrition and health for children:

C8.2 Understand the nutritional needs of children and the allergies commonly associated with food.

GLOSSARY

ART TERMS/DEFINITIONS

Action Art: Live works presented out in the public realm that address social and political issues.

Activist Art: Art that addresses political ideas or takes a political stance.

Biodiversity: Biological diversity is indicated by the numbers of different species of plants and animals in an environment.

Conceptual Art: An art form based upon a concept or an idea, in which the concept or idea involved in the work are central, taking precedence over traditional aesthetic and material concerns.

Dialogic Art: Dialogic art uses dialogue as an artistic medium, in a variety of forms including, but not limited to speaking, writing, and physical participation. Examples of artwork that include dialogue as a central component can be found in the work of Joseph Beuys and his notion of “social sculpture,” Suzanne Lacy, Mierle Laderman Ukeles, Christo and Jeanne-Claude, among others.

http://www.artsusa.org/animatingdemocracy/programs/learning_exchanges/seattle/008.asp

Ecological Art: Art that interprets nature and inform us about nature and its processes, or about environmental problems we face.

Food Justice: A movement that seeks to improve access to fresh and healthy foods in all communities, particularly those where access is most limited. <http://departments.oxy.edu/uepi/cfj/>

Food Miles: Food miles are a way to measure how far food has travelled before it reaches the consumer. It is a good way of looking at the environmental impact of foods and their ingredients.

<http://www.organiclinker.com/food-miles.cfm>

Interventionist Art: The art of the interventionists trespasses into our everyday world to raise awareness of injustice and other social problems. These artists don't preach or proselytize; they give us the tools to form our own opinions and create our own political actions.

http://www.massmoca.org/press_releases/04_2004/04_05_04.html

Installation art: Installation art is site-specific and usually consists of an ensemble of objects or effects that work together to create a whole. Artists deal with their own thematic concerns and consistently string certain elements throughout their installations.

<http://www.artandculture.com/cgi-bin/WebObjects/ACLive.woa/wa/movement?id=1024>

Informational Art: Art that seeks to educate its viewers by providing research, surveys, and data that support a concept or theme portrayed in the artwork.

Lyrical Art: Art that presents a playful and poetic metaphor or experience to express or connect with an audience in a social context.

http://www.communityarts.net/readingroom/archivefiles/2003/06/lyrical_express.php

Relational Art: Relational Art is an emerging movement in art identified by Nicolas Bourriaud, a French philosopher, who recognized a growing number of contemporary artists used performative and interactive

techniques that rely on the responses of others: pedestrians, shoppers, browsers-the casual observer-turned-participant. http://place.unm.edu/relational_art.html

Site-Specific Art: Art that is created for a specific site, indoors or outdoors, that incorporates elements of the locale (physical, historical, and cultural) in the work.

GARDEN TERMS/DEFINITIONS

Agroforestry: combines agriculture and forestry technologies to create sustainable land use systems.

Garden: a planned space, usually outdoors, set aside for the display, cultivation, and enjoyment of plants (herbs, fruits, flowers, or vegetables) and other forms of nature. A garden can be any size large or small.

Genetically Engineered Foods: Genetically engineered foods have had foreign genes inserted into their genetic codes. Historically, farmers bred plants and animals for desired traits for thousands of years. Genetic engineering allows scientists to speed this process up by moving desired genes from one plant into another -- or even from an animal to a plant or vice versa. The consequences are yet unknown.

<http://www.factmonster.com/spot/frankenfoods1.html>

Heirloom: a horticultural variety that has survived for several generations usually due to the efforts of private individuals.

Harvest: the season for gathering in agricultural crops, also denotes the act of gathering and a crop that is ripe.

Hydroponics: the growing of plants in nutrient solutions with or without an inert medium (as sand, gravel or soil) to provide mechanical support.

Permaculture: is a design system which aims to create sustainable habitats by following nature's patterns, specifically concentrating on combining ecology, landscape, organic gardening, architecture and agroforestry.

Terroir: originally a French term in wine and coffee appreciation used to denote the special characteristics of geography that bestowed individuality upon the food product. The term is now being used in other farming reference for say tomatoes. It is generally understood as the concept that geology, soil & mineral composition of a given area affects the taste of the food produced in that soil.

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WEB

BioKids website devoted to biology geared toward children <http://www.biokids.umich.edu/>

School Garden Network <http://www.schoolgardens.org>

KidsGardening! <http://www.kidsgardening.com/grants/2006-HOH-landing.asp>

National Gardening Association <http://assoc.garden.org/>

USDA United States Department of Agriculture <http://www.usda.gov/> <http://www.mypyramid.gov/>

Sonoma County Farm Trails <http://www.farmtrails.org>

Sonoma County Agricultural Preservation and Open Space District <http://www.sonomaopenspace.org/>

Cornell University, food systems - includes lesson plans on nutrition <http://foodsys.cce.cornell.edu>

Cornell University, migrant farmworkers & where food comes from, lesson plans

<http://www.farmworkers.cornell.edu/curriculum.htm>

Sustain: The Alliance for Better Food & Farming – food miles <http://www.sustainweb.org/>

Luther Burbank Home & Gardens <http://ci.santa-rosa.ca.us/default.aspx?PageId=708>

DoEAT <http://www.shannonspanhake.org/bio.html>

Food & Drug Administration (FDA) <http://www.fda.gov>

FDA & Center for Food Safety And Nutrition (CFSAN) <http://www.cfsan.fda.gov/~dms/flg-4.html>

Food, Land and People <http://www.foodlandpeople.org/> an organization helping people of all ages better understand the interrelationships among agriculture, the environment, and people of the world.

genomics.energy.gov http://www.ornl.gov/sci/techresources/Human_Genome/elsi/gmfood.shtml

GE Free Sonoma <http://www.gefreesonoma.org/>

Hunger Action Network of NY State <http://www.hungeractionnys.org>

Soil Biological Communities for Kids <http://www.blm.gov/nstc/soil/Kids/index.html>

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