An analysis prepared as part of

THE Vivid Picture PROJECT

Proposed Indicators for Sustainable Food Systems

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Introduction

From the outset, the Roots of Change Council recognized the need for a way to indicate change in the food system, as a mechanism to measure progress toward sustainability. The Vivid Picture project team was charged with developing "a set of sustainability indicators... for each sector using inclusive analytic techniques. All indicators must be measurable and based on data that is currently collected or can be collected."

An indicator can be described as "a way to measure, indicate or point to with more or less exactness," or "something used to show the condition of a system." For example, an indicator for the goal that a sustainable food system "promotes food choices that lead to healthy eating," might be: daily per capita servings of fruits and vegetables. Indicator data are the actual quantitative measurements or observations that address the underlying intent of the indicators.

In the example above, the measurement for 2001 was 4 servings per day. The Vivid Picture sustainability indicators are not intended to describe every aspect of the state of the food system. They represent a limited set of benchmarks to help gauge progress toward a sustainable food system and are intended to be used in combination with expert opinion and qualitative analytical methods. The objective of the indicators component of the Vivid Picture project was to come up with a set of measurable data that covers key trends whose change is a proxy for change in the broader system.

Groundbreaking on many levels, the Vivid Picture project advanced current indicator theory by pioneering a set of indicators for not only one issue area, but a whole multidimensional field—the health of the food system. To the best of our knowledge, this is the first effort to develop indicators for the food and agriculture sector at the state level with existing data and represents an attempt to quantify trends not previously measured. The project involved developing a system for measuring progress toward ecological, economic, social, and health outcomes, making the collection very diverse. Furthermore, it measures outcomes throughout the value chain, from input supply and production through to retail and consumption.

Indicator Selection

Background

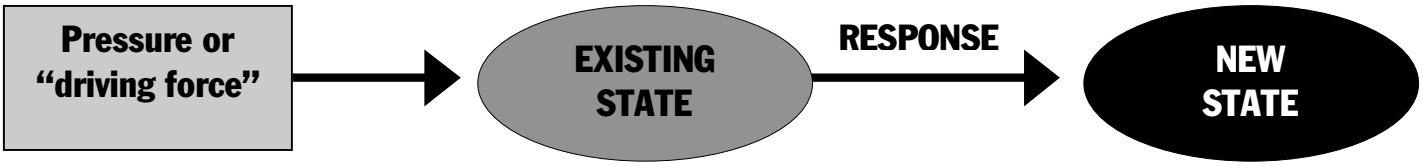
IDENTIFYING INDICATORS:
The Vivid Picture indicators team[1] met in July 2004 to establish a process for selecting indicators. The indicator process was guided by a review of many previous efforts (see sidebar). A literature review on indicator models had been conducted by Gail Feenstra and a range of models were considered. For the Vivid Picture indicators, a Pressure-State-Response model was selected and some Linkage Analysis was incorporated. These and other models considered are described briefly in the sidebar.

An extensive process for identifying the indicators was employed. The first step was to identify and clarify a list of goals of a sustainable food system. Indicators were then selected to measure progress toward each of these goals.[2] Stakeholder input and participation was a central part of the Vivid Picture indicators process. Cutting edge

indicator theory suggests that stakeholder participation is important in helping identify, interpret and apply indicators. The Vivid Picture project took the point of view that indicators are useless if they are not used—as such, it is essential that stakeholders understand and support the set of indicators selected. Input was sought from the ROC Council and dozens of food system experts at both the initial identification stage and again in refining the list of indicators. Many participants brainstormed possible indicators. Experts provided feedback on the data and content as well as possible data sources. An average of three experts were consulted per goal. A deep review of the indicator set was conducted to finalize the list and eliminate any remaining inappropriate indicators. In the next phase of the project, it is recommended that stakeholder input also be solicited to help identify and quantify desired end states for the indicators in the year 2030 and to interpret the data and trends.

DATA LIMITATIONS:
The process of identifying sustainability indicators for the food system in California has also highlighted a number of limitations that deserve further attention. The process has, to a great extent, illuminated that significant data gaps exist that prevent a comprehensive understanding and measurement of the food system. We address some important gaps in the indicator "wish list" located at the end of this paper. In addition, the process has shown that in many cases, related data are collected by different agencies in related fields but that coordination could be improved. Interpreting data across fields and institutions has proved challenging. For example, in studying the average Californian's diet and health, the California Department of Education's comprehensive data on overweight students does not relate directly to the Centers on Disease Control and Prevention's definitions, nor is serving size held constant among agencies, making interpretation across data sets difficult.

Figure 1: A Pressure-State-Response Model



Summary of the indicator selection process.
The Vivid Picture project indicators team:
*obtained agreement on the goals
*brainstormed indicators with ROC Council, other experts and participants
*refined the list with the VP indicators team, applying criteria for indicator selection
*redefined initial indicators after input from outside experts
*obtained available trend data for indicators from field experts and data managers
*reviewed indicators again with VP team; rated acceptability
*incorporated new ideas and iterated selection process

Findings

INDICATOR CRITERIA

The Vivid Picture project indicators team developed a set of 11 criteria against which to assess the appropriateness of potential indicators. Indicators had to be compliant with these principles in order to be considered acceptable. The criteria applied for indicator selection are as follows. The indicators must be:

- *Based on Vivid Picture goals*: the indicator measures progress toward the given goal or goals.
- *Opportunities-based*: the indicator measures progress toward the goals (positive) rather than regression away from the goals (negative).
- *Statewide*: The indicator data must be available for the state of California, rather than for the U.S. or a smaller region within California.
- *Measurable*: The indicator data must be quantifiable.
- *Available:* The data must be available to the public.
- *Cost-effective*: It must be possible to access the data with little monetary input.
- *Stable, reliable, credible*: The data must be from a reliable and credible source, collected in a rigorous and consistent way and replicable from one time period to the next.
- *Understandable and usable*: The indicator must be easily grasped by potential interpreters of the data so that they can apply it in their own communities.
- *Sensitive to change*: The indicator must respond to change over a reasonable length of time—not take hundreds of years to show progress.
- *Measure effectiveness of VP scenarios*: The indicator will ideally relate directly to the VP scenarios and help to measure the outcomes of each scenario.

INDICATORS

The following is a list of 63 proposed indicators for 18 of the 22 goals. They were selected from a shortlist of more than 125 and a total of 81 data sets were used. The indicators listed below meet the above criteria. It is important to note that not all indicators selected for the main list perfectly conform to all criteria. In general, though, the criteria were strictly adhered to and in every case indicator selection was the product of rigorous research and consideration by the indicators team. All of these indicators are easily updated. A research paper that details each of the indicators and their sources accompanies this report. The research paper details the following for each indicator:

- *Trend data:* Data points or trend data in tabular or graph format for each indicator. While the purpose of the VP indicators is to monitor change between now and 2030, these historical data help to provide context, supply baseline data and facilitate a better understanding of the indicators and their sensitivity.
- *Source information:* Full reference for the source of the data, with URL information where available.
- *Data particulars:* Information to help explain and give context to the trend data.
- *Strengths and limitations:* A brief narrative highlighting the assets of the indicator as well as the limits of its power to represent the state of the food system.

Goal 1: Promotes food choices that lead to healthy eating
a. Daily per capita servings of fruits and vegetables
b. Obesity rate in adults

Goal 2: Provides easy access to healthy food from retail outlets for all eaters in California
a. Distance (and distance distribution) from eaters to nearest full-service food store (urban and rural, those with/without cars)
b. Number of farmers markets that accept FMNP coupons (WIC), senior FM coupons, food stamps

Goal 3: Provides affordable food for all eaters in California
a. Percentage of households that are food insecure/food secure
b. Percentage of population that is in poverty.

Goal 4: Provides for meaningful livelihoods and opportunities for all food and farming workers.
a. Average wage paid to farmworkers
b. Percentage of farmworkers employed through farm labor contractors
c. Average wage paid to grocery workers (compared to other industries)
d. Average wage paid to food service and processing workers (compared to other industries)
e. Total number of ethnic minority farmers (Hispanic, Asian, African American)

Goal 5: Facilitates continuous entry for beginning farmers, fishers, foresters, processors, retailers, restaurateurs and ranchers
a. Total number of ethnic minority farmers, farms, acreage (Hispanic, Asian, African American, American Indian)
b. Total women farmers (principle operator) and acreage controlled
c. Age distribution of farmers
d. Number of commercial fishing licenses and permits

Goal 6: Provides eaters with foods produced and processed as close to home as possible
a. Total direct ag sales to public
b. Percentage of consumers now buying CA ag products more often than 6 months ago.
c. Number of school districts with farm-to-school programs.

Goal 7: Encourages eaters to know where, how, and by whom their food is produced
a. Total direct sales per capita, as % of total ag sales
b. Number certified farmers markets
c. Sales from certified farmers markets
d. Number of CSAs
e. Number of farms that offer ag tourism
f. Number of school garden
g. Number of farm-to-school programs

Goal 8: Supports deepening regional identities through food.
a. Number of counties and producers participating in "Buy Fresh, Buy Local" campaigns
b. Number of restaurants participating in the Chef's Collaborative
c. Number of Slow Food Convivia and number of members in the organization.

Goal 9. Honors and draws on the diversity and richness of different food cultures.

Goal 10: Supports and increases biodiversity in plant and animal products (including marine species).
a. Number of crops statewide for top 75% of the harvested acres
b. Number of cultivars for selected CA commodities for top 75% of harvested acres

Goal 11: Conducts farming, ranching, and fishing activities so that water, air, forests, and soil resources are enhanced and biodiversity and wildlife habitat are increased so that food production continues into perpetuity.
a. Number of organic acres in CA
b. Tons topsoil lost/year due to erosion
c. Total water usage (acre-feet) in ag
d. Amount of water quality limited surface water with agriculture as a source of pollution.
e. Farmworker pesticide poisonings
f. Number of areas in no-take marine reserves

Goal 12: Preserves farmland, forests, and oceans.
a. Number of acres prime farmland
b. Number of acres of urban area
c. Number of acres in Williamson Act

Goal 13: Provides incentives for waste recycling, reduction of petroleum and other non-renewable inputs
a. Number of organic growers
b. Number of organic acres in CA
c. Number of composters accepting food and ag waste (current) in relation to total number of composters/processors of organic materials (mostly urban)
d. Total tons of food and ag waste disposed; pounds per capita
e. Number of Operating Food Diversion Programs
f. Fuel, fertilizer and chemical expense in agriculture; as % of total expenses

Goal 14: Employs humane practices in animal care
a. Number and identity of humane animal certification programs
a1. Number of Certified Humane Raised and Handled animal producers (label)
a2. Number of AHA-certified animal producers (Free-Farmed Certification Program)
b. Number of grass-fed animal producers

Goal 15: Provides opportunities for revenue from on-farm energy production, tourism, education, and other value added services (in addition to food production).
a. Number of farms engaged in ag tourism
b. Dollars for renewable energy programs

Goal 16: Rewards farmers, fishers, and ranchers for conservation services

a. Total dollars paid and number of contracts to CA for conservation practices
a1. Total dollars paid in NRCS EQIP program
a2. Total dollars paid in CSP (Conservation Security Program)
a3. Total dollars paid WHIP (Wildlife Habitat Incentives Program)
a4. Total contracts per program
b. Total dollars paid and number of contracts to CA for retiring farmland
b1. Total dollars paid under Conservation Reserve Program (CRP)
b2. Total dollars paid under Wetland Reserve Program (WRP)
b3. Total dollars paid under Grasslands Reserve Program (GRP)
b4. Total contracts per program
c. Total acreage in Williamson Act

Goal 17: Provides opportunities for food, fishing, and farming operations to be profitable.

a. Farm production balance
b. Net farm income
c. Number of farms by size/sales category
d. Personal income generated by farm, manufacturing, retail food and eating/drinking establishments
e. Number of workers in various food sectors
f. Number of retail food businesses by size classes (number of employees)
g. Number of food manufacturers by size classes (number of employees)
h. Retail price spread
i. Number of federal and state inspected slaughterhouses
j. Income/employment from commercial fishing and processing.

Goal 18: Is characterized by many locally owned and operated food and farming businesses.

a. Total number of farms by size classes (by sales volume and acreage)
b. Total number of retail food businesses by size classes (number of employees)
c. Total number of food manufacturers by size classes (number of employees)
d. Percent of CA farm debt held (by various types of lenders).
e. Aggregate income earned by workers in various food sectors.
h. Total number of workers in various food sectors
i. Number of fish retail licenses/transfer tickets

Goal 19. Encourages capitalization and business structures that provide investment and ownership opportunities to workers and community members.

Goal 20. Facilitates graceful exits for farmers, fishers, foresters, ranchers, processors, retailers, and restaurateurs. (This principle would be a corollary to the current principle 15)

Goal 21. Promotes efficient markets that share information and proceeds equitably among all players in the food chain.

Goal 22. Allows businesses of all sizes to participate in the system as long as they are abiding by sustainable practices and principles.

Recommendations to the Roots of Change Council

- *Select a set of indicators for each of the 20 sustainability goals.*
- *Adopt the list of 63 primary indicators[3] as listed above as an initial list for assessing progress toward sustainability in the food system.*
- *Develop additional indicators for remaining goals as needed and recognize that this list, after continued analyses, must and will be refined*
- *Ensure that all final indicators selected conform to the indicator criteria listed above*.
- *Make contact with data managers or agencies managing these datasets to encourage the support the maintenance of the data gathering on the issue in question.*
- *Conduct ongoing sensitivity analyses on these datasets to further understand the true impacts these data are measuring against the goal they are associated with.*
- *Conduct further interpretive research on these indicators, soliciting expert knowledge on why trends are moving in particular directions—an important complement to the quantitative data.*
- *Involve stakeholders in identifying 2030 target values for the indicators.*
- *Collect trend data periodically*

Supplemental Indicators

Background

In order to reduce the number of recommended indicators, we sorted through the primary list and moved those which measured similar conditions, those which were less opportunities-based or those for which data were not as robust to a separate "supplemental list." The list was created because trend data existed for all of these indicators and had already been gathered by the indicators team. After stakeholder interviews, it may be that some of these might be substituted for some in the recommended list, or some may be reincorporated into the main list if it is being used by particular communities that prioritize these issues.

Findings

See the white paper *Proposed Indicators for a Sustainable Food System* for the current list of supplemental indicators.

Recommendation to the Roots of Change Council

- There is no need to do anything at this time with the supplemental indicators. They can be considered as possible recommended indicators with stakeholder approval or if particular communities find them useful.

"Wish List" Indicators

Background

The indicator selection criteria were extremely valuable in guiding our indicator selection process. Many common-sense indicators at first glance appeared to be excellent candidates for the VP goals, yet several promising indicators were rejected because there was no existing data that measured the indicator. In other words, the "wish list" represents key identified indicators for which there was insufficient data to be placed on the primary list. For example, the proportion of food consumed in California that was produced in California seems as if it would be an excellent indicator of a system that provides eaters with food produced and processed as close to home as possible. However, there is no data source in existence to measure the indicator.

Findings

The "wish list" indicators are as follows:

Goal 1:
- Per capita weekly expenditures (by demographic per product categories)
- Variety in the average diet

Goal 6:
- Percentage of direct agricultural sales that are destined for CA
- Food miles
- Percentage of food consumed in California which is produced in California

Goal 10:
- Number of plant breeding research programs and $ spent

Goal 15:
- Revenue from agricultural tourism
- # of people that know a farmer
- # acres in production with products that will be consumed locally
- # of retailers that have country of origin labeling
- # of acres in urban agriculture

Recommendations to the Roots of Change Council

- *Place additional indicators that are highly desirable, but for which credible data is not currently collected, on the "wish list" for further research.*

- *Publicize the "wish list" indicators as key research gaps that require further research.*

Some groups might use the supplemental or "wish list" indicators, depending on their priorities or focus. Indicators that are highly desirable, but for which credible data is not currently collected, should be added to the "wish list" for further research.

The Need For Cross-cutting Indicators

Background

In addition to the main set of recommended indicators, 5 preliminary cross-cutting indicators have been selected. These are indicators that, as a set, measure progress toward economic, environmental and social equity issues. They address multiple values and goals at once and serve to give a quick yet selected pulse of the state of the food system. They are intended to simplify the evaluation of a sustainable food system by presenting a "short list" of indicators.

After reviewing several models for identifying cross-cutting indicators, the VP team engaged in a selection process and decided on the indicators listed below from the existing list of recommended indicators. We recognized that it was more appropriate to select indicators with existing data as opposed to new indices we could have created or indicators without data.

The proposed list of cross-cutting indicators represents a first cut and should be considered a preliminary selection. The selection process did not include time for vetting these suggestions with stakeholders outside the project. Over time, data for other indicators may become available and may better serve to measure progress toward the 20 goals of a sustainable food system than the 5 indicated here. A note of caution: it is important to keep in mind that such a small set of indicators may never be a good proxy for whole system change. With such a small set, it is important to ensure that efforts are not overly focused on achieving these five indicators at the expense of broader system change. However, a subset of the 50 indicators is valuable for providing a quick and rough measure of the system.

The selection process for the cross-cutting indicators was similar to the selection process for the main set of indicators but more cursory because of time limitations. Selection criteria were established and include the following. The set of indicators must:

- Address ecological, economic and social equity/health
- Address goals
- Be understandable and straightforward
- Be informed by the Vivid Picture analyses done to date
- Be few in number (ideally 3 – 5)

Findings

The following list is the preliminary set of cross cutting indicators selected by the team. The rationale for, and the limitations of, each of these indicators can be found in the accompanying research paper.

1. *Percentage of households that are food insecure/food secure.*
2. *Average wage paid to farmworkers.*
3. *Total direct agricultural sales to public; % of total ag sales by size class.*
4. *Total number of farms, food retail establishments and food processors/manufacturers.*
5. *Number of organic acres in California.*

Recommendations to the Roots of Change Council

- *Adopt a list of cross-cutting indicators. We recommend tracking the recommended subset of the main list of indicators. Conduct sensitivity analyses to determine if these five (or any other subset) more or less track the overall trends of the total list of indicators.*

- *Refine the list by engaging food system stakeholders, obtaining comments and feedback.*

Taking the Indicators Forward

Background

Developing sustainability indicators for the Vivid Picture project was a groundbreaking undertaking. In the context of the project, the indicators can be used in analyzing the Vivid Picture, the change agenda and food system trends; selecting ideal VP values; assessing past performance as well as current baseline and future trajectories; and communicating with the public. It is hoped that they will also serve to benefit to local and state policy planning processes and the efforts of other organizations and institutions, and contribute to the growing field of sustainability indicators.

Recommendations to the Roots of Change Council

- Accept the proposed primary and cross-cutting indicators as described above as a good starting point for further discussion with stakeholders.

The Vivid Picture sustainability indicators have been successfully developed and approved by the ROC Council and dozens of food system experts. However, the meaningfulness of the indicators with a broader audience still needs to be tested. It is recommended that these indicators accompany a qualitative analysis in the next phase of the project and be taken back to the project's constituents to illuminate and further

develop the meaning of the indicators. Experts outside the project team can help identify *why* trends are moving in particular directions—an important complement to the quantitative data. Stakeholders can and should be brought into the process in identifying 2030 target values for the indicators. Linking indicators through to policy and change is still in its infancy, and it is important to be proactive in ensuring the Vivid Picture indicators remain relevant and accepted.

The Indicators: Contents

The remainder of this paper provides a detailed description of the recommended Vivid Picture project sustainability indicators. Each indicator is described and detailed below under the sustainability goal it attempts to measure. Interpretations of the indicators are not given at this time. Under each goal listed below, a narrative describing the selection process for the goal's indicators is provided in order to give context to each set of indicators and explain why certain indicators were selected while others were not. This information is designed to inform the ongoing research team that may be charged with monitoring the status of each of the indicators.

Each indicator section contains:

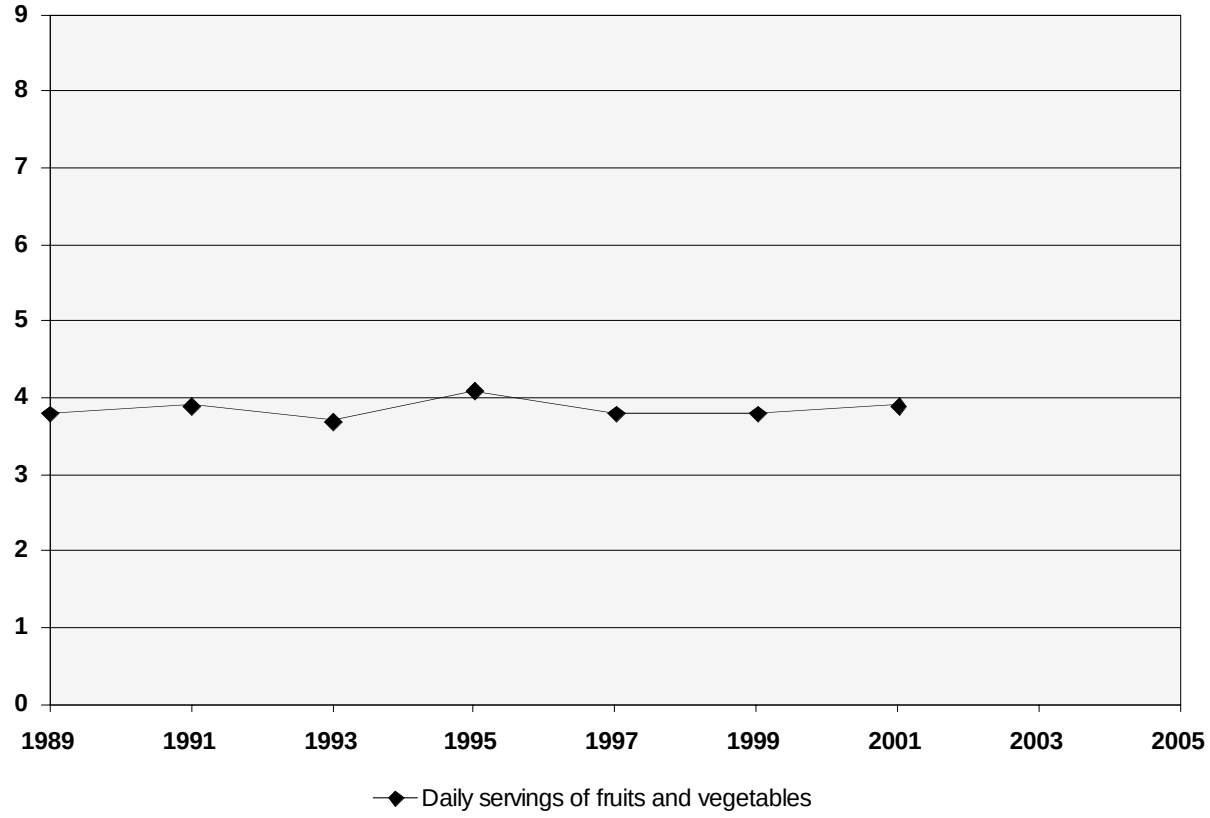
- *Trend data:* Data points or trend data in tabular or graph format for each indicator. While the purpose of the VP indicators is to monitor change between now and 2030, these historical data help to provide context, supply baseline data and facilitate a better understanding of the indicators and their sensitivity.
- *Source information:* Full reference for the source of the data, with URL information where available.
- *Data particulars:* Information to help explain and give context to the trend data.
- *Strengths and limitations:* A brief narrative highlighting the assets of the indicator as well as the limits of its power to represent the state of the food system.

Following the main list of indicators, the list of supplemental indicators, additional data points for measuring system change, and a wish list of top indicators for which no data were available are included. Neither of these lists is complete, but both are valuable and can be further developed.

Goal 1: Promotes food choices that lead to healthy eating

SELECTION PROCESS:
A set of food choice and dietary impact measures was sought in looking for direct indicators of healthy eating. Consumption of fruits and vegetables and obesity rates were selected as indicators—both are straightforward, direct and obvious indicators of the health of food choices. Together, they address good food choices as well as the consequences of poor diet. Numerous other indicators were considered to measure progress toward the goal of improved diet. The consumption of fresh food was reflected on, but there is a lack of consensus among nutritionists about the nutritional value of fresh food (ie. versus frozen or processed foods) and there is no agreed-upon target set for what proportion of food consumed should be fresh. Childhood overweight was also discussed, but the available data were based on a standard for overall fitness (fitness gram[4]) that is not as well understood as the CDC obesity standard.

1a. Daily per capita servings of fruits and vegetables



SOURCE INFORMATION:

Data were drawn from the California Dietary Practices Survey conducted by the Cancer Prevention and Nutrition Section of the California Department of Health Services. Obtained through personal communication with CPNS staff.[5]

DATA PARTICULARS:

- This indicator gauges the number of daily servings of fruits and vegetables (y-axis) consumed by the average Californian resident each year (x-axis).
- Data are collected through telephone surveys.

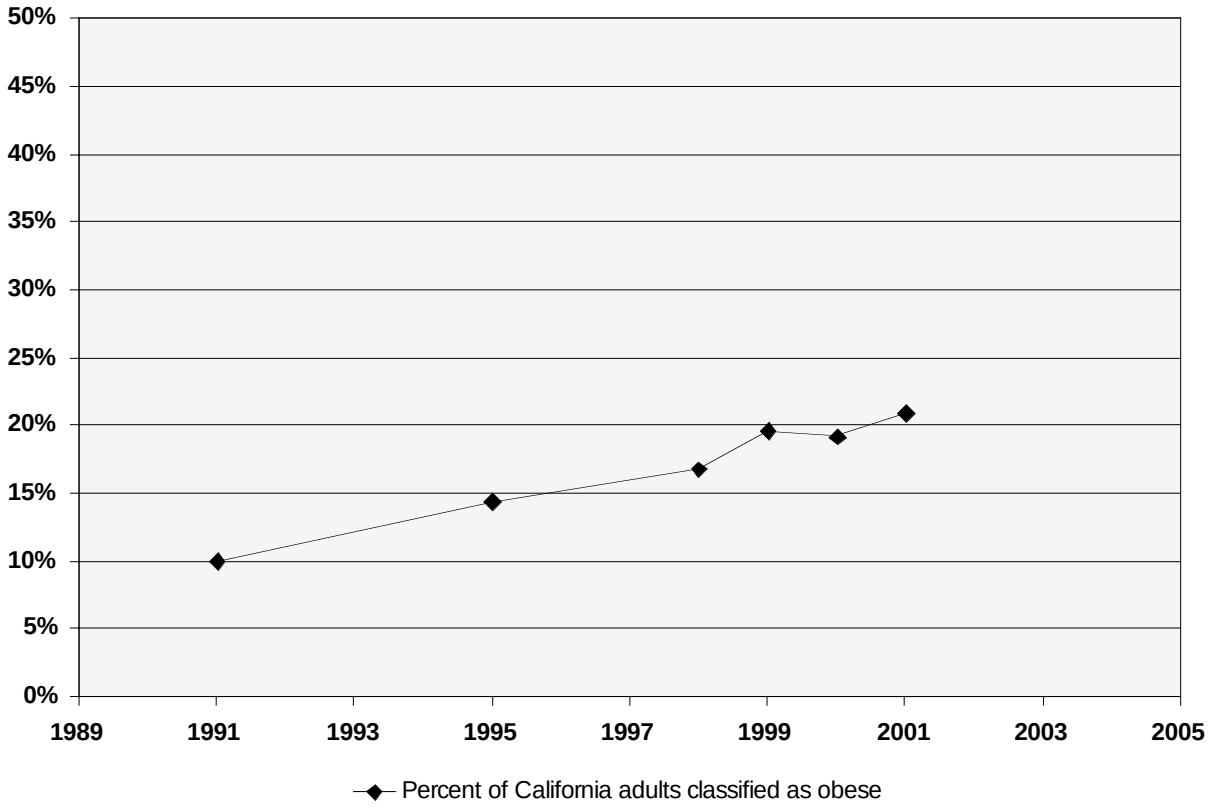
STRENGTHS AND LIMITATIONS:

Daily servings of fruits and vegetables is a very good proxy for healthy eating. It is a direct and straightforward measure of the extent to which Californians are fulfilling an important piece of the food pyramid, and obtaining key vitamins and minerals. It is also the area where diets most commonly fall short of the standard. In addition, California is a major supplier of fruits and vegetables across the state and nation. Given that produce is a key agricultural sector in the state, it makes sense from an agricultural perspective as well as a nutritional perspective that consumption of produce be used as an indicator.

This indicator is sensitive to change and the source is dependable and consistent. The survey is conducted every two years and the agency expects collection to continue well into the future, although funding issues have slowed the publication of some data.

Limitations in the methodology arise from lack of clear indication of serving size during interviews. Studies have shown that this tends to bias results upward. However, the consistency of data collection from year to year increase the reliability of the trend data. A national indicator of daily fruit and vegetable intake is available in the National Health and Nutrition Examination Survey (NHANES).[6] This survey is more precise in that respondents are shown specific serving sizes, but it is not currently available on a state-to-state basis.

1b. Adult Obesity Rate



SOURCE INFORMATION:

The Behavioral Risk Factor Surveillance System of the Centers for Disease Control and Prevention (CDC). Data are currently available at www.cdc.gov/nccdphp/dnpa/obesity/trend/prev_reg.htm

DATA PARTICULARS:

- Data points reflect the percentage of adults in California exceeding CDC standards for obesity.

STRENGTHS AND LIMITATIONS:

Of all the public health problems caused by diet-related factors, the obesity epidemic is the most widely recognized. In addition, trends in obesity are well understood by the nutritional community. The data have been collected over a long period of time and in a consistent manner, showing change in the average population at a generational scale. The source is very reliable and the data are collected consistently and reliably. The indicator is somewhat responsive to change, however, activity is also a major factor affecting obesity. Therefore, the influence of activity on obesity rates may obscure the sensitivity of the data to changes in diet.

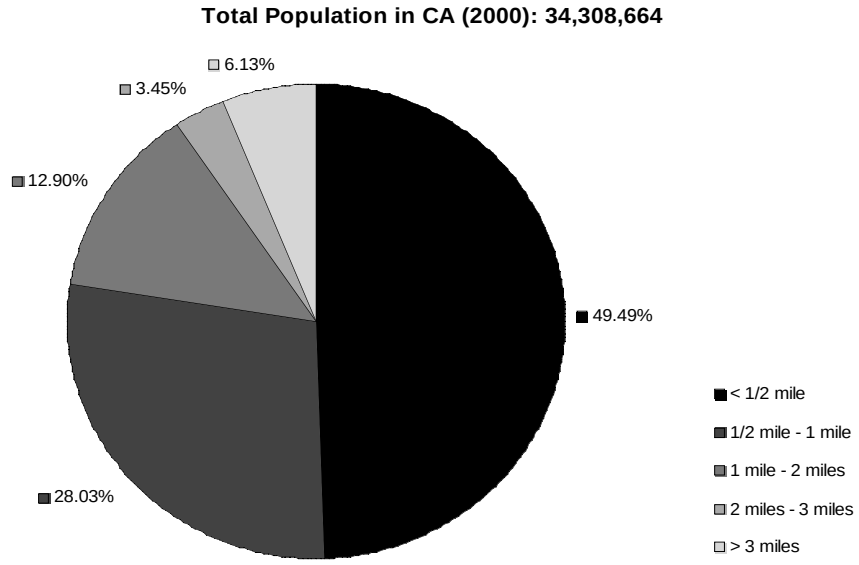
Goal 2: Provides easy access to healthy food from retail outlets for all eaters in California

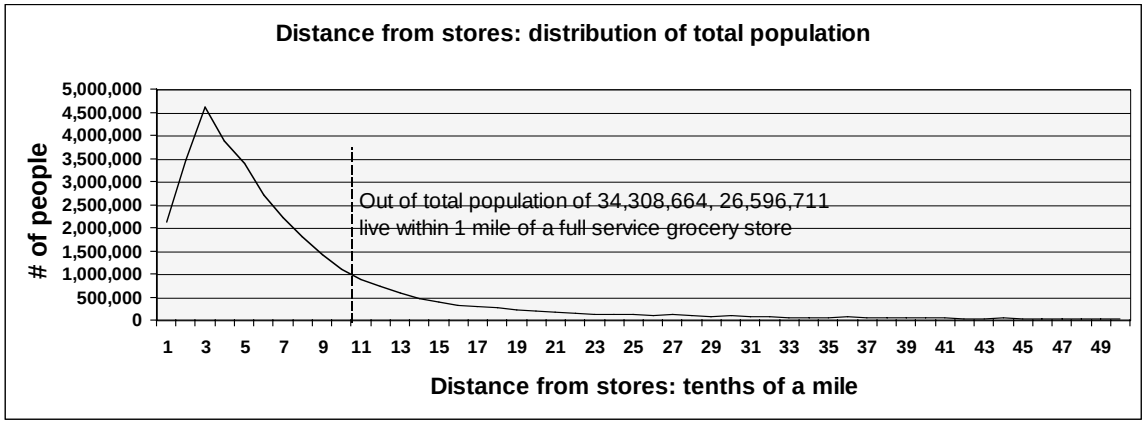
SELECTION PROCESS:
This goal has two key components—access and health. It is very closely related to goal 3, which addresses food affordability, an aspect of food access. This goal, rather, focuses on the ability of people to access food in terms of physical accessibility. This is taken a step further in addressing the ability of low-income residents to obtain healthy food through public assistance programs (eg. food stamps, WIC, seniors nutrition program, school lunch programs). As such, the indicators selected for this goal, as a collection, include measures of access to full-service food stores and the extent to which farmers' markets, a key outlet for healthy food, accept coupons from low-income populations. Together, these indicators cover various venues where people obtain food, as well as a variety of mechanisms through which people obtain food—namely, direct purchasing and public assistance programs.

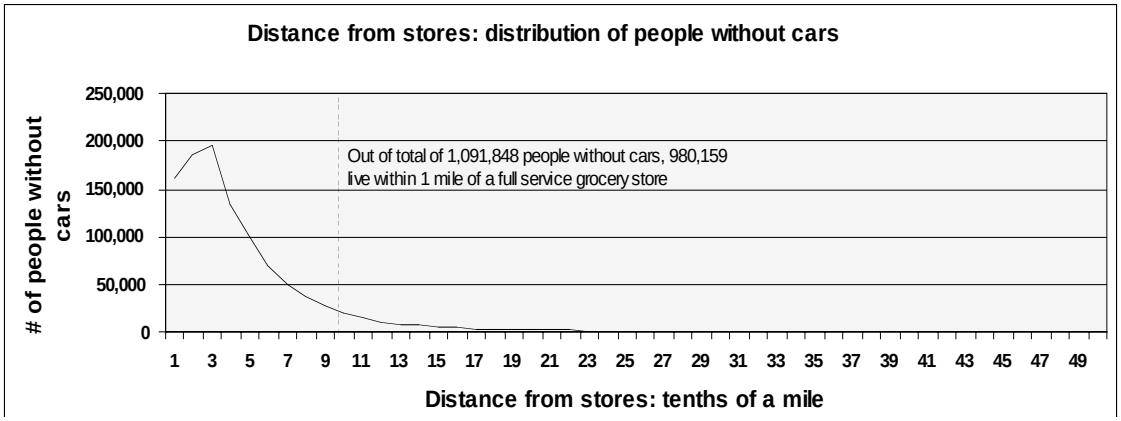
In selecting indicators for this goal, a number of important measures were considered. For example, an indicator of the prevalence of an emergency food system was suggested. However, it is not clear in the context of a sustainable food system whether an increase in such systems, including access to government food programs, would reflect progress or a deterioration of food system health. Yet given the importance of having some indication of the state of the public safety net, the prevalence of food banks was included as a supplemental indicator. The number of farmers' markets was also considered, and is included as an indicator for goal 7. Here, the number of markets accepting food stamps and coupons was selected in order to target the low-income population.

In the indicator measuring distance of consumers to the nearest full-service store, the designation "full-service" was questioned and alternates, such as "natural food store," suggested. Since the goal addresses retail outlets in general, it was felt that more specific designations, such as natural food stores, were too specific. In addition, full-service outlets were understood as the most accurate category to describe outlets that sell healthy food. Full-service outlets were understood to generally have produce departments, a good indicator of the prevalence of healthy food.

2a. Distance (and distance distribution) from eaters to nearest full-service food store (urban and rural)







SOURCE INFORMATION:

Ecotrust Geographic Information System (GIS) analysis by Analisa Gunnell based on 2004 store data from InfoUSA and urban and rural designation data and population data from the US Census 2000. Automobile data from US Census 2000, Table SF3.[7]

DATA PARTICULARS:

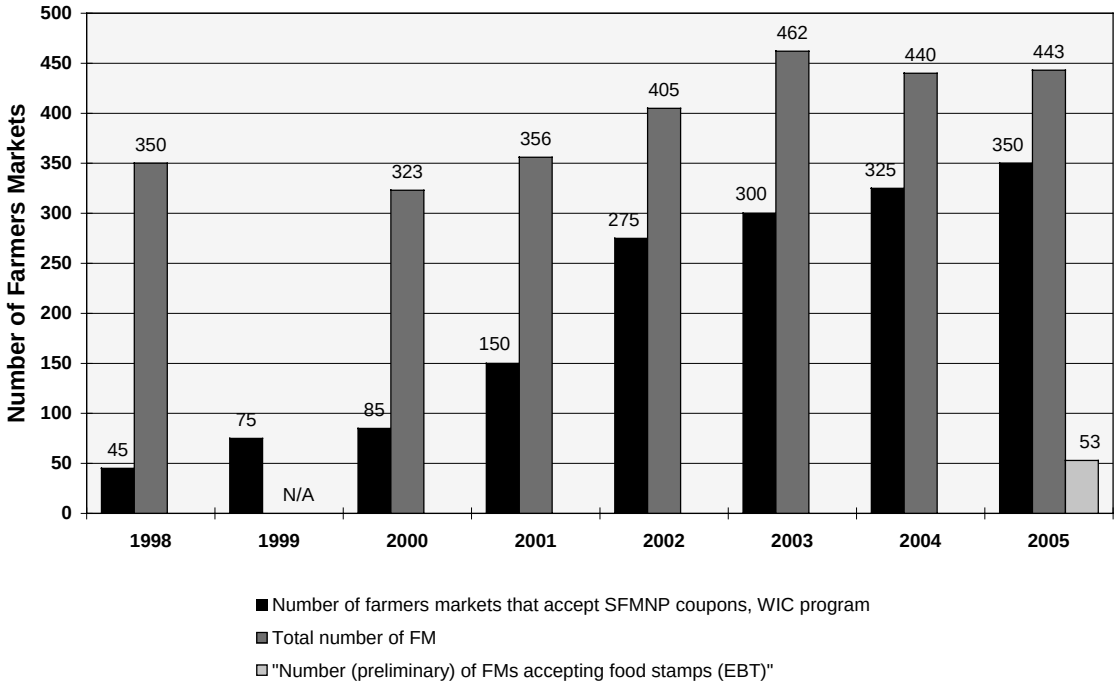
Outlet names and locations were obtained from InfoUSA.[8] California Nutrition Network's GIS Mapviewer software (www.calnutritionnetworkgis.org) was used to obtain a subset of "grocery store and food market" names that were (a) large chain supermarket/grocery store chain with at least 10 stores, (b) small chain supermarket/grocery store with 5 – 9 stores, (c) grocery, other supermarket/grocery store that is independent or less than 5 stores. From this list, outlets known not to be full-service outlets were removed. These included outlets such as liquor stores and gas stations. The remaining list was then geocoded based on addresses obtained from InfoUSA and inserted into the Geographic Information System (GIS). Census block data was overlain in order to calculate miles traveled to the nearest full-service outlet. Rural and urban designations from the Census data allowed for further analysis. Distances measured are road-based, not direct geographical distance.

STRENGTHS AND LIMITATIONS:

An indication of how far people must travel to obtain food is an important aspect of access. Generally speaking, the further people, *particularly* those without personal transportation, live from food outlets, the poorer their access is. This indicator has proven useful beyond its purpose and the GIS layers on which it is based provide a wealth of new information and potential for broad analyses that affect many dimensions of social equity and food security. The data can quantify how far Californians must travel to access full-service food retail outlets, and can further break down the data into income categories, car ownership and rural/urban designations.

Despite the power and potential of this indicator and the data on which it is based, there are certain drawbacks. The data sets are expensive to gather and maintain, and require special skills to interpret. However, this data is collected regularly by a private agency. Unfortunately, price points at different stores are not currently available on a statewide basis. In the future, this data will be essential in order to further analyze aspects of affordability and its relationship with food access. Finally, results are likely slightly skewed because Census and store data come from different years. At the time of this analysis, Census data for 2004 had not yet been released.

2b. Number of farmers markets that accept Senior Farmers Market Nutrition Program coupons, Women, Infant and Children (WIC) coupons and food stamps



Farmers' markets that accept food stamps:
In April 2005, 53 markets accepted Electronic Benefits Transfer (EBT).

SOURCE INFORMATION:

Farmers' markets that accept WIC coupons: CA Department of Health Services, Women, Infants and Children Supplemental Nutrition Branch. Personal communication with WIC Program Coordinator Patty Blomberg.

Farmers' markets that accept SFMNP coupons: Senior Farmer Market Nutrition Program Coordinator, Carole Cory from the CA Aging Department, USDA Food and Nutrition Service.

Farmers' markets that accept food stamps: The California Farmers' Market Electronic Benefits Transfer (EBT) Implementation and Promotion Project. Available at: www.ecologycenter.org/ebt/index.html

DATA PARTICULARS:

- The graph represents the total number of farmers' markets approved by both WIC *and* the Senior Farmers Market Nutrition Programs. "Approved" means that these markets have been accepted by these programs to redeem WIC and Senior coupons. Markets may deliver benefits and coupons in different ways.
- *WIC Program*: WIC is formally known as the Special Supplemental Nutrition Program for Women, Infants and Children. Eligible WIC recipients are issued Farmers' Market Nutrition Program coupons in addition to their regular WIC benefits. These coupons can be used to buy fresh, unprepared fruits, vegetables and herbs from farmers or farmers' markets that have been approved by the Department of Health Services to accept FMNP coupons. The federal food benefit

level for FMNP recipients may not be less than $10 and no more than $30 per year, per recipient. However, this may be supplemented with state, local or private funds. The farmers or farmers' markets then submit the coupons for reimbursement.

- *Number of farmers' markets accepting food stamps*: Food stamps are now distributed and redeemed electronically using a "Golden State Advantage" card (also known as Electronic Benefit Transfer—EBT), which is distributed to eligible recipients of food assistance in California. Farmers' markets that wish to accept food stamps must now become authorized to accept EBT cards, and organize and promote the use of EBT cards at the market. The market must set up a Central Point of Sale Device (POS), swipe customers' cards, and then distribute market scrip to eligible customers. The list of approved markets will be updated regularly on the Ecology Center website.

STRENGTHS AND LIMITATIONS:

This indicator portrays an important subset of government food assistance programs. It is a valuable mechanism for showing how low-income segments of the population who do not have access to food can gain access and assistance at public markets. The sources are credible and reliable and the indicator tells a valuable part of the story of food access for the low-income population. However, obtaining the data is dependent on personal communication with program coordinators—the information is not published nor readily available to the public at this time.

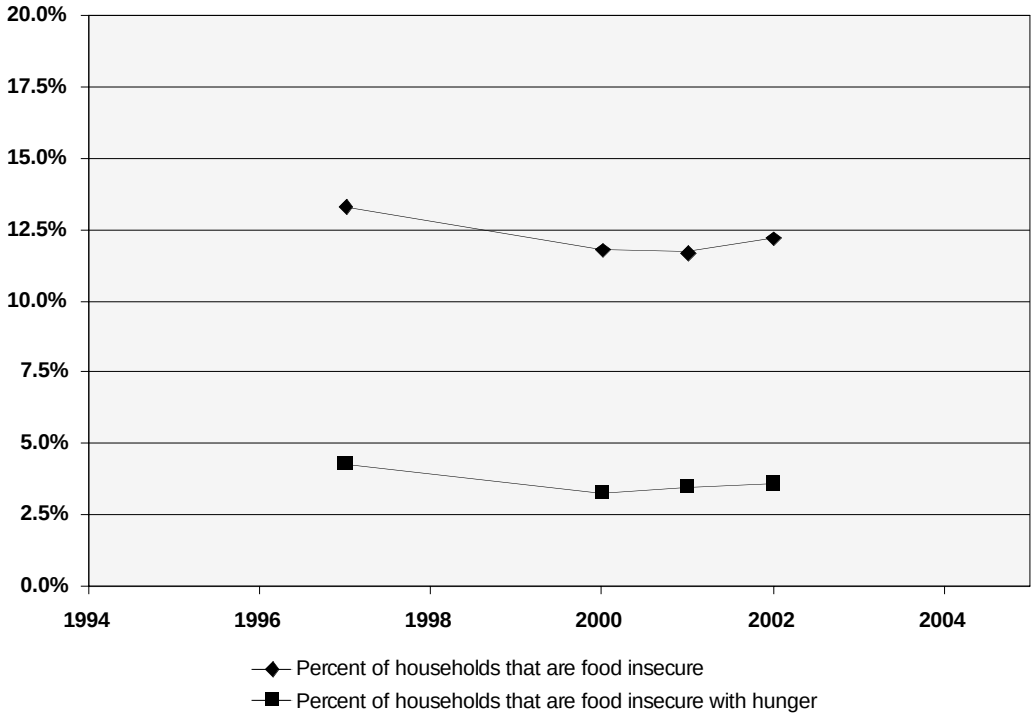
Goal 3: Provides affordable food for all eaters in California

SELECTION PROCESS:
Food affordability is a complex concept for which to ascribe indicators—one that relates not only to poverty and inadequate income but the cost of food in the marketplace. On one hand, a person with low income may be able to afford food if the cost of food is also low. Clearly, affordability is worst for those with low incomes when the cost of food is high. However, cheap food may also indicate that producers and processors are not receiving fair wages (although the farmgate to consumer price spread is a more accurate indicator of this).

Some work has been done in attempt to address the proportion of people's income available for food (vs. housing and other basic costs). This was found to be an inadequate indicator for the Vivid Picture because data are not and will not be collected consistently and across the state. Another consideration was that the proportion of the population using food stamps could be seen as a good indicator of how many people can afford food. However, there is a significant subset of the population who do not obtain food stamps even though they are food insecure, undermining the reliability of this indicator. Ideally, there would be an indicator that reflected the affordability of a reasonable diet, but such a measure is not available. Currently, affordability and healthy diet are addressed under two separate goals and there is no available single indicator addressing both. Another indicator considered was the average cost of food basket in inner city communities. In this case, the data could be collected but at significant expense and there is no agency collecting this information at this time. Finally, the number of food banks per capita was also considered and is included as a supplemental indicator. It was not included as a principal indicator in part because it is not straightforward whether or not the number of food banks is a positive trend. While it is important and beneficial to meet the population's need, the need for food banks in itself is negative.

Because of the complexity of these issues, the Vivid Picture indicators team selected indicators dealing directly with food security and poverty. Ultimately, the extent to which people can afford food is directly linked to their household income (since poverty measures are based in part on a ratio of household income to the local cost of living) as well as one's ability to know where their next meal is coming from (food security). Furthermore, by comparing trends in poverty and food security, we can isolate changes in food affordability from overall economic trends. The indicators presented here were the most relevant indicators of food affordability identified at this point in time.

3a. Percentage of households that are food insecure/food secure
a1. Percentage of households that are food insecure
a2. Percentage of households that are food insecure with hunger



SOURCE INFORMATION:

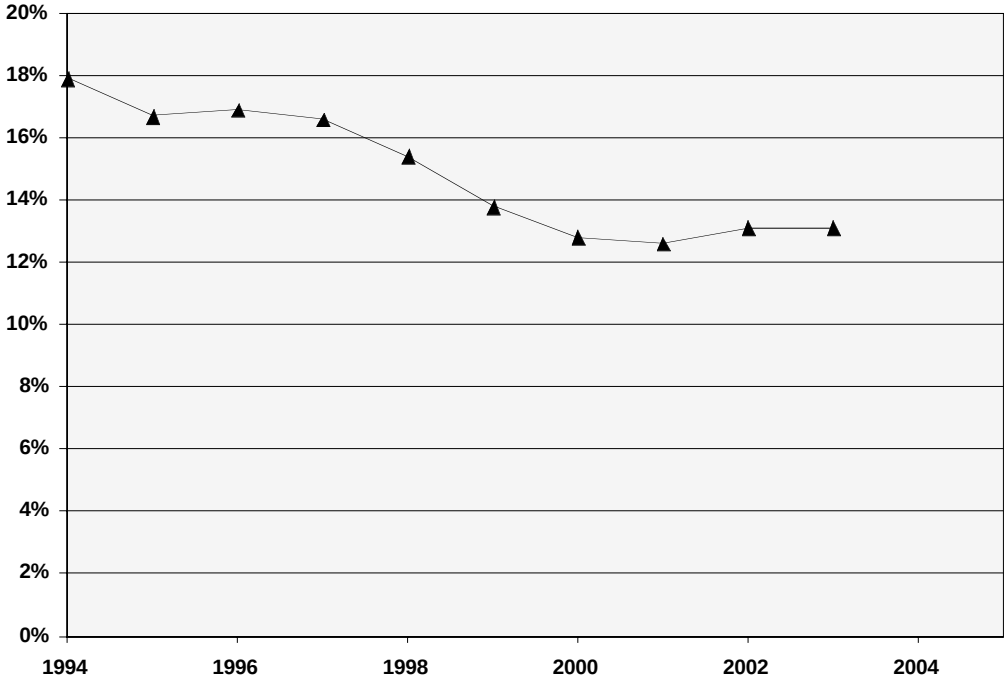
Data from *Household Food Security: Statistical Reports* published by the USDA Economic Research Service (ERS). Available in the Briefing Room "Food Security in the United States: Recommended Readings" at: www.ers.usda.gov/Briefing/FoodSecurity/readings.htm#statistical.

DATA PARTICULARS:

- Three-year averages (including the year before and the year after the listed year) are published to provide adequate precision at the state level. Data for a single year were not considered sufficient to provide reliable estimates, leading to the use of the three-year averages.
- 1996 – 98 data has been adjusted to account for different screening procedures in the survey protocol during this period.[9]
- Data for 1997 – 99 and 1998 – 2000 are not available.
- In the context of this data, food insecurity occurs when household members have "concerns about adequacy of the household food supply and in adjustments to household food management, including reduced quality of food and increased unusual coping patterns." The added descriptor of hunger refers to situations in which adults in the household have "repeatedly experienced the physical sensation of hunger."
- A full description of the methodology and particulars of this data are available from the source.[10]

RATIONALE/STRENGTHS AND LIMITATIONS:
Food security is an excellent indicator of food affordability. It directly specifies the extent to which the population is achieving adequate food intake, which has a significant correlation to affordability. The data are collected consistently, are reliable and are from a credible source. Furthermore, they are highly responsive to change in the food system. Food security is a particularly useful indicator for the Vivid Picture as it also addresses food access (goal 2). Comparisons with the poverty indicator can help isolate changes that are not due to overall changes in the economy.

3b. Percentage of population that is in poverty.



SOURCE INFORMATION:

Data are provided by the United States Census, available at www.census.gov/hhes/www/poverty/poverty.html, which provides detailed poverty tables for all ages from the Current Population Survey. Data for 2002 and later are located in "Table POV46: Poverty Status by State."[11] Poverty data prior to 2002 are located in "Table 25: Poverty Status by State and Ten Large Metropolitan Areas."

DATA PARTICULARS:

- Poverty thresholds change annually. In 2002, the weighted average threshold for one person was 9,183.[12]

RATIONALE/STRENGTHS AND LIMITATIONS:

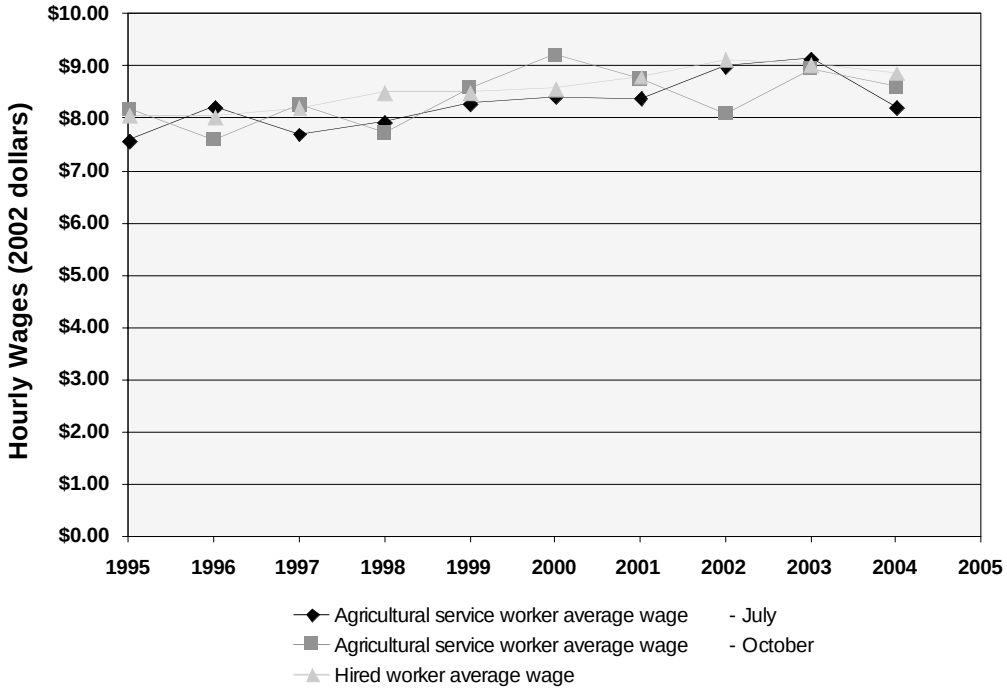
Poverty is a leading driver of food affordability—if people are living in poverty, they will clearly have a more difficult time being able to afford food. The source for this data is reliable, understandable and consistent and it offers reasonable trend data on a statewide basis. However, poverty is not highly sensitive to change in the food system—for example, if the food system made great strides toward sustainability, this would not necessarily be reflected in similarly changing poverty rates, although some improvement would be expected among food system workers. Poverty trends are also useful in understanding trends in food security.

Goal 4: Provides for meaningful livelihoods and opportunities for all food and farming workers.

SELECTION PROCESS:
The indicators considered for this goal are fundamentally about basic equity for people working in the food and agriculture industries. Measures sought aimed to look at the sectors along the food value chain and address what people are earning, how they are employed, whether they have equal opportunities, etc. These underlying indicators of social equity provide a good foundation, and a significant part, of meaningful livelihoods. They are also measures that economic conditions in the overall value chain will impact directly.

It can be assumed that as wages rise, benefits and other positive aspects of employment are likely also increasing. While there are many dimensions of meaningful livelihoods, income is one of the most fundamental. As such, some of the indicators selected address income. Farmworkers were not compared with other food service workers because the type of employment (i.e. seasonal, part-time) is currently so fundamentally different that they do not compare. The status of ethnic minorities and women farmers are illustrated in order to show how the transition of the farm population reflects the overall population. Certain indicators that were considered but for which there was no data available included the number of women and ethnic minorities in leading corporate positions, and relative income from minority producers. Many aspects of meaningful livelihoods, such as the degree of control and self-direction a job provides, are not broadly measurable, but this does not diminish their importance. Indicators, however, are restricted to those aspects for which measurements exist.

4a. Average wage paid to farmworkers



SOURCE INFORMATION:

USDA National Agricultural Statistics Service. Farm Labor, November Reports. Available at: http://usda.mannlib.cornell.edu/reports/nassr/other/pfl-bb/. See Tables (a) "Agricultural Service Workers: Number, Hours Worked, and Wage Rates for California, Florida, and United States"

and (b) "Hired Workers: Annual Average Wage Rates By State."

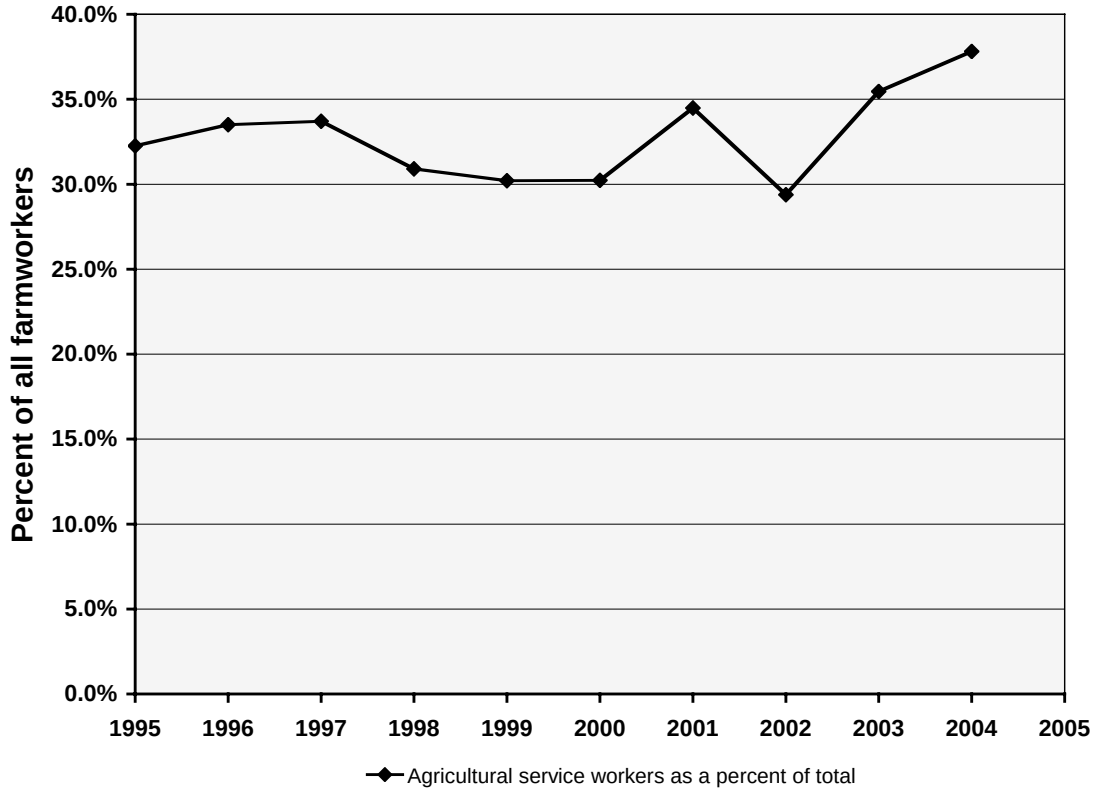
DATA PARTICULARS:

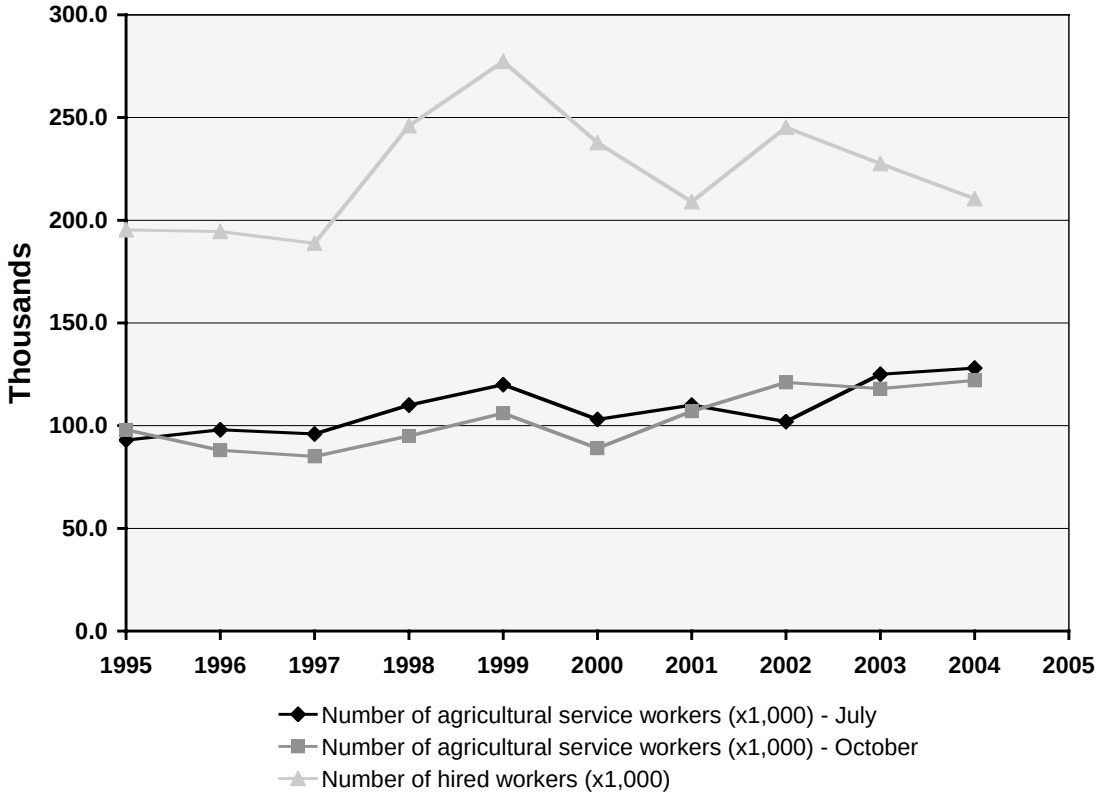
- Annual data not available for agricultural service worker average wages.
- Hired worker average wages: excludes agricultural service workers. California wage data available on website going back to 1962.
- Surveys for hired agricultural service workers occur in July and October to represent different seasons.
- A hired worker is “anyone, other than an agricultural service worker, who was paid for at least one hour of agricultural work on a farm or ranch. Worker type is determined by what the employee was primarily hired to do, not necessarily what work was done during the survey week.”
- An agricultural service worker is defined as someone who provides “service on a contract or fee basis such as veterinarian work, artificial insemination, sheep shearing, milk testing, etc., performed on the farm or ranch. This also includes custom crews and crew leaders.” However, the definition is currently somewhat misleading, as this is the category into which all contract labor falls in the USDA survey.
- Adjusted for inflation to 2002 dollar.

STRENGTHS AND LIMITATIONS:

An important aspect of a meaningful livelihood is earning a living wage. If workers' incomes put them below the poverty level, as is the case with many farmworkers, they cannot be said to have meaningful livelihoods. Yet, since income is measured per hour, the indicator does not provide information about the regularity of work, which is a concern because agricultural service workers in particular have highly inconsistent work. In addition, most agricultural workers of all types only have work seasonally and are not provided with benefits. Nevertheless, this indicator reflects the extent to which worker income is making progress toward fair wages. Unfortunately, the data does not further break down the data on agricultural service workers. The average wages may include some bias due to the inclusion of higher paid specialty labor and professionals.

4b. Percentage of farmworkers employed through farm labor contractors





SOURCE INFORMATION:

USDA National Agricultural Statistics Service. Farm Labor, November reports. Available at http://usda.mannlib.cornell.edu/reports/nassr/other/pfl-bb/ See tables: (a) "Agricultural Service Workers: Number, Hours Worked, and Wage Rates for California, Florida, and United States"

and (b) "Hired Workers: Annual Average Number and Hours Worked By Region and United States"

Percentage of farmworkers employed through contractors: Ratio of July agricultural service workers to sum of July agricultural service workers and hired workers.

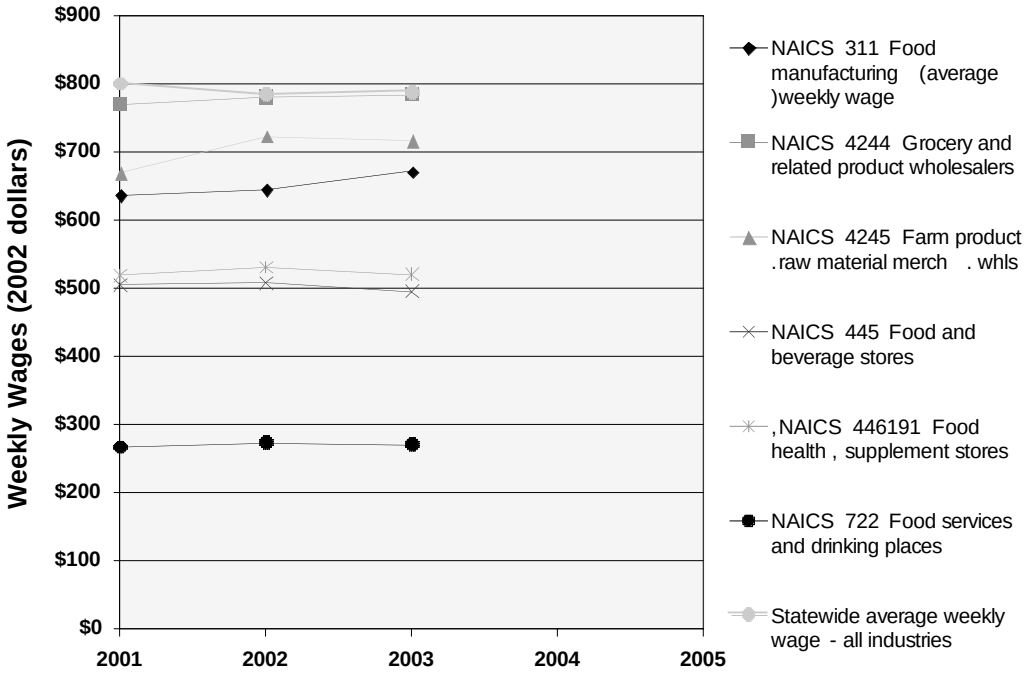
DATA PARTICULARS:

- Annual data not available.
- For additional information and definitions, see indicator 4a.
- The second graph provides context to the first, giving a perspective on the prevalence of hired vs. contract labor. It shows the slow, steady growth in contract labor, removed from the noise in the level of general hiring.

STRENGTHS AND LIMITATIONS:

This indicator is an important complement to 4a. In addition to wages, the proportion of workers employed through labor contractors gives an indication of equity because there are concerns with quality of employment when going through contract labor providers. Most importantly, employers are reportedly increasingly using labor contractors because it absolves the employer of accountability for worker conditions and wages and has been associated with a decline in these aspects. There has also been an association made between farm labor contract use and low wages. The source is reliable and the data will be available well into the future.

4c. Average wage paid to grocery workers (compared to other industries)



SOURCE INFORMATION:

Quarterly Census of Employment and Wages. Bureau of Labor Statistics public query data tool. Available at: http://data.bls.gov/PDQ/outside.jsp?survey=en

DATA PARTICULARS:

- Query identifiers used: California, Statewide, Average Weekly Wage.
- NAICS codes are part of a new classification system (it replaces the Standard Industry Code). Data under this scheme only go back to 2001.
- Data includes private establishments only, for all sizes of establishments.

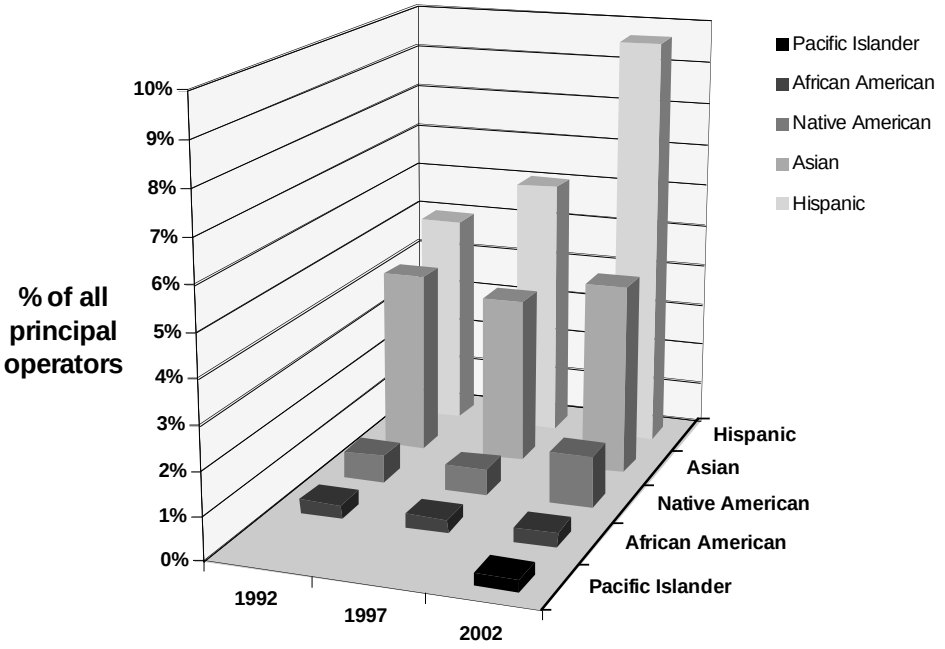
STRENGTHS AND LIMITATIONS:

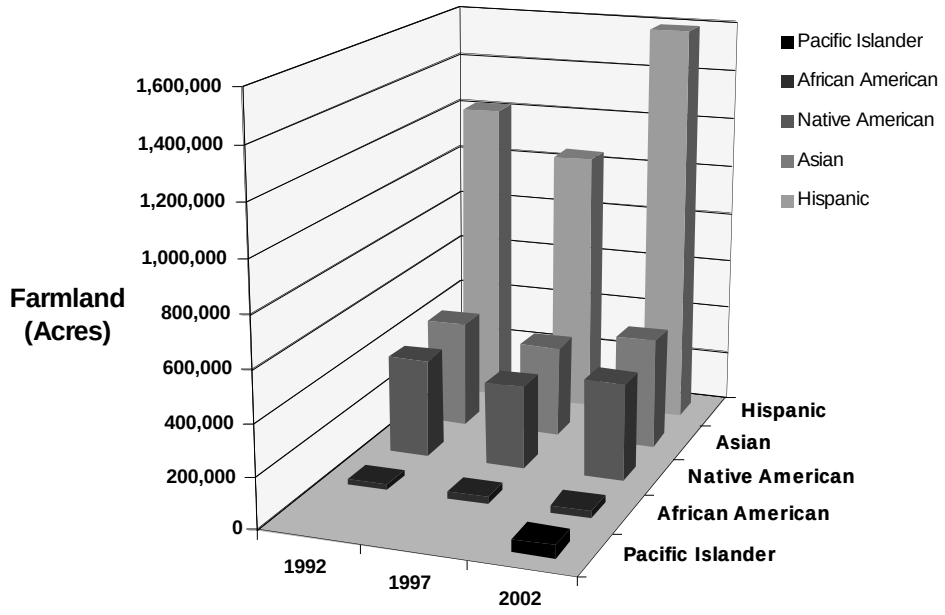
The average wage paid to grocery workers is important to monitor as an indication of adequate wages, and is particularly relevant at this point in time. Many analysts believe that with the trend toward big box stores such as WalMart and an increasingly competitive retail environment, retail worker wages could be negatively affected. This is a responsive measure of a key factor in meaningful and sustainable livelihoods for retail workers. As with indicator 4a, this indicator is not a comprehensive measure of the meaningfulness of work for those in the retail sector (it does not take into account benefits, work environment, etc.) but is the best available quantitative indicator of meaningful livelihood for this group.

4d. Average wage paid to food service and processing workers (compared to other industries)

See indicator 4c.

4e. Total number of ethnic minority farmers (Hispanic, Asian, African American)





SOURCE INFORMATION:

USDA 2002 Census of Agriculture:

Data on African American farmers: Table 42:
www.nass.usda.gov/census/census02/volume1/ca/st06_2_042_042.pdf

Data on Asian farmers: Table 45:
www.nass.usda.gov/census/census02/volume1/ca/st06_2_045_045.pdf

Data on Hispanic farmers: County Table 50:
www.nass.usda.gov/census/census02/volume1/ca/st06_2_050_050.pdf; State Table 17:
www.nass.usda.gov/census/census97/volume1/ca-5/ca1_17.pdf; State Table 49:
www.nass.usda.gov/census/census02/volume1/ca/st06_1_049_049.pdf

Data on Native American farmers: Table 43:
www.nass.usda.gov/census/census02/volume1/ca/st06_2_043_043.pdf

Data on Pacific Islander farmers: Table 44:
www.nass.usda.gov/census/census02/volume1/ca/st06_2_044_044.pdf

DATA PARTICULARS:

- Prior to 2002, the Asian and Pacific Islander categories were combined. In 2002, an individual could also specify more than one race, placing them in a new category.
- In 2002, the Census started counting more than just principal operators—up to 3 farmers per farm. However, number of principal operators is still listed in Table 47.
- Since 'Hispanic' is not a racial category, there is overlap with other (racial) categories.
- In 1997, Census data started being adjusted for non-response and non-coverage.

STRENGTHS AND LIMITATIONS:

Number of minority farmers is a good indicator of new entrants because these are groups that have traditionally been excluded from owning and operating farms. As numbers increase, it is a clear indicator that new entrants are able to get established. Looking at the number of farmers and acreage controlled, it is possible to also get a sense of the average size of farms operated by people in these categories. Adjustments due to changes in methodology in the 1997 and 2002 Census of Agriculture, such as a shift in 2002 to collecting data on more than just principal operators and the addition of Pacific Islanders as a separate category, may bias some comparisons, but should not impact the timeframe of the Vivid Picture Project.

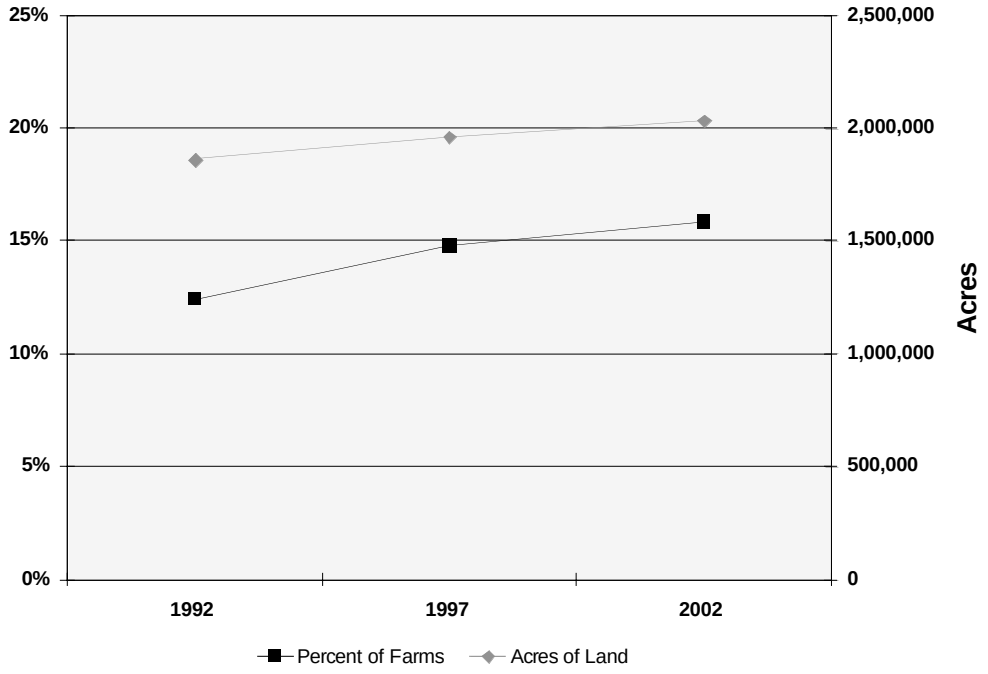
Goal 5: Facilitates continuous entry for beginning farmers, fishers, foresters, processors, retailers, restaurateurs and ranchers.

SELECTION PROCESS:
Indicators selected for this goal aim to reflect the facility with which people in various categories who are not yet farm operators are able to move into the industry. Indicators for other sectors of the food system were not found to be available. In terms of production, the number of new farmer entry programs was considered as an indicator. While this is a good qualitative measure, there is no reliable data on the number and extent of these programs. The price of farmland is one of the main obstacles facing entrant farmers. This data is available but the particular economic conditions, urban pressures and political climate in different regions of California are too heterogeneous to make such an indicator valid. The value of loans available to new farmers was selected as a supplemental indicator for this goal. While it is a good indicator reflecting the facilitation of new entrants to farming, it does not fundamentally reflect a healthy agricultural economy and represents a type of social safety net. Ultimately, the age distribution of farmers and the proportion of minority and women farmers are the best available indicators of a system that encourages new producers. The number of fishing licenses and permits was selected as an indicator of conditions that facilitate entry into fishing.

5a. *Total number of ethnic minority farmers, farms, acreage (Hispanic, Asian, African American, American Indian)*

See indicator 4e.

5b. *Total women farmers (principal operator) and acreage controlled*



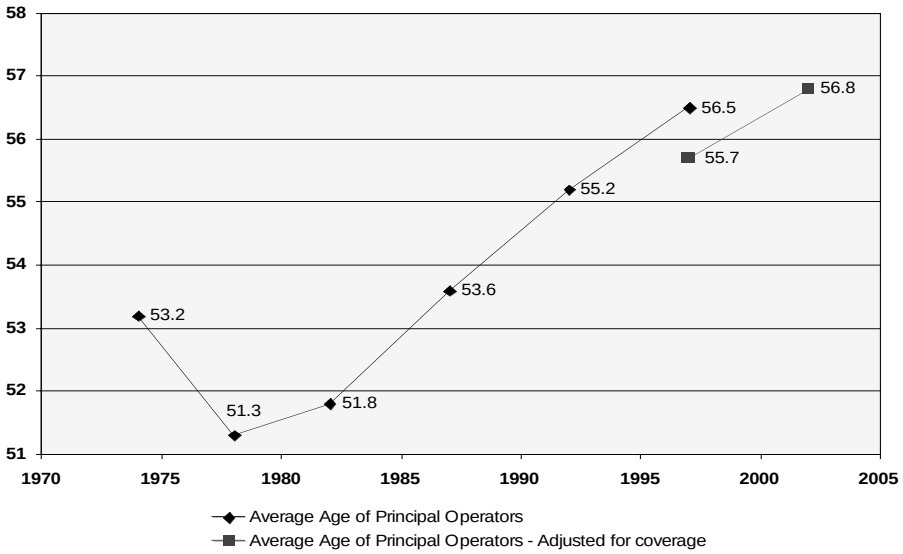
SOURCE INFORMATION:

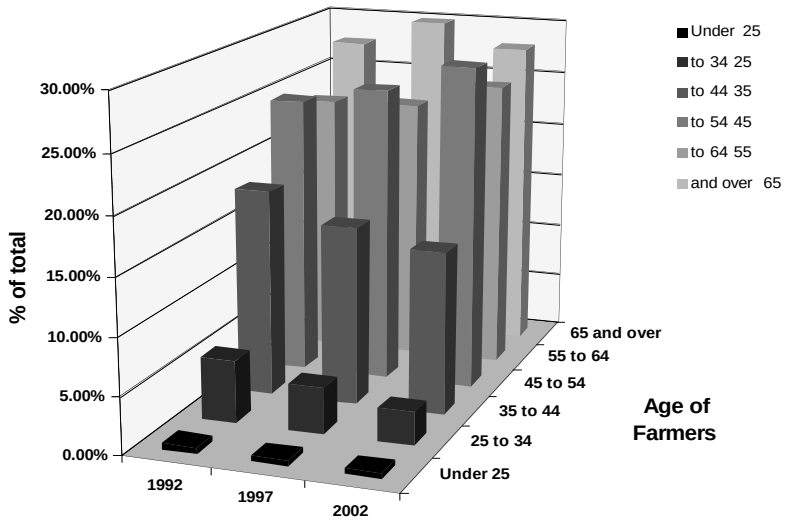
Data on women farmers: USDA Census of Agriculture 2002. *Table 48: Women Principal Operators - Selected Farm Characteristics: 2002 and 1997*. Available at: www.nass.usda.gov/census/census02/volume1/ca/st06_1_048_048.pdf

STRENGTHS AND LIMITATIONS:

As with minority farmers, this is a good indicator of new entrants because women represent another group that has traditionally been excluded from owning and operating farms. As the numbers of women principal operators increases, it indicates that new entrants are more easily able to get established. Adjustments due to changes in methodology between the 1997 and 2002 Census of Agriculture may bias some comparisons.

5c. *Average age and age distribution of farmers*





SOURCE INFORMATION:

Average age of principal operator: USDA Census of Agriculture, State Level Data, *Table 1. Historical Highlights: 2002 and Earlier Census Years*, at www.nass.usda.gov/census/census02/volume1/ca/st06_1_001_001.pdf

Age of farmer by category: USDA Census of Agriculture, State Level Data. *Table 60. Summary by Age and Primary Occupation of Principal Operator: 2002*, at www.nass.usda.gov/census/census02/volume1/ca/st06_1_060_060.pdf For 1997 data, see 1997 Census of Agriculture, State Level Data, *Table 48. Summary by Age and Principal Occupation of Operator: 1997,* at www.nass.usda.gov/census/census97/volume1/ca-5/ca1_48.pdf

DATA PARTICULARS:

- Data adjusted for coverage and non-response are only available for 1997 and 2002.
- Quantities are summed from the separate USDA tables broken down by whether the operator's primary occupation is farming.
- 1997 data are not adjusted for coverage or non-response to the survey.
- The third graph, farmland by age, is provided for additional context.

STRENGTHS AND LIMITATIONS:

This is a key indicator of new entrants to farming. Higher numbers of young farmers would clearly reflect this since new entrants tend to be young. Also, large numbers of farmers approaching retirement age would signal the need for new entrants. An increasing average age of farmers indicates a climate in which new farmers have a difficult time getting started. Agree with Katie, that although the third graph is interesting, it is too much info. We need to stay as streamlined as possible.

5*d. Number of commercial fishing licenses and permits*

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Commercial Fishing licenses (R)									6,322	4,546
Commercial Fishing license (NR)	1,190	1,158	1,221	1,270	1,145	1,055	961	931	859	351

SOURCE INFORMATION:

Department of Fish & Game, License and Revenue Branch, Commercial fish licenses and permit statistics found at: www.dfg.ca.gov/licensing/pdffiles/cf_items_10yr.pdf.

DATA PARTICULARS:

- Data retrieved July 31, 2005—licenses and permits reported in the first quarter.
- Data are reliable and consistent through time. Data available since 1970.

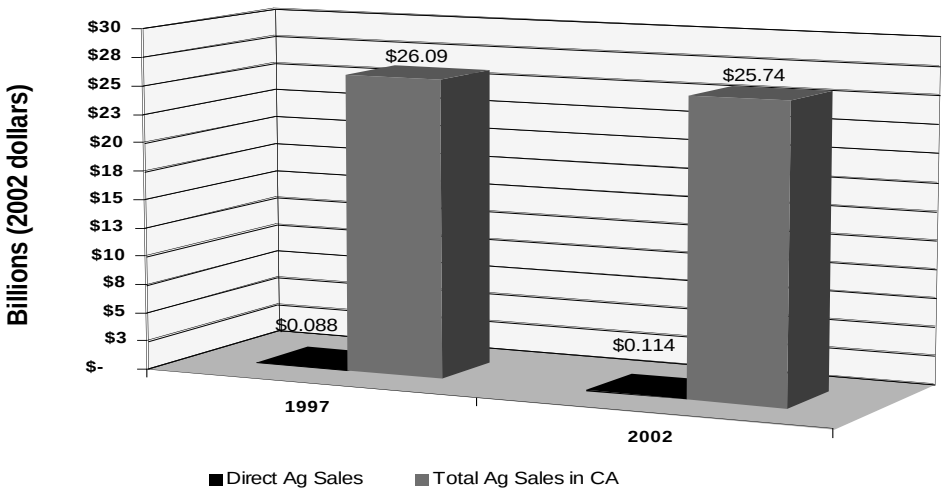
STRENGTHS AND LIMITATIONS:

This indicator shows the accessibility to commercial fishing of new and existent fishers, and the competitiveness of the fishing activities in the state. It is a straightforward indicator and the source is reliable. It is assumed that a greater number of licenses and permits reflects a context that makes it easier for new entrants to become established.

Goal 6: Provides eaters with foods produced and processed as close to home as possible

SELECTION PROCESS:
The proximity of food production and processing to eaters is a challenging goal to measure. Value chains can be very complex and involve numerous transfers between entities. Also, it is not required that food movements be reported and much of the data are proprietary. While import and export data for individual agricultural commodities are available on a national level, import data at the state level, available through bills of lading at the ports, is exceedingly expensive, making it impossible to track food miles for the state level. Currently there is no metric for food distribution other than for certain individual legs of transport between states and direct sales from producer to consumer. Direct sales is an excellent starting point because by its very nature it eliminates some of the transport back and forth (eg. to processing, packaging and storage facilities) that tends to accompany the conventional food value chain. Here, direct agricultural sales and the prevalence of farm-to-school programs are two good indicators for obtaining food produced close to home and verifying whether or not the system is accomplishing its goal. This represents a good measure, using different information sources, of the extent to which people are connecting with local food sources. Ideally, we would like to be able to collect better data on the path food travels from farmgate to eater, and several indicators on the wish list attest to this.

6a. *Total direct agricultural sales to public*



SOURCE INFORMATION:

USDA 2002 Census of Agriculture,[13] "Table 2: Market Value of Agricultural Products Sold Including Landlord's Share, Direct, and Organic: 2002 and 1997". Available at www.nass.usda.gov/census/census02/volume1/ca/st06_1_002_002.pdf

DATA PARTICULARS:

- Direct agricultural sales are listed in the Census of Agriculture every 5 years. They measures the value (in USD) of agricultural products sold directly to individuals for human consumption from roadside stands, farmers' markets, pick-your-own sites and other methods. The meaning of "direct sales" is based on the USDA Census definitions in "Appendix A—General Explanation."
- Non-edible products such as nursery crops, cut flowers, and wool are excluded. Livestock sales are included. Sales of agricultural products by vertically integrated operations through their own processing and marketing operations are excluded.

STRENGTHS AND LIMITATIONS:

This indicator is a straightforward and easily understandable method to measure one of the main mechanisms through which people purchase local food. Comparing data sets across Census years provides an interesting and useful estimate of changes in the direct sales market. However, while data collection is consistent from Census to Census, providing good trend data, the data points themselves appear to underreport actual sales.[14] Indeed, there are differences between the Census data and the figures for farmers' market sales calculated in indicator 7c. In addition, there is no certainty that all direct-marketed agricultural products are destined for local markets (e.g. some could be direct marketed to other regions over the internet). The proportion of Californian direct agricultural sales that are destined for locations within California is not available at this time. Despite these limitations, this indicator is the best available approximation of local, direct sales of agricultural products.

6*b. Percentage of consumers now buying California agricultural products more often than 6 months ago.*

In September 2003, 33% of the California public was buying more CA agricultural products more often than 6 months ago.

SOURCE INFORMATION:
The California Grown Campaign of the California Department of Food and Agriculture. Data drawn from Tootelian, Dennis (2004, October). *Economic Analysis of the 'California Grown' Campaign*. Commissioned by Fleishman-Hillard. See also CDFA press releases.[15]

DATA PARTICULARS:

- The data are based on written surveys conducted for the Campaign.

STRENGTHS AND LIMITATIONS:
This is a clear and direct indicator of the degree to which Californians are purchasing food produced close to home. It is a highly sensitive measure of change, as it is a direct and responsive measure of change in consumer behavior. Those surveyed who were aware of the campaign had significantly higher rates of purchasing California products than those who were not aware of the campaign. However, there is no guarantee that the survey will continue to be funded and conducted every 6 months. Nonetheless, having this data point is important and valuable in providing a benchmark of the state of Californians' purchasing and eating habits right now and is a good starting point for repeat data collection.

6c. *Number of school districts with farm-to-school programs.*

School districts implementing farm-to-school (F2S) programs: 30
Total school districts: 986
% of school districts wit F2S programs: 3.04%

SOURCE INFORMATION:

Data obtained from the website of the National Farm-to-School Program at the Center for Food and Justice, Urban and Environmental Policy Institute at Occidental College, California, at: www.farmtoschool.org/ca

DATA PARTICULARS:

- A school district is considered as having a farm-to-school program if at least one of the schools in the district has a farm-to-school program.
- A school is considered to be implementing a farm-to-school program when it is carrying out all of the following activities, or a combination of #1 and any of the other activities: 1. Buying products from local area farmers for a cafeteria meal program or for nutrition education in the classroom 2. Gardening, composting and waste management programs 3. Nutrition, health and environment education in the classroom 4. Experiential learning opportunities such as farm tours, trips to farmers markets, farmer and chef visits to the classroom

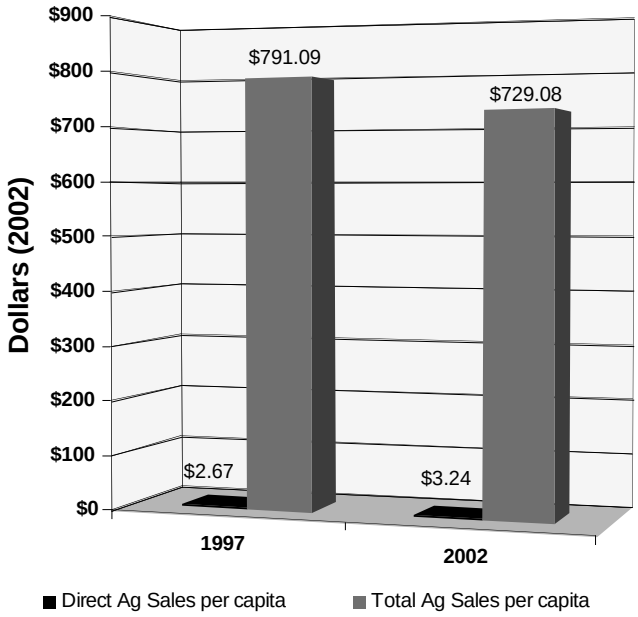
STRENGTHS AND LIMITATIONS:

This indicator lists the number of school districts, rather than simply the number of schools (number of schools is an indicator for goal 7: “Encourages eaters to know where, how and by whom their food is produced”), because it alludes to the dimension of geographic distribution, showing the extent to which these programs have been adopted across California. The more districts that have farm to school programs, the more broadly the youth population has access to healthy, fresh food produced close to home. This indicator has the added benefit of reflecting a level of education about the food system, and as such is also relevant to goal 7. The source is reliable and the indicator measures an important segment of the population who may obtain food locally. The data are currently only for one year, so there is no trend data at this time. It will, however, will continue to be posted annually.

Goal 7: Encourages eaters to know where, how and by whom their food is produced

SELECTION PROCESS:
The indicators for this goal are fundamentally about trying to assess the level of peoples' knowledge about how their food is produced, who produces and where it comes from, as well as the ability of the food system and its institutions to encourage this. When people understand and feel connected to the agricultural cycle, and have knowledge about where their food comes from and how it was grown, they are more likely to seek out healthy, locally produced food. Some examples of indicators considered included a measure of labeling schemes, which was rejected due to inadequate sources, and the distribution of farmers' markets, for which there is no current data.[16] Ultimately, this collection of indicators represents many aspects of knowledge about food, covering numerous avenues of direct marketing (direct sales, number of farmers' markets, CSAs), education programs to increase knowledge of food systems (farm-to-school programs, school gardens) and informal knowledge acquisition (agricultural tourism).

7a. Total direct sales per capita, as % of total agricultural sales



SOURCE INFORMATION:

USDA 2002 Census of Agriculture,[17] "Table 2: Market Value of Agricultural Products Sold Including Landlord's Share, Direct, and Organic: 2002 and 1997". Available at: www.nass.usda.gov/census/census02/volume1/ca/st06_1_002_002.pdf. Population estimates were obtained from Table 1-1: Population, Live Births, Deaths, Maternal Deaths, Fetal Deaths, and Infant Deaths. Available at: www.dhs.ca.gov/hisp/chs/OHIR/tables/population/estimates.htm

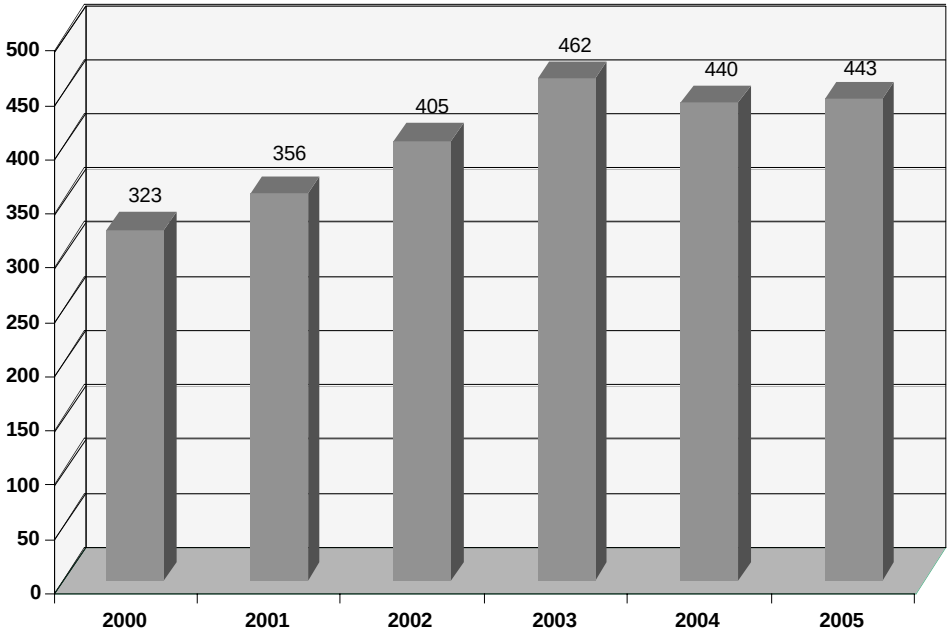
DATA PARTICULARS:

- Direct agricultural sales are listed in the Census every 5 years. It measures the value (in $) of agricultural products sold directly to individuals for human consumption from roadside stands, farmers' markets, pick-your-own sites and other methods. The meaning of "direct sales" is based on the USDA Census definitions in "Appendix A—General Explanation."
- Non-edible products such as nursery crops, cut flowers, and wool are excluded. Livestock sales are included. Sales of agricultural products by vertically integrated operations through their own processing and marketing operations were excluded.[18]
- Total direct sales per capita was calculated by dividing the value of total direct sales by the total state population for the given year.

STRENGTHS AND LIMITATIONS:

This indicator is similar to indicator 6a. Here, total direct sales are measured *per capita* in order to better illuminate the spread of direct sales across the population. When eaters purchase directly from producers, it is a good proxy for knowledge about where their food comes from. Although there is a positive trend, direct marketing in comparison to all agricultural sales is still a tiny fraction. It is expected that direct marketing will increase in the future and this indicator will become more meaningful as things progress. See indicator 6a for additional information.

7b. Number of certified farmers' markets



SOURCE INFORMATION:

California Department of Food and Agriculture (CDFA). Data provided by Janice Price, Director, Certified Farmers' Markets Program. The data for 2005 are preliminary and were obtained from www.ams.usda.gov/farmersmarkets/States/California.htm.

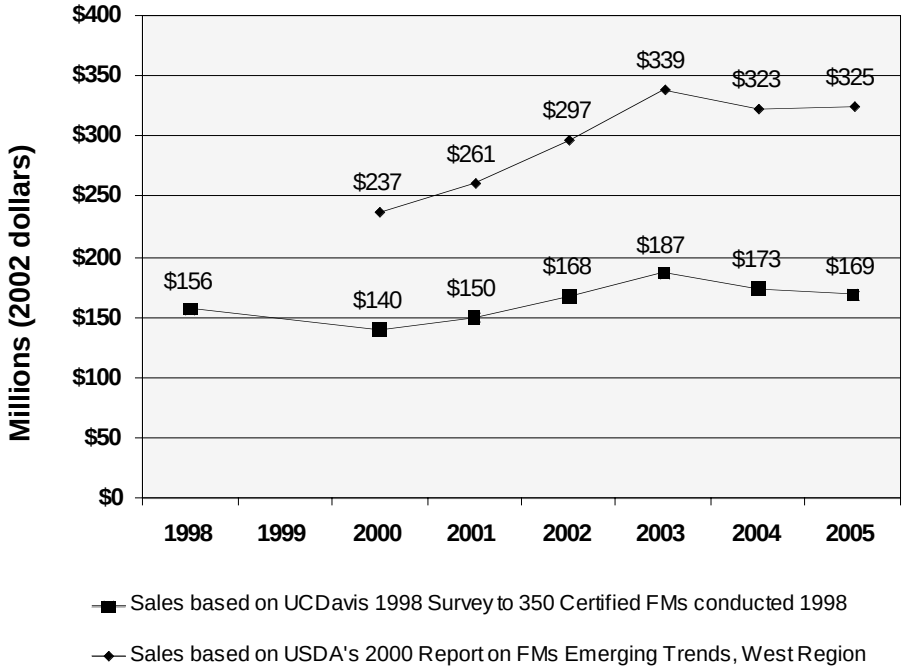
DATA PARTICULARS:

- 'Certified farmers markets' refers to those that operate in accordance with market regulations established in 1977 by the California Department of Food and Agriculture.
- From 2000 – 04, the values were estimated based on the number of certified farmers markets that paid to operate during the third quarter of each year (during the summer season).

STRENGTHS AND LIMITATIONS:

The presence of farmers' markets, assuming they are patronized, is a very straightforward and common-sense measure of peoples' ability to know where their food is coming from and by whom it was grown. Markets further provide an opportunity to create new relationships between producers and consumers. The number of active farmers' markets from year to year lends insight into the extent to which the direct marketing channel is growing in popularity. The trend is particularly relevant over a number of years since we can assume that the success of the markets is high if markets persist over the years. However, there is no exact indication of the number of people visiting the markets. Nevertheless, the data are very useful and the source is credible and reliable.

7c. Sales from certified farmers' markets



SOURCE INFORMATION:

Estimated annual sales of all certified farmers' markets based on 1998 survey from: Feenstra, G. and C. Lewis (1999, November-December). Farmers' markets offer news business opportunities for farmers. In: *California Agriculture*. 25- - 9.

Annual estimates for farmers' markets sales in the Far West region extracted from USDA's publication *U.S. Farmers Markets.*[19]

DATA PARTICULARS:

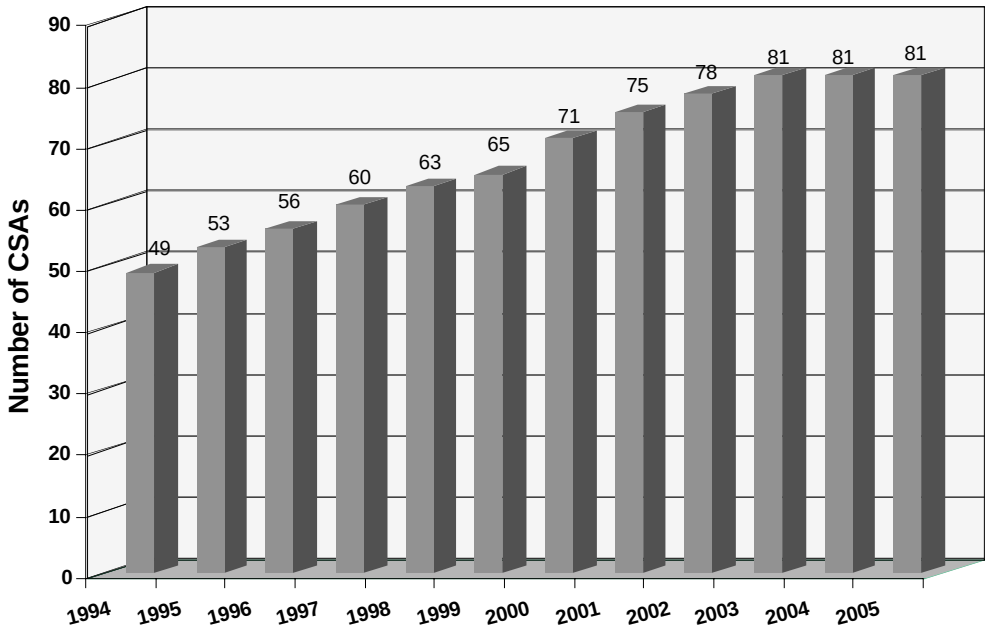
- The graph includes two data sources, one for California (based on Feenstra and Lewis) and one for the Far West region (based on USDA study). Both are included here to provide a range.
- CFM: Certified Farmers' Markets
- The USDA's Far West region includes Alaska, California, Hawaii, Nevada, Oregon, and Washington. The figure for the year 2000 was used as a baseline. Values for other years were calculated by assuming that sales per market is constant from year to year, and calculating based on number of markets in the region per year.
- Estimates of CA data based on 1998 California farmers' market survey. Calculated as follows: Feenstra and Lewis (1999) established an estimation of average weekly sales by market across the state. This figure was multiplied by the number of certified farmers' markets shown in indicator 6d and by the number of weeks of operation of the markets in a year to obtain an estimate of sales from all farmers' markets in the state. To adjust the latter by seasonality of market operations, we assumed that only 60% operate year-round (accordingly to the responses obtained from the sample of farmers' markets surveyed by Feenstra

and Lewis in 1998), and the remaining 40% was assumed to operate 28 weeks a year (or from mid May to the third week of November). This annual figure for 1998 was then used as a base year for calculating the following years in that time series based on the number of farmers' markets operating in the state for the given year. It was assumed that the percentage of each type of farmers' markets (rural, small town, metropolitan) remained constant from year to year as follows: rural (18%); small town (30%); metropolitan (52%).

STRENGTHS AND LIMITATIONS:

Currently, there is no reliable statewide data for sales from farmers' markets. The methods used to obtain the trend data for this indicator have intrinsic limitations that stem from the assumptions made. If, for example, the proportion of rural markets increased in one year, the results would be skewed. However, anecdotal evidence suggests that significant deviance from year to year is not the case. Farmers may also be underreporting sales to their market managers. The proximity of the CA and regional figures suggest that either the CA data are slightly high or that the regional data are slightly low. Total sales is a good indicator of peoples' knowledge of where there food comes from because it reflects that eaters are willing to spend more for their food through direct marketing channels.

7d. Number of CSAs



SOURCE INFORMATION:

Data for number of CSAs started each year was provided by Guillermo Payet at Local Harvest. Current data available on the Local Harvest database, available at www.localharvest.org/csa

DATA PARTICULARS:

- Figures represent the number of farmers that offer a Community Supported Agriculture (CSA) program and pay membership dues to the organization Local Harvest. Local Harvest is the leading source of direct marketing information in the United States.
- Figures were obtained by running a database search for CSAs in California.

STRENGTHS AND LIMITATIONS:

This indicator measures increased participation in a program that facilitates eater knowledge of where their food comes from. As CSA programs increase, more people are getting out to the farms where their food is produced, getting to know the producers and directly and consistently supporting agricultural enterprises in California. The main drawback of this particular indicator is the possible inaccuracy of the figures—there may be a significant number of CSAs that are not registered with Local Harvest. The exact number is unknown.

7e. Number of farms that offer agricultural tourism

559 California farms offer agricultural tourism (as of 05/18/2005)

SOURCE INFORMATION:
University of California Small Farm Center, Agricultural Tourism Project. Data currently available at: www.calagtour.org/agtour.asp

DATA PARTICULARS:

- Figure includes farms that offer some type of tourism services on-site that are registered with the UC Small Farm Center Agricultural Tourism Project.
- The database is a free service provided to the farms by the Small Farm Center. Producers register after direct contact with Small Farm Center staff or through voluntary registration to the webpage.
- The number of farms is updated on an annual basis, but trend data are not maintained on a public site.

STRENGTHS AND LIMITATIONS:
This indicator gives an indication of one of the processes by which people gain knowledge of their food sources. As agricultural tourism increases, more people will be spending time on farms, exposed to the production cycle and getting to know food producers. As with indicator 7d, the data depend on voluntary registration with the Small Farm Center and thus may not capture all farms carrying out agricultural tourism. Furthermore, annual data points, while straightforward, are not documented in an easily-accessible format.

7f. Number of school gardens

In 2002, 2,378 California public schools had garden programs (26% of all schools)

SOURCE INFORMATION:

Survey conducted by the California Department of Education, Nutrition Division Services and UC Davis, Nutrition Department. Reported in: Graham, Healther, Deborah Lane Beall, Mary Lussier, Peggy McLaughlin, and Sheri Zidenberg-Cherr (2005). Use of school gardens in academic instruction. In*: Journal of Nutrition Education and Behavior.* 37: 147 – 51.

Total number of public schools obtained from the National Center for Educational Statistics, available at: http://nces.ed.gov/nationsreportcard/states/profile.asp

DATA PARTICULARS:

- Percentage based on total number of schools in 2005.
- "Garden" is defined as "plants grown in the ground, in raised beds, in pots or in greenhouses in both classrooms or outdoors."
- All 9,805 public schools in California were surveyed, 4,194 responded. 57% of respondents had gardens and 85% of these used the garden for academic instruction.

STRENGTHS AND LIMITATIONS:

The survey from which the figure was drawn was only conducted one year. It is unclear if, and in what format, school garden data will be collected in the future. Nevertheless, this is a very important indicator of knowledge about where our food comes from—it directly points to literacy about the agricultural cycle and targets the youth population.

7g. Number of farm-to-school programs

In 2005:
Number of CA schools implementing farm-to-school programs (F2S): 250
Total Number of Schools (public): 9,100
% of Schools with F2S programs: 2.75% (Last updated: May/2005)

SOURCE INFORMATION:
Data were obtained from the National Farm-to-School Program of the Center for Food and Justice, Urban and Environmental Policy Institute at Occidental College, California. Personal communication with Anupama Joshi, May 2005. Total number of public schools obtained from the National Center for Educational Statistics. Available at: http://nces.ed.gov/nationsreportcard/states/profile.asp

DATA PARTICULARS:

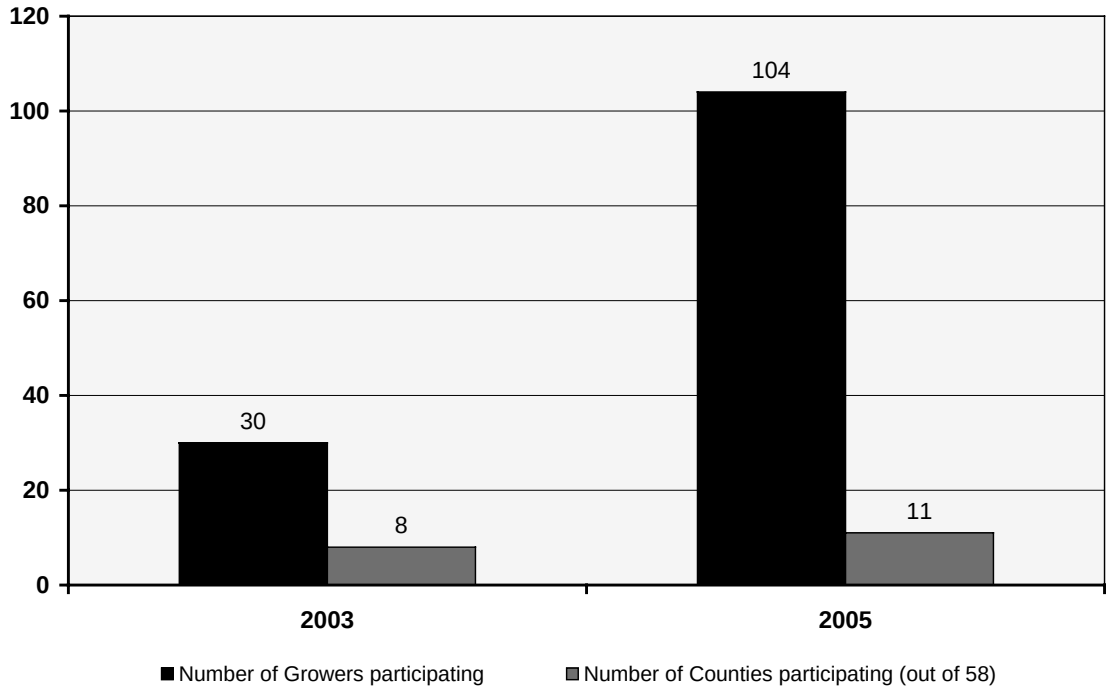
- Figure is approximate.
- A school is considered as implementing a farm-to-school program when it is carrying out all of the following activities, or a combination of #1 and any of the other activities: 1. Buying products from local area farmers for a cafeteria meal program or for nutrition education in the classroom 2. Gardening, composting and waste management programs 3. Nutrition, health and environment education in the classroom 4. Experiential learning opportunities such as farm tours, trips to farmers markets, farmer and chef visits to the classroom

STRENGTHS AND LIMITATIONS:
This indicator was selected as a complement to indicator 6f. It is another way to represent youth learning about the agricultural cycle and has the added dimension of education about working commercial farms. Farm-to-school programs tend to focus on cafeterias, whereas school gardens have more of a focus on agriculture and gardening. It also measures progress toward Goal 1, promoting food choices that lead to healthy eating. This indicator is similar to 6c, which measures the number of school *districts* with farm-to-school programs. The data are currently only available for one year, so there is no trend data as yet, but it is expected the data will be posted yearly in the future.

Goal 8: Supports deepening regional identities through food

Selection Process:
Fundamentally, this goal is highly qualitative—it is an attempt to assess the extent to which people are identifying regionally with their sources of food, which is very difficult to quantify. The indicators for this goal aim to document programs or situations that show that people are engaged with this particular aspect of eating. The indicators selected represent programs that have been identified in the landscape at this time as leading efforts to improve regional identity. However, the likelihood that all these programs will persist until 2030 is low. As such, some flexibility should be built in to looking at this collection of indicators into the future. It may be that at some point, one particular program may be replaced by another. In the indicator selection process, local labels were considered but there was no adequate mechanism for data collection. This set of indicators selected is particularly interesting because each initiative highlights different parts of the value chain: production, marketing, retail and consumers.

8a. *Number of counties and producers participating in "Buy Fresh, Buy Local" campaign*



SOURCE INFORMATION:

Current regional data (partial) available through: www.caff.org/programs/bfblRC.shtml. Current and trend data for the Sacramento Valley were provided by personal communication with the following staff of the Community Alliance with Family Farmers (CAFF): Temra Costa for the Southern Sacramento Valley, Liv Nevin for the Central Coast region, Judy Blue for the Gold Coast, and Mary Ann Vasconcellos for San Luis Obispo.

DATA PARTICULARS:

- The "Buy Fresh, Buy Local" campaign is carried out by CAFF in collaboration with Food Routes Network. Regional labeling initiatives are included as part of regional campaigns to increase the purchase of fresh, local foods.
- Currently no "buy fresh, buy local" initiatives are active in other regions of California
- Participating counties include:
    - Central Coast: Monterey, San Benito, San Mateo, Santa Clara, Santa Cruz
    - Gold Coast: Santa Barbara, Ventura
    - San Luis Obispo: San Luis Obispo
    - Southern Sacramento Valley: Sacramento, Solano, Yolo

STRENGTHS AND LIMITATIONS:

Buy Local campaigns are an excellent way to increase regional food identity. Measuring their increase is a direct reflection that a stronger identity is being built in a given region, connections between producers and their local communities are increasing and progress

toward knowledge of food sources (goal 6) is being made. Historical data, however, was not rigorously tracked and is based on the best recollection of regional CAFF leaders. In future, data collection may be complicated by increased autonomy of Buy Local campaigns—for example, San Luis Obispo recently dropped out of the CAFF campaign in order to start their own Buy Local campaign.

8*b. Number of restaurants that are members of the Chefs Collaborative*

As of April 1, 2005, there were 29 restaurants participating in the Chefs Collaborative

SOURCE INFORMATION:

Chefs Collaborative (2005). "Member Restaurants." Available at: www.chefscollaborative.org/index.php?name=Restaurants&catID=3

DATA PARTICULARS:

- The figure is based on a count of member restaurants listed on the Chefs Collaborative website on April 1, 2005.
- Member restaurants are those committed to the mission of the Chefs Collaborative and who have a paid membership to the organization.
- The mission of the Chefs Collaborative is to work "with chefs and the greater food community to celebrate local foods and foster a more sustainable food supply. The Collaborative inspires action by translating information about our food into tools for making knowledgeable purchasing decisions. Through these actions, our members embrace seasonality, preserve diversity and traditional practices, and support local economies."[20]

STRENGTHS AND LIMITATIONS:

The Chefs Collaborative is the leading organization of chefs dedicated to providing fresh, local food to customers, making direct marketing connections with producers and undertaking education by making regionally identified and seasonal food part of the dining experience at their restaurants. An increasing number of participating restaurants reflects growing popularity of these qualities. Yearly data are not currently published, which may make data collection more difficult in future.

8c. *Number of Slow Food Convivia and number of members in the organization*

As of July 14, 2005, there were 35 convivia in California. As of June 27, 2005, there were a total of 3,105 active Slow Food members in California.

SOURCE INFORMATION:

Slow Food USA (2005). "Local Convivia." Available at: www.slowfoodusa.org/contact/index.html

Number of active members provided by Slow Food USA Membership Coordinator, Ragan Rhyne.

DATA PARTICULARS:

- 2005 data based on count of member convivia listed on website as of April 1.
- Membership growth has been at approximately 25% per year for the last five years.
- The Slow Food Movement arose in recognition that the "industrialization of food was standardizing taste and leading to the annihilation of thousands of food varieties and flavors"

STRENGTHS AND LIMITATIONS:

Slow Food chapters are created in commitment to "stewardship of the land and ecologically sound food production; to the revival of the kitchen and the table as centers of pleasure, culture, and community; to the invigoration and proliferation of regional, seasonal culinary traditions; and to living a slower and more harmonious rhythm of life."[21] Members are people who support the value of fresh-prepared food, including local food. The extent to which membership is growing is a direct positive indicator of interest in local identity and food and as such is a good indicator of Goal 7. Because the Slow Food Movement is still relatively recent, data do not go back very far and Convivia members may not be representative of the general Californian population, but it is easy to track and the organization is likely to be a presence over the long term.

Goal 9: Honors and draws on the diversity and richness of different food cultures.

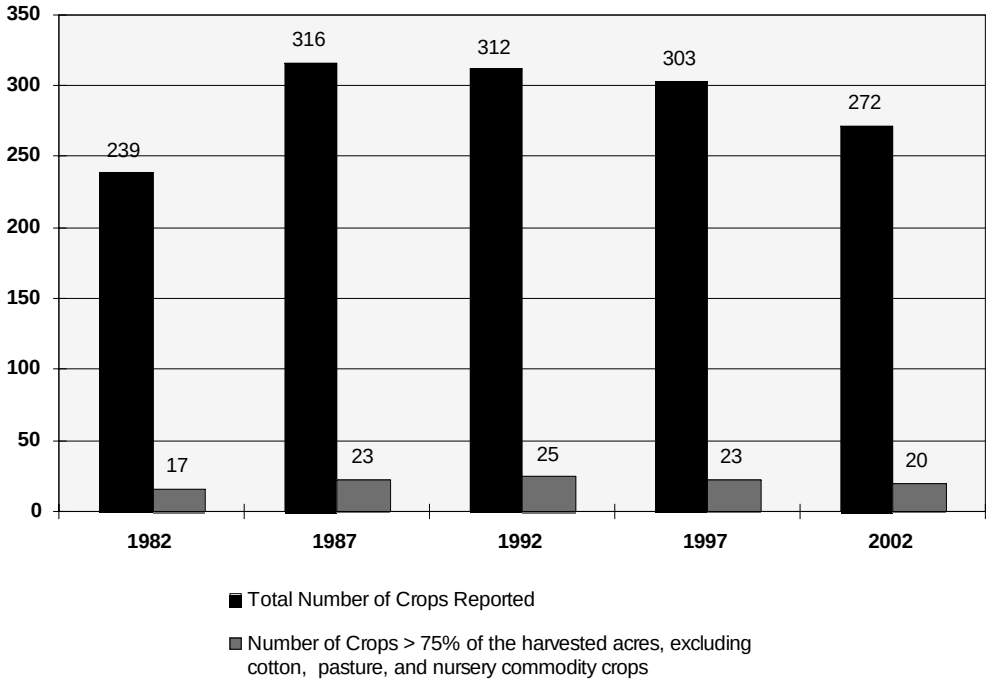
This goal was included after the indicator selection process had occurred. As such, no indicators are currently listed.

Goal 10: Supports and increases biodiversity in plant and animal products (including marine species).

SELECTION PROCESS:
For this goal, the indicators team sought indications of how the diversity of plants and animals as they relate to agriculture, including both genetic diversity and species diversity. Many indicators were considered. An measure of seed diversity was researched, including the number of varieties, the number of organizations that managed heirloom seed collections, and the number and size of seed banks. In all these cases, the available data were insufficient. Another consideration was the degree to which integrated pest management (IPM) strategies are promoted as an alternative to chemical pest control, which tends to decrease diversity. Again, there was no way to quantify the extent to which IPM is promoted, nor how much is spent on promotion.

The direct measures of agricultural diversity selected as indicators for this goal (crop diversity and the diversity of cultivars) cover diversity at both the crop level and genetic level. They not only quantify cultivated plant diversity itself, but also allude to wild diversity. As the diversity of food crops increases, the diversity of the rural landscape and niches for wild species also increase. While the indicators by no means cover all the bases (eg. animal and marine products are not represented), these are the best available data points we could find at this time.

10*a. Number of crops statewide for top 75% of the harvested acres*



SOURCE INFORMATION:

California Agricultural Statistical Service NASS-CA, based on County Agricultural Commissioner's data. Available at: www.nass.usda.gov/ca/bul/agcom/indexcac.htm

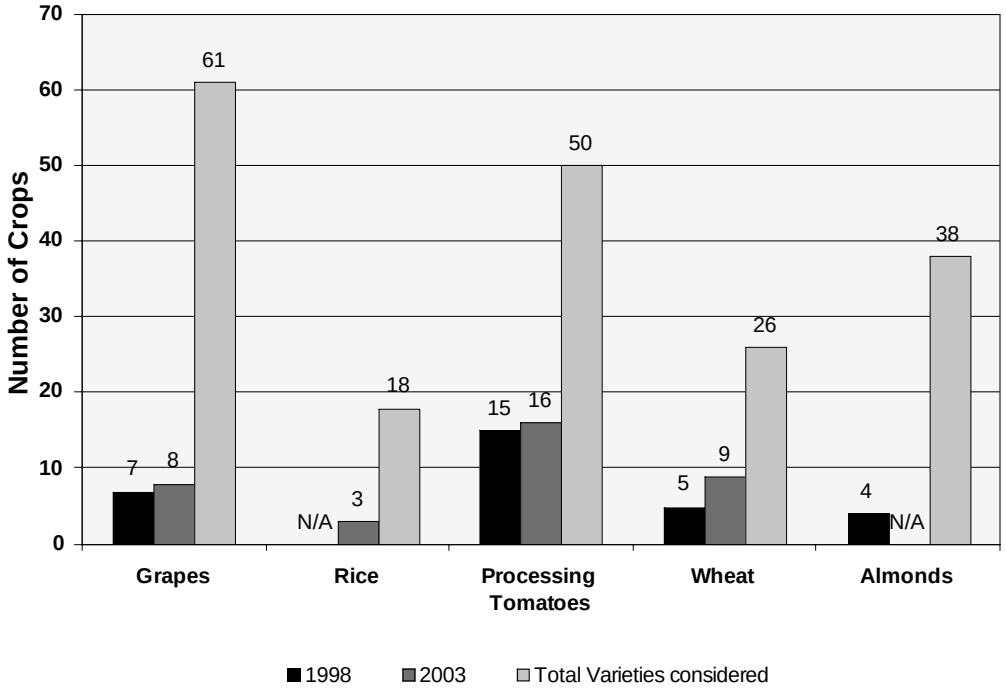
DATA PARTICULARS:

- Acreage of pasture, cotton, Christmas trees, nursery crops and flower crops were excluded from the total acreage, which is focused on food crops.
- "Top 75%" indicates the number of different crops contained in 75% of the harvested acres statewide, considered from largest to smallest acreage per crop. If, for example, 35% of the cropland was covered with lettuce, 40% with tomatoes, and 25 crops each covered 1% of the remaining cropland, the value of this indicator would be 2 (since the leading 2 crops cover 75% of the cropland). Diversity across the bulk of the agricultural landscape would be considered low.
- Data collected every 5 years, available online as of 1982.
- Prices used to estimate crop values reflect the average price received by growers, except for fruits and vegetables, which are on a Free-On-Board Basis (ready to ship). Not all the counties report on every year, in which case the data from the most recent year is used instead.

STRENGTHS AND LIMITATIONS:

This indicator is intended to illustrate crop diversity in 'most' of California. 75% was determined by the Vivid Picture indicators team to be a good figure for ascertaining diversity in the most widely grown crops. Essentially, this indicator tells us if there is diversity on a broad scale in California. This indicator would be sensitive to major changes across the agricultural landscape but would not reflect increasing diversity of plants grown on a small scale.

10*b. Number of cultivars for selected CA commodities for top 75% of their harvested acres*



SOURCE INFORMATION:

Grapes: USDA National Agricultural Statistics Service California. California Grape Acreage Reports. Available through www.nass.usda.gov/ca/bul/acreage/indexgab.htm. See in particular Tables 4 and 5.

Rice: The California Cooperative Rice Research Foundation (CCRRF). Available at: www.agronomy.ucdavis.edu/ricestation. Click on "2004 California Rice Acreage"

Processing Tomatoes: Processing Tomato Advisory Board Table: "2003 Top 50 Varieties With Average Rankings." Available at: www.ptab.org/ranking6.htm.

Wheat: CA Wheat Commission California Wheat Variety Survey. Yearly survey results available at: www.californiawheat.org/variety_survey.htm.

Almonds: CASS-USDA (2001, May 9). 2000 California Almond Acreage Report. Available at: www.nass.usda.gov/ca/rpts/acreage/almonds/105almac.htm

DATA PARTICULARS:

- Number of cultivars for selected commodities were obtained based on annual harvested acres.
- Wine grapes include red and white varieties.
- Data for processing tomatoes was given in loads of tomatoes inspected. The VP indicators team adjusted these values to be based on harvested acres and then calculated the number of cultivars in the first 75% of the harvested acres starting with the cultivar with the largest acreage harvested reported. The conversion used from loads to acres is: 1 load=26 tons, 1 acre=yielded 31.8 tons in 1998 and 41 tons in 2003.
- Data for all listed commodities, with the exception of rice, were collected on an annual basis between 1998 – 2003.

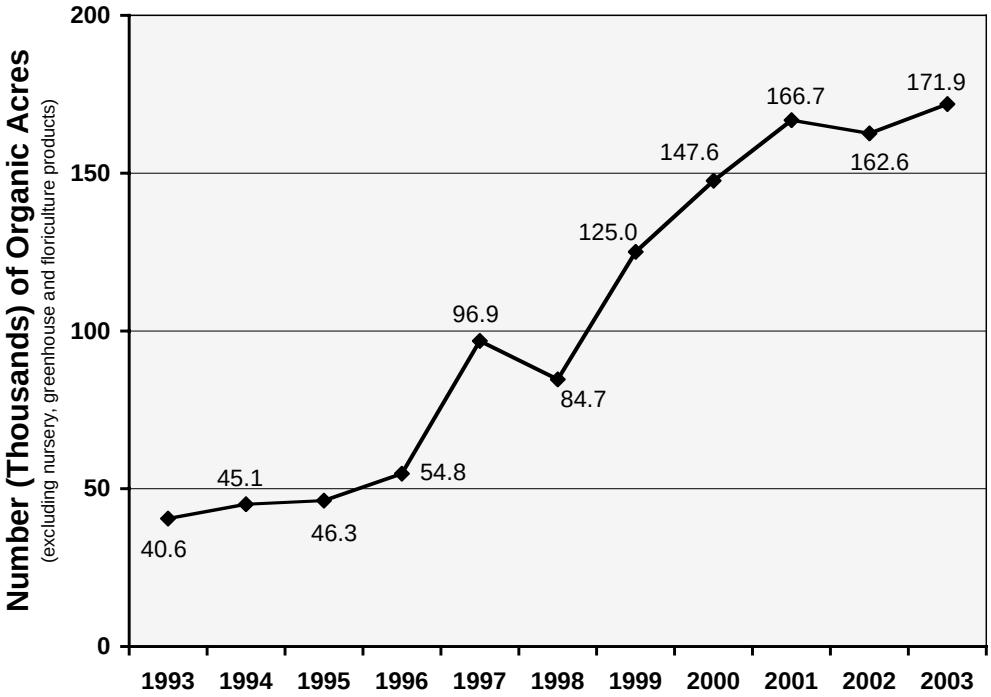
STRENGTHS AND LIMITATIONS:
This indicator describes agricultural biodiversity at the commodity level. Similarly to indicator 10a, the most productive ¾ of the total sample was used in order to gauge diversity in the bulk of total output. This is particularly interesting because it distinguishes the degree of varietal homogeneity among some of California's leading commodities. Commodities that are representative of the diversity of California agriculture—grapes, tomatoes, rice, wheat, and almonds—were selected. While these do not represent the full diversity of California agriculture, these are all leading commodities in California and represent a variety of food groups, making the selection a good proxy for California crop production. The data for the selected crops is publicly available, but must be drawn from various sources and requires some additional manipulation and effort to put it in a form that is simple and understandable.

Goal 11: Conducts farming, ranching, and fishing activities so that water, air, forests, and soil resources are enhanced and biodiversity and wildlife habitat are increased so that food production continues in perpetuity.

Selection Process:

While there is a great deal of environmental data related to agriculture and fisheries available, the majority is limited to individual case studies of particular regions and/or products. The indicators team sought statewide data that will be collected into the future, and aimed to find indicators that tap into broad resource trends that affect the ability of farmers to be able to farm in the future. The indicators selected deal directly with two of the resource categories addressed in this goal: soil (through a measure of soil erosion) and water (through measures of water use in agriculture and water quality). These indicators measure the stability of soil and water over the long-term. One indicator selected—the prevalence of organic agriculture—is one good method for evaluating impact on wildlife and lands through a reduction in chemical applications. Ideally, the Vivid Picture indicators team would have preferred to list indicators solely of positive environmental trends, such as regeneration of native ecosystems, increase in wildlife populations, etc., but quantitative measures of such indicators were not available. The indicators of damaged waterways, farmworker poisonings and topsoil loss, while not reflecting positive trends, are important in giving a fuller picture of this goal. Ultimately, the indicators selected measure the impact of food production on some of our natural resources. Unfortunately, it was not possible to provide a thorough overview of all natural resources in the time available—for example, the indicators do not directly address forest or air resources.

11a. *Number of organic acres in CA*



SOURCE INFORMATION:

Data for 1992 – 95: Tourte, Laura and Karen Klonsky (1998). Organic agriculture in California: A statistical review. In: *Agricultural Issues Center Issues Brief, No. 6*, May 1998. Available at: http://aic.ucdavis.edu/pub/briefs/brief6.html

Data for 1995 – 97: Klonsky, Karen; Laura Tourte; Robin Kozloff and Benjamin Shouse (2002). "A Statistical Picture of California's Organic Agriculture, 1995 – 98", University of California, Agricultural Issues Center, DANR Publication 3425.

Data for 1998 – 2003: Klonsky, Karen (2003.) Chapter 10: Organic agricultural production in California. In: Siebert, Jerry. ed. (2002) *California Agriculture: Dimensions and Issues.* Giannini Foundation of Agricultural Economics. See; "Table 7. Organic Acreage in CA by Commodity Group, 1992 – 2002" Available at: http://are.berkeley.edu/extension/giannini/Chapter10.pdf

Revised data on number of growers and acreage was provided in directly by Karen Klonsky (personal communication, 04/11/2005).

DATA PARTICULARS:

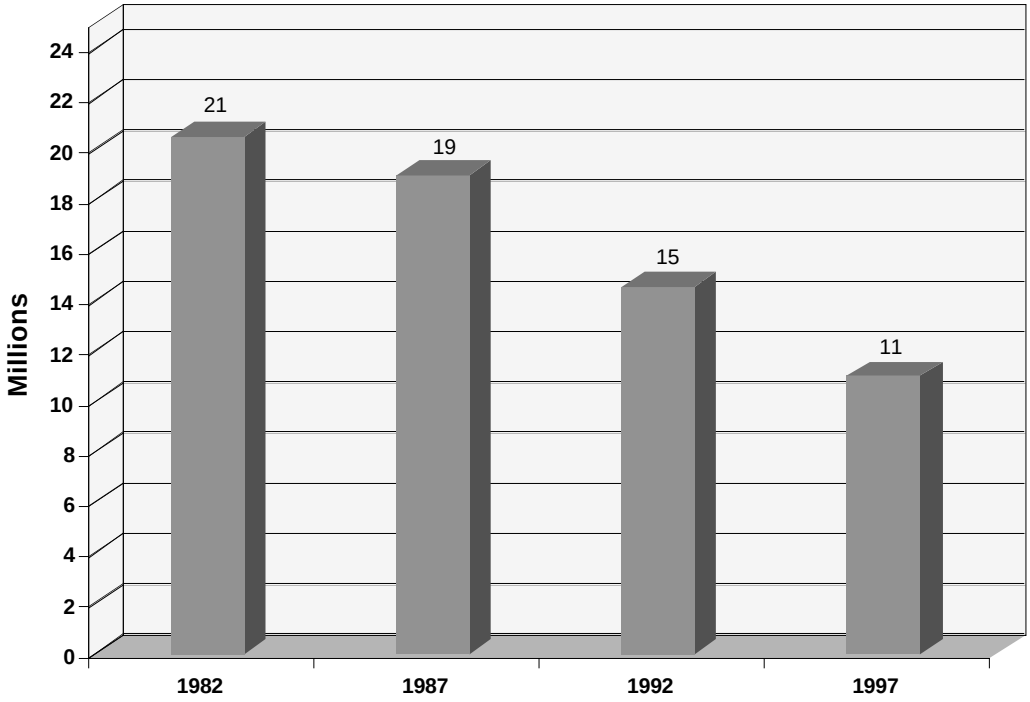
- Acreage includes cropland, pasture and rangeland.
- Number of organic growers registered under the California Organic Food Act in the California Department of Food and Agriculture.

STRENGTHS AND LIMITATIONS:

This indicator highlights numerous dimensions of the environmental impact of agriculture. More acres in organic production translates to fewer chemicals and hormones being used, which impacts soil health (enhancement of microorganisms, better soil structure, etc.), water quality (fewer chemical residues, less eutrophication, etc.), and air quality (lower particulate matter, chemical drift, etc.). In addition, organic (compared with conventional) agriculture tends to increase wildlife habitat in and around the farm. The data are reliable but are not officially tracked by an institution. The

indicator is sensitive to change and directly measures what we want to see more of—organic production.

11*b. Tons topsoil lost/year due to erosion*



SOURCE INFORMATION:

Summary Report, 1997. National Resource Inventory (NRI 1997) conducted by the Natural Resource Conservation Service of the United States Department of Agriculture. Annual average estimates of erosion rates available at: www.nrcs.usda.gov/technical/land/erosion.html.

DATA PARTICULARS:

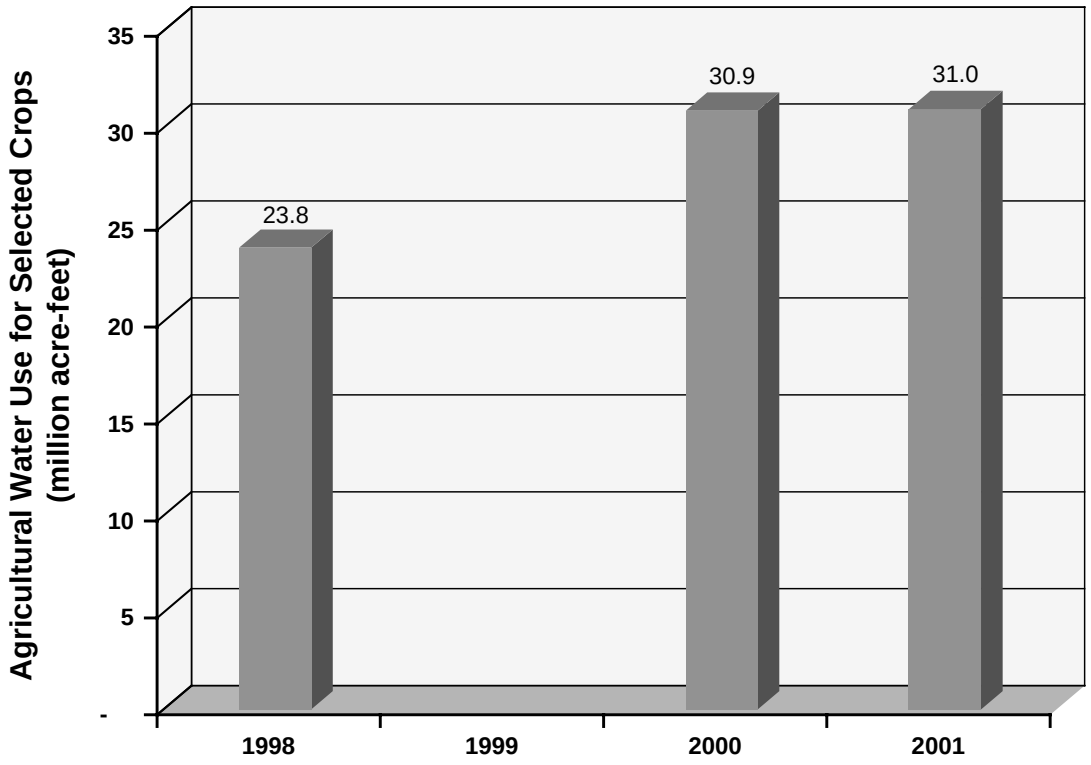
- The total soil loss in tons per year was calculated using the following formula:
- Total tons of topsoil lost/year= 1000 (LCc+ LCp)(Wr+Wd)
- where LC=Land Cover Use (cropland and pastureland), Wr= Average Erosion sheet and rill Rates, Wd= Average Estimated Wind Erosion Rates. In other words, total topsoil loss equals the total land cover multiplied by each of the erosion rates (both for wind and water) that correspond to that type of land cover.
- All definitions taken from NRI Glossary: www.nrcs.usda.gov/technical/NRI/1997/summary_report/glossary.html
- Exact definitions of all terms can be obtained from the glossary of *Summary Report, 1997. National Resource Inventory* (NRI 1997) conducted by the Natural Resource Conservation Service of the United States Department of Agriculture.[22]

STRENGTHS AND LIMITATIONS:

Topsoil loss has been one of the greatest consequences of unsustainable farming practices. The rate of topsoil loss is an important aspect of soil health. More indirectly, it has the capacity to approximate the extent of farming practices that maintain or degrade soil health, or practices that maintain capacity of land to produce in perpetuity. The 1997 National Resources Inventory remains the best available, nationally consistent,

statistically reliable source of estimates on resource conditions and trends not yet addressed at the state level by the annual NRIs. However, the methodology is changing and state level data may not be available consistently in the future.

11c. *Agricultural water use (acre-feet) for selected crops*



SOURCE INFORMATION:

Annual land and water usage data from the Department of Water Resources, Land and Local Assistance Division: www.landwateruse.water.ca.gov/annualdata/datalevels.cfm.

DATA PARTICULARS:

- Total (acre-feet) water used to irrigate selected crops= Applied Water (AW) per Crop x Irrigated Crop Acres. Water use is measured by crop. Water use (applied water) for a broad range of water-using crops (20 selected crops, including alfalfa, hay, barley, grapes, potatoes) was collected, multiplied by the irrigated acreage covered by each crop, and aggregated.
- Data for more recent years is available and will be posted by the Department of Water Resources, pending processing and formatting of the information for public use.
- Data points were obtained from the Annual Crop Water Use data, which is the most comprehensive data available for water usage in the agriculture sector.
- Data for 1999 have not yet been published.
- Definitions:
    - Applied Water (AW): The amount of water from *any* source needed to meet the demand of the crop (unit: acre feet per acre). Calculated by subtracting effective precipitation (EP) from evapotransipration (ET) and dividing the remainder by the consumed fraction (CF—portion of applied irrigation water that satisfies evapotranspiration).[23]

  - Definitions can be found at www.waterplan.water.ca.gov/cwpu2005/index.cfm#vol4
  - 1 acre-foot= covers one acre, one foot deep; is equivalent to 1,233 cubic meters.
- To understand the yearly differences of AW for the different crops, the Team took into account that 1998 received 235% effective precipitation compared to expected precipitation, 2000 was a normal year and 2001 was a drought year, with only 75% of the expected precipitation.

STRENGTHS AND LIMITATIONS:

Water data are collected yearly but there is insufficient funding available at the state level to pool and process the information to determine water use for other years. Water use is correlated (through an inverse relationship) to precipitation. Therefore, if we want to see change in water efficiency in time through the use of this indicator, we need to take into account the "noise" or impact caused by variations in precipitation from year to year. In other words, this indicator is useful if we have long-term trend data for it. If it were possible to obtain a consistent measure of this indicator over the years, it would be an excellent measure of progress toward reducing water use in agriculture and conserving water resources in the state. Given that the indicator does not measure water use in all agricultural activities in the state, it would not be sensitive to micro-scale change in the system. However, it is a good indicator of overall water use.

11d. Area of water quality-limited surface with agriculture as a source of pollution

Listings of total water bodies polluted by agricultural sources		
	Total number of water bodies listed in 2002	*Percentage of total with agriculture as a source of pollution*
	205	**30**

Breakdown of water bodies polluted by agriculture sources

	*Number**	*Percentage**	*Estimated area affected*	*Unit*
Bays and harbors	11	20.8%	172,954	Acres
Estuaries	14	11.4%	95,165	Acres
Lakes/reservoirs	10	13.9%	115,841	Acres
Saline lakes	3	35.1%	291,761	Acres
Wetlands, freshwater	3	8.8%	73,597	Acres
Wetlands, tidal	1	8.0%	66,339	Acres
Coastal shorelines	3	0.0%	15	Miles
Rivers/streams	160	1.9%	16,138	Miles

* Total water bodies polluted by agriculture sources

SOURCE INFORMATION:
State Water Resources Control Board (SWRCB) (2002). *Clean Water Act, Section* 303(d). Summary Tables. Data are located in the Table: "Source Category Totals (water body based)" under Source Category Summary Tables at: www.swrcb.ca.gov/tmdl/303d_sumtables.html

DATA PARTICULARS:

- This indicator lists the number of water bodies listed as "impaired water bodies" in California under the 303(d) section list of the 2002 Clean Water Act.
- The 303(d) list is reviewed every two years.

STRENGTHS AND LIMITATIONS:
Water bodies listed under Section 303(d) of the Clean Water Act are considered high-risk polluted waters that require special attention by the corresponding authorities. Although not a complete vision of water quality, the number of water bodies and their total size affected by agricultural pollutants is an interesting way to measure the effects pf agricultural practices on water bodies in California.

This indicator could be even more compelling with additional analysis estimating the relationship of the above data to the total number and size of water bodies in the state. It would also be interesting to map the distribution of these water bodies in order to identify areas where agriculture is more harmful to waterways. As pollutants are controlled through more sustainable agricultural practices and the development of riparian buffer zones, we can infer that this indicator of "impaired water bodies" is sensitive to change in agricultural practices and pesticide use.

11e. Farmworker pesticide poisonings

Listing of illnesses and injuries in California associated with pesticide residue in agricultural fields, 1990 – 2003

Year	Systemic/Respiratory		Topical		TOTAL
	Definite	Possible	Definite	Possible	
1990	3	32	11	119	165
1991	16	37	7	87	147
1992	11	57	19	112	199
1993	10	38	2	67	117
1994	33	31	5	42	111
1995	20	48	74	89	231
1996	29	37	15	60	141
1997	83	44	20	62	209
1998	40	19	5	47	111
1999	23	17	0	42	82
2000	21	30	2	22	75
2001	7	22	0	17	46
2002	30	23	13	12	78
2003	4	17	4	33	58

SOURCE INFORMATION:

California Department of Pesticide Regulation (DPR) (2003). Table available from the Work Health & Safety Branch, Pesticide Illness and Surveillance Program at:
www.cdpr.ca.gov/docs/whs/pisp/2003fld_residue_year.pdf

DATA PARTICULARS:

- The Health and Safety Code (Section 105200) mandates that California physicians report suspected cases of pesticide-related illnesses or injuries. These reports are then inspected by the DPR's scientists and investigated by the Agricultural Commissioners in each county. DPR then evaluates medical records and investigation reports to establish the likelihood of pesticides causing the incidents reported.
- Additional information on the Illness and Surveillance Program is available at: www.cdpr.ca.gov/docs/whs/2003pisp.htm

STRENGTHS AND LIMITATIONS:

The Pesticide Illness Surveillance Program aims to identify all types of pesticide illnesses as well as illness scenarios that warrant action. The program promotes proactive, health protective measures, especially for workers who face frequent high pesticide exposure risks due to the nature of their employment. This indicator is predicated on the understanding that when farming occurs in ways that are healthy for the environment, toxic substances are less likely to poison workers. Fewer pesticide poisonings should reflect reduced use of these chemicals. In addition, farmworker illness caused by pesticide poisoning also illuminates farmworker health conditions at the workplace, in particular reflecting any improvement in the implementation of safety and risk-prevention measures by employers. Finally, it could indirectly indicate a change in the application of pesticides. Noteworthy limitations of this indicator are that the majority of pesticide-related illnesses go unreported and that improved human management of

chemicals could result in decreased illness without a concomitant decrease in quantity of application.

11f. Number of areas in no-take (no-fishing) marine reserves

Number of marine areas under no-take management (Marine Life Reserves)	
State Marine Reserves	21
State Marine Parks	25
Total	**46**

SOURCE INFORMATION:

California Department of Fish and Game, Marine Region, Existing Marine Protected Areas, Maps and Coordinates Section. Protected areas regulated under the Marine Life Protection Act Initiative. Data available at: www.dfg.ca.gov/mrd/mlpa/maps.html

DATA PARTICULARS:

- This indicator shows the number of marine protected areas in California (known as Marine Life Reserves) designated by the Marine Life Protection Act to limit the extraction or possession of any living, geological or cultural marine resource, except under a permit or authorization from the managing agency for specific purposes such as research, restoration or monitoring.
- Two types of designated areas under the Public Resources Code, Section 36700 follow the no-fish/no-take use restrictions: State Marine Reserves [36700(a)] and State Marine Parks [36700(b)].

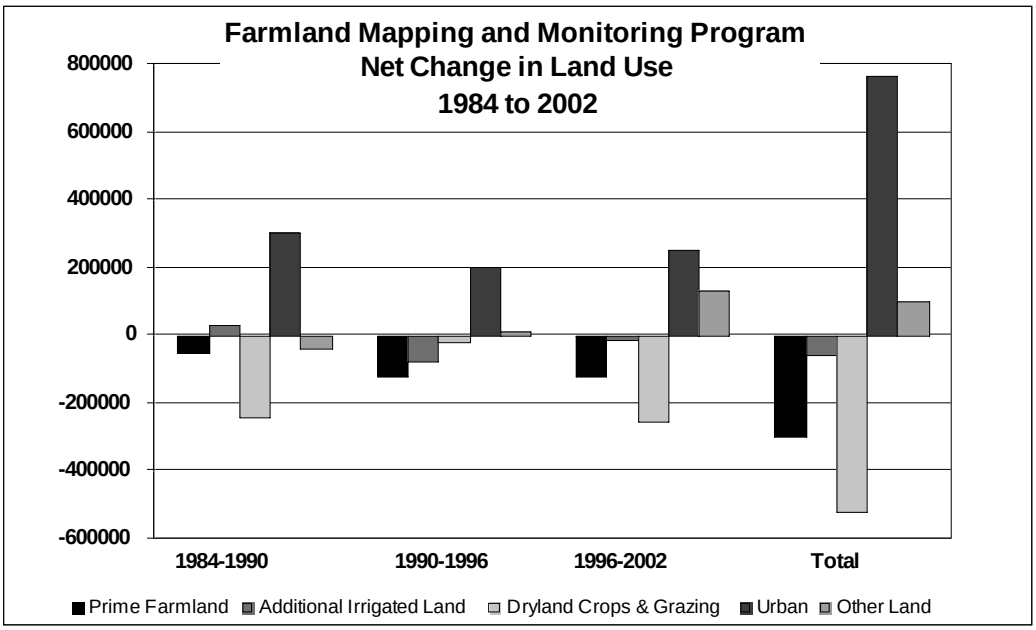
STRENGTHS AND LIMITATIONS:

The existence of a system of marine protected areas is crucial for habitat and ecosystem protection of marine resources, preservation of ecosystem integrity, and biological diversity. It also provides opportunities for scientific research and education. This indicator reveals the effort made to designate such areas that will support the preservation of marine resources, species and populations in perpetuity. However, information about the size and importance of these marine protected areas in relation to the fishing "footprint" (area affected by commercial fishing) is not available. Ideally, this indicator would include a more thorough measure of the range of environmental and ecological services provided by these protected areas to enhance conservation of marine resources in the California's ocean areas.

Goal 12: Preserves farmland, forests, and oceans.

SELECTION PROCESS:
A sustainable food system is one in which quality farmland is conserved, and forest and ocean ecosystems that provide food are maintained in good health. This goal was originally focused on farmland specifically; as such, there are at present no indicators directly reflecting ocean or forest preservation. The indicators selected for farmland preservation include acreage of quality farmland, an obvious selection, as well as acreage protected under a federal farmland preservation act. In addition, a measure of the footprint of urban areas was included. This indicator attests to the spread of urban sprawl onto farmland, forestland and other areas and is an important indicator because urban sprawl has been one of the main threats to farmland preservation in California in recent years.

12a. Net change in number of acres of prime farmland



SOURCE INFORMATION:

Farmland Mapping and Monitoring Program, Division of Land Resource Protection, Department of Conservation. Data and graph provided by Jan Carey, Land and Water Use Scientist. Additional county level data is provided by the Department at: www.consrv.ca.gov/DLRP/fmmp/stats_reports/county_acreage_summaries.htm.

DATA PARTICULARS:

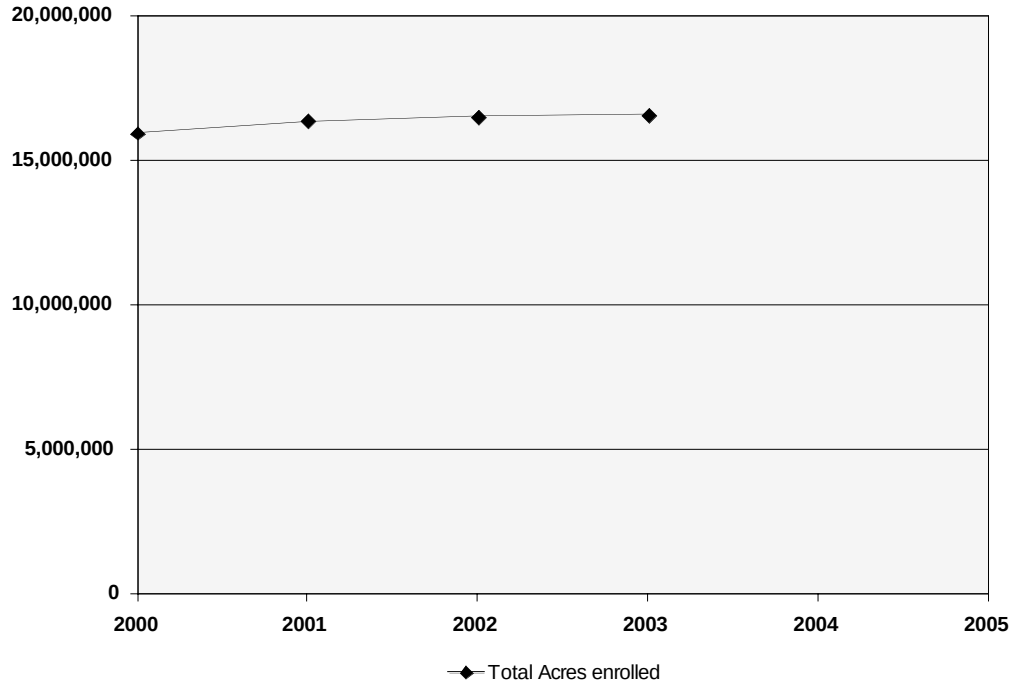
- The criteria for land to be considered prime farmland can be obtained from the Farmland Mapping and Monitoring Program at: www.consrv.ca.gov/DLRP/fmmp/overview/prime_farmland_fmmp.htm
- For more detail about the soil criteria and mapping categories, please read the excerpt from the FMMP Guidelines at www.consrv.ca.gov/DLRP/fmmp/pubs/soil_criteria.pdf.

STRENGTHS AND LIMITATIONS:

The change in prime farmland acreage is obviously a straightforward and useful indicator of farmland preservation. Because statewide data is an aggregate of county-level data and not all lands in all counties have been incorporated into the program yet, it can be expected that statewide numbers will change slightly over time as more land is surveyed. Ideally, the ratio of farmland to the total area surveyed is a more reliable indicator of farmland preservation.

12b. Acres of urban area

See indicator 12a.



12c. Number of acres in the Williamson Act

SOURCE INFORMATION:

California Department of Conservation, Division of Land Resource Protection. *The California Land Conservation (Williamson) Act Status Report 2004*. Available at: www.consrv.ca.gov/DLRP/lca/stats_reports/2004%20Williamson%20Act%20Status%20Report.htm

DATA PARTICULARS:

- The Williamson Act is also known as the California Land Conservation Act. It has been the state's premier agricultural land protection program since its enactment in 1965. The Williamson Act preserves agricultural and open space lands through property tax incentives and voluntary restrictive use contracts.
- For more information on the Act, see *The California Land Conservation (Williamson) Act Status Report 2004.*

STRENGTHS AND LIMITATIONS:

The Williamson Act keeps farmland in farming and explicitly discourages transition to urban use. The original Act involved 10-year contracts to restrict use to agricultural use; a newer version of the Act with an optional 20-year contract horizon is now in place (Farmland Security Zone provision). While the Act does not incentivize conservation practices on-farm per se, protecting agricultural land is in itself an act of conservation. The indicator is limited in that only land within a designated agricultural preserve is eligible under the Act. In addition, only 54 of 58 counties have enrolled in the program.

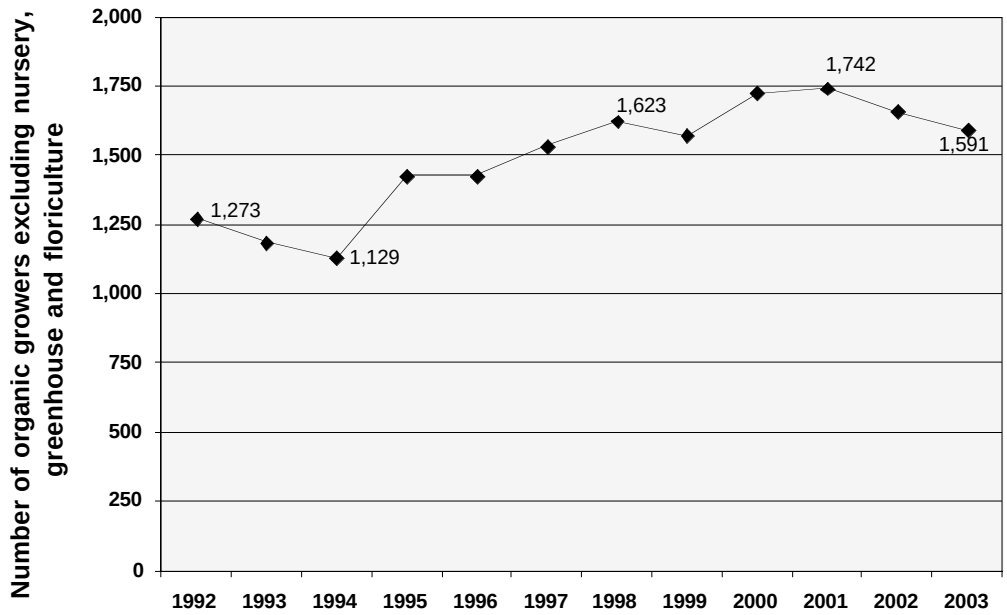
However, the Act is a unique and innovative way to preserve agriculture and farmland and good enrolment data are provided on an annual basis.

Goal 13: Provides incentives for waste recycling, reduction of petroleum and other non-renewable inputs

SELECTION PROCESS:
Indicators selected for this goal reflect two main processes—the *reduction* of inputs and the *recycling* of materials. Reduction of non-renewable inputs is straightforwardly gauged by a direct measure of consumption of non-renewable inputs (see indicators a,b,f and g). There are numerous possible indicators of this and many were considered. Ultimately, an indicator of on-farm consumption of petroleum-based products was selected, along with the prevalence of organic agriculture, which points to an alternative production system that is associated with lower inputs. These measures give a good indication of the extent to which California is moving from a petroleum-based production system to an alternative system. This set of indicators is focused on production and no measure of input reduction in other links of the value chain was selected. However, many of the indicators for other goals get at this, including direct marketing (goals 6 and 7) and improved local links (goals 6, 7 and 8).

In terms of the recycling of materials used in the food and agriculture sector, ultimately these indicators aim to elucidate aspects of closed loop production—production where outputs are reintegrated into the production process. This not only includes agricultural production, but also processing, distribution, etc. The indicators selected to characterize closed loop production (a,b,c,d and e) collectively represent the best available approach to measuring the extent to which the system is providing incentives for recycling. Many other indicators were considered, for example the number of acres in sustainable production was sought. As yet, there are no agreed-upon parameters for sustainable production. Other measures of waste recycling were explored, such as the International Standards Organisation ISO 14000, number of EMS-certified agriculture businesses, on-farm recycling, net metering, and fuel use but unfortunately none of the sources were adequately thorough, relevant and reliable.

13*a. Number of organic growers*



SOURCE INFORMATION:

Klonsky, Karen (2003). Chapter 10: Organic agricultural production in California. In: Siebert, Jerry. ed. (n.d.) *California Agriculture: Dimensions and Issues.* UC Berkeley Giannini Foundation of Agricultural Economics. Table 6. Registered Organic Growers in CA by Commodity Group, 1992 – 2002.

2003 data provided in table format through personal communication with Karen Klonsky.

DATA PARTICULARS:

- Number of organic growers registered under the California Organic Food Act in the California Department of Food and Agriculture.
- Excludes nursery, greenhouse and floriculture.
- These data on acreage may include non-production farmland that has been certified, but is not necessarily in production.[24]

STRENGTHS AND LIMITATIONS:

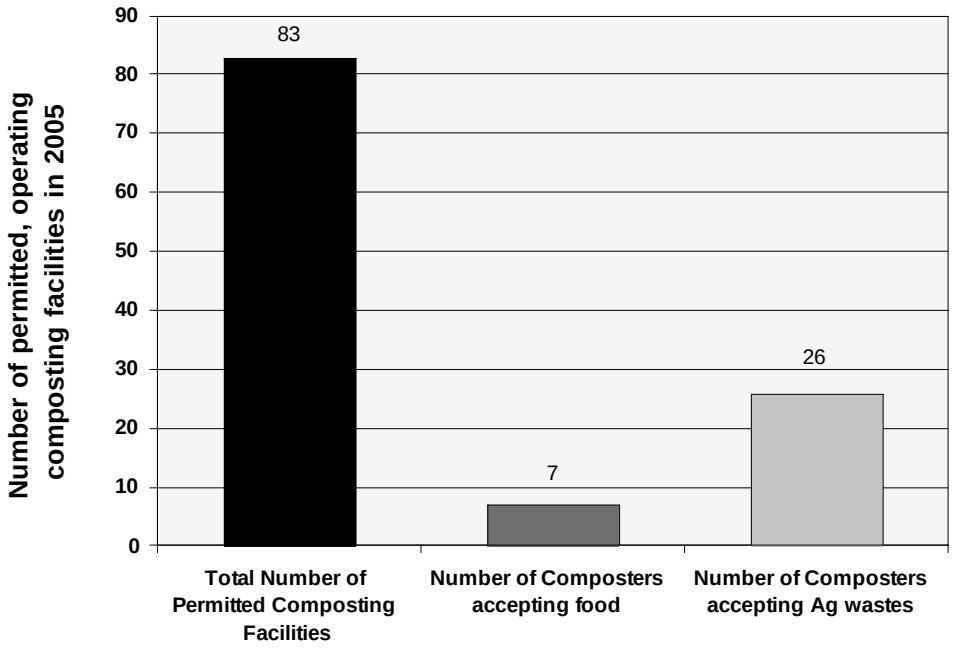
The number of organic growers and farms indicates both the reduction of inputs and recycling of materials used. Organic production involves much lower applications of petroleum-based biocides and other non-renewable inputs into agriculture. Organic production also involves waste recycling in the form of manures, agricultural residues and food scraps that are used to generate compost, which is then reincorporated into the production cycle. An increase in the number of organic producers directly shows the extent to which California agriculture is moving toward practices that limit inputs and increase on-farm recycling of materials.

13*b. Number of organic acres in California*

SOURCE INFORMATION AND DATA PARTICULARS:
Please refer to indicator 8a.

STRENGTHS AND LIMITATIONS:
The number of acres in organic production is a complement to the number of organic producers. Together, the two give an idea of average farm size. In addition, number of acres may provide a more accurate measure for the extent to which inputs are minimized and materials recycled, since these are generally directly related to acreage. Refer to indicators 11a and 13a for additional information.

13c. *Number of composters accepting food and agricultural waste (current) in relation to the total number of composters/processors of organic materials (mostly urban)*



SOURCE INFORMATION:

California Integrated Waste Management Board, List of Permitted Food Scrap Compost Facilities and Compost and Mulch Facilities (2004, June 17). Retrieved from the Solid Waste Information System (SWIS). Available at: www.ciwmb.ca.gov/SWIS/Search.asp#DOWNLOAD

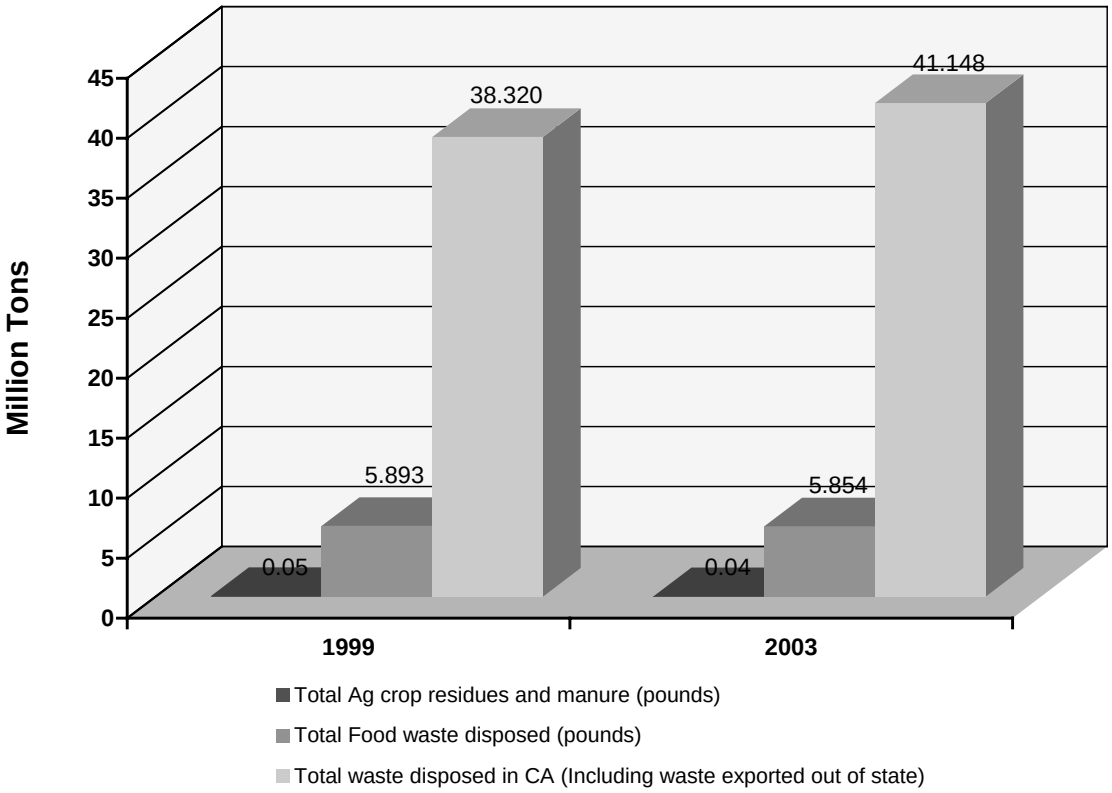
DATA PARTICULARS:

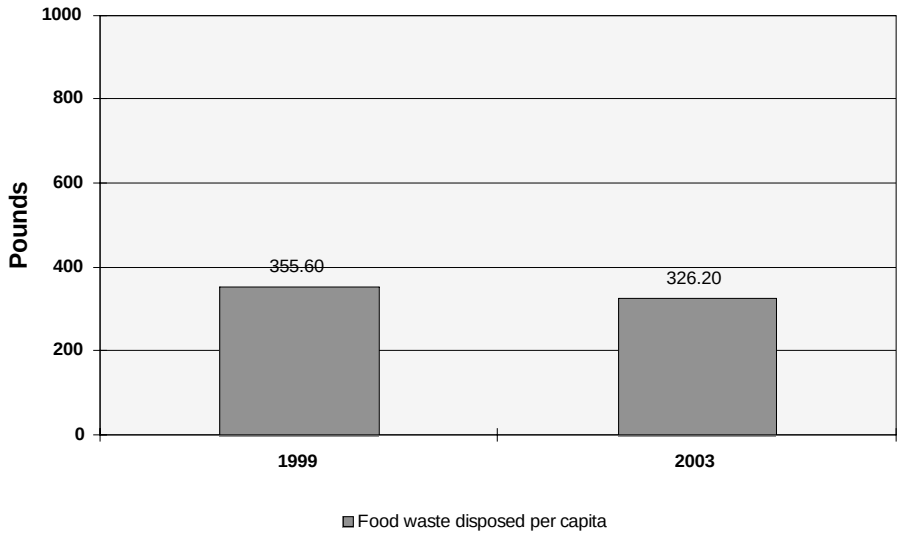
- "Permitted" refers to permits to operate given out by the Integrated Waste Management Board.

STRENGTHS AND LIMITATIONS:

Composters that accept food and agriculture wastes directly divert significant quantities of material from the waste stream. An increasing proportion of such facilities means better access for agriculture- and food-related businesses and an increased statewide capacity to recycle food and agriculture waste. The indicator does not specify the distribution of these facilities. This information would help us understand how evenly geographically distributed the facilities are and hence give an even better indication of access. While addresses could be geocoded and inserted into a GIS, too many resources would be required to make it worthwhile at this point. It is also important to note that most of these facilities deal with food waste and do not accept certain agricultural waste such as animal wastes from concentrated animal feeding operations. Given that urban food waste can be recycled and redistributed to nearby farms, this measurement is also useful as an indicator of rural-urban partnerships, one of the main frames for the Vivid Picture.

13*d. Total tons of food and agricultural waste disposed; pounds per capita*





SOURCE INFORMATION:

California Integrated Waste Management Board (1999, December). *Statewide Waste Characterization Study: Results and Final Report*. Waste Stream Measurement and Analysis. Available at: www.ciwmb.ca.gov/WasteChar/Study1999/ExecSumm.htm#Results; and California Integrated Waste Management Board (2004, December). *Statewide Waste Characterization Study*. Available at: www.ciwmb.ca.gov/Publications/default.asp?pubid=1097

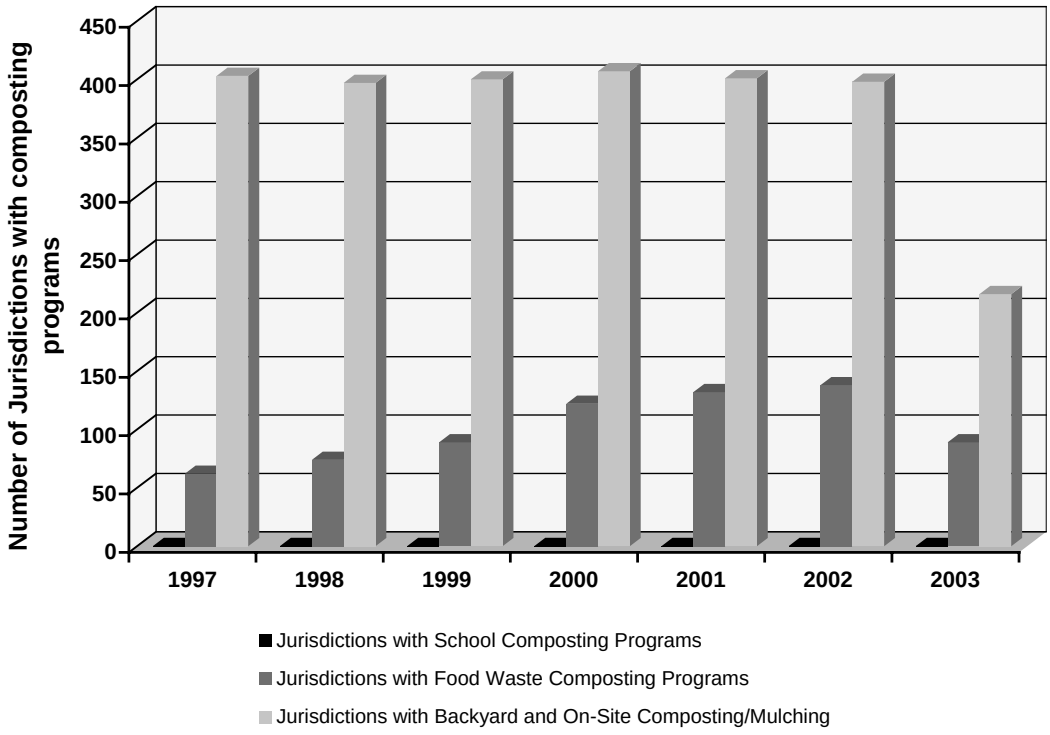
DATA PARTICULARS:

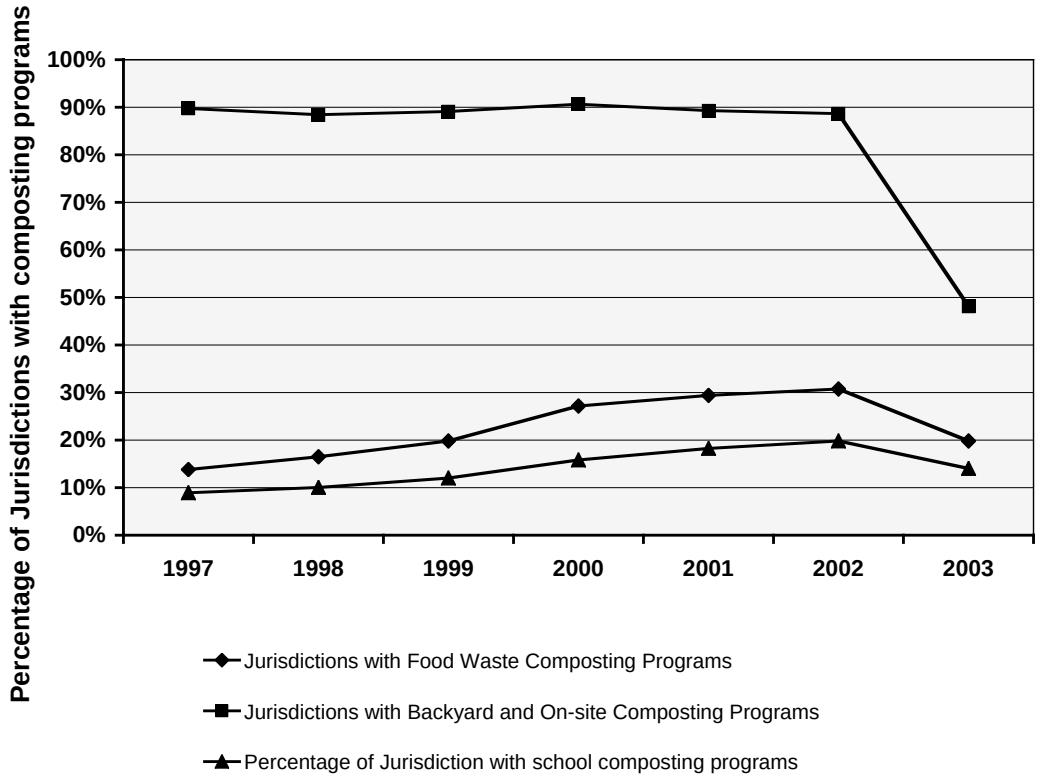
- Total tons of food and agricultural waste that go into landfills through the waste stream. The number of pounds of food waste per capita was calculated based on food waste tonnage (conversion rate 1 ton = 2,000 pounds).
- "Food" refers to food material resulting from the processing, storage, preparation, cooking, handling, or consumption of food.
- "Agricultural crop residues" refers to plant material from agricultural sources, such as orchard and vineyard prunings, vegetable byproducts from farming, and residual fruits, vegetables, and other crop remains after usable crop is harvested.
- "Manures" refers to manure and soiled bedding materials from domestic, farm, or ranch animals.
- Based on landfill surveys at selected landfills across California in both summer and winter. Data on composition of waste were gathered from 550 waste samples sorted at 22 disposal facilities (landfills and transfer stations) in five regions over four seasons. Approximately equal numbers of waste samples belonging to each waste sector were obtained from each region of the state. The waste from samples was sorted into 98 material types. In addition, surveys of vehicle drivers at the entrances to participating disposal facilities produced data that was used to estimate the portion of California's waste that corresponds to each of the waste sectors and subsectors. A total of 4,693 surveys were completed.
- The 1999 and 2003 studies vary in methodology: the 1999 survey obtained figures from measuring waste at commercial facilities, whereas the 2003 study obtains samples from vehicles at disposal facilities.
- A full explanation of the methodology and limitations of the waste characterization assessments can be found at: www.ciwmb.ca.gov/WasteChar.

STRENGTHS AND LIMITATIONS:

The total volume of food and agricultural waste disposed of doesn't tell us how much waste is generated but quantifies how much is going into the state's landfills. Waste diversion and recycling programs are not directly taken into account and are thus not reflected in the data. This is an important and responsive indicator because incentives for waste recycling will lead directly to less food waste in landfill. This waste characterization study also reveals that food represented 15.7% of the total stream in 1999 and 14.6% in 2004.[25] One of the most significant limitations is that data was collected from the disposed waste stream of businesses only; households are not included. In addition, the quality of the data is dependent on information being donated from locally-based waste studies—this is expected to improve over time. The methodology for data collection between 1999 and 2003 varied somewhat, but it is expected that it will be consistent in the future. Pending funding, the study will be replicated regularly in the future.

13e. Number of Operating Food Diversion Programs





SOURCE INFORMATION:

Integrated Waste Management Board, Planning Annual Report Information System (PARIS). Statewide Occurrence of Operating Diversion Programs (2005). Available at: www.ciwmb.ca.gov/LGTools/PARIS/yrcmpsu.asp

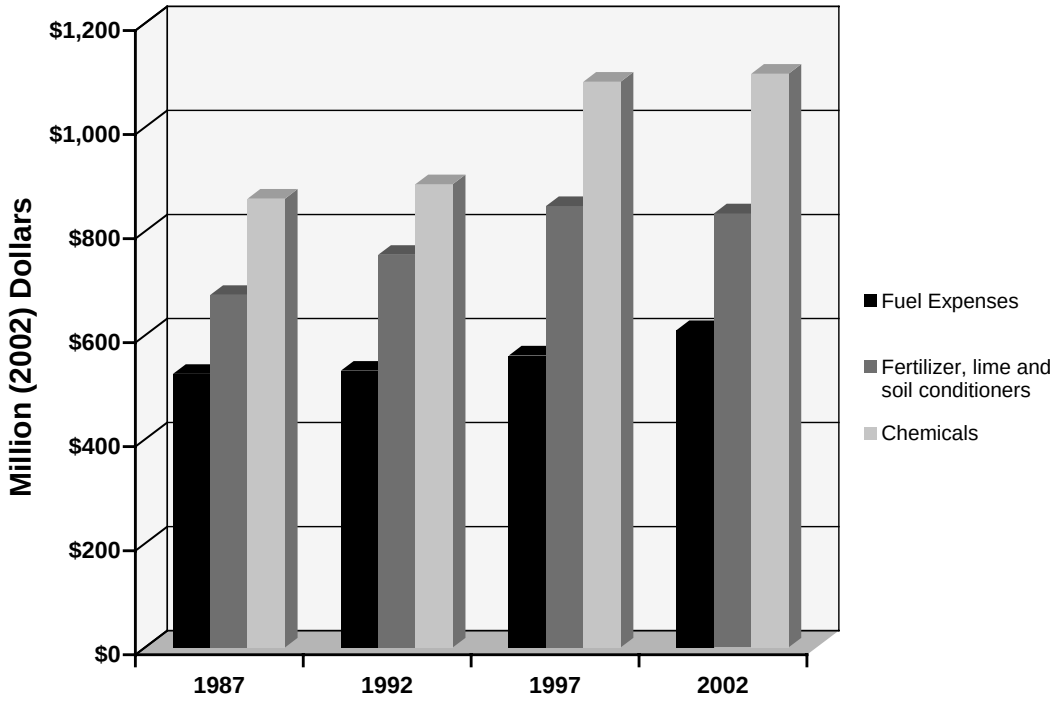
DATA PARTICULARS:

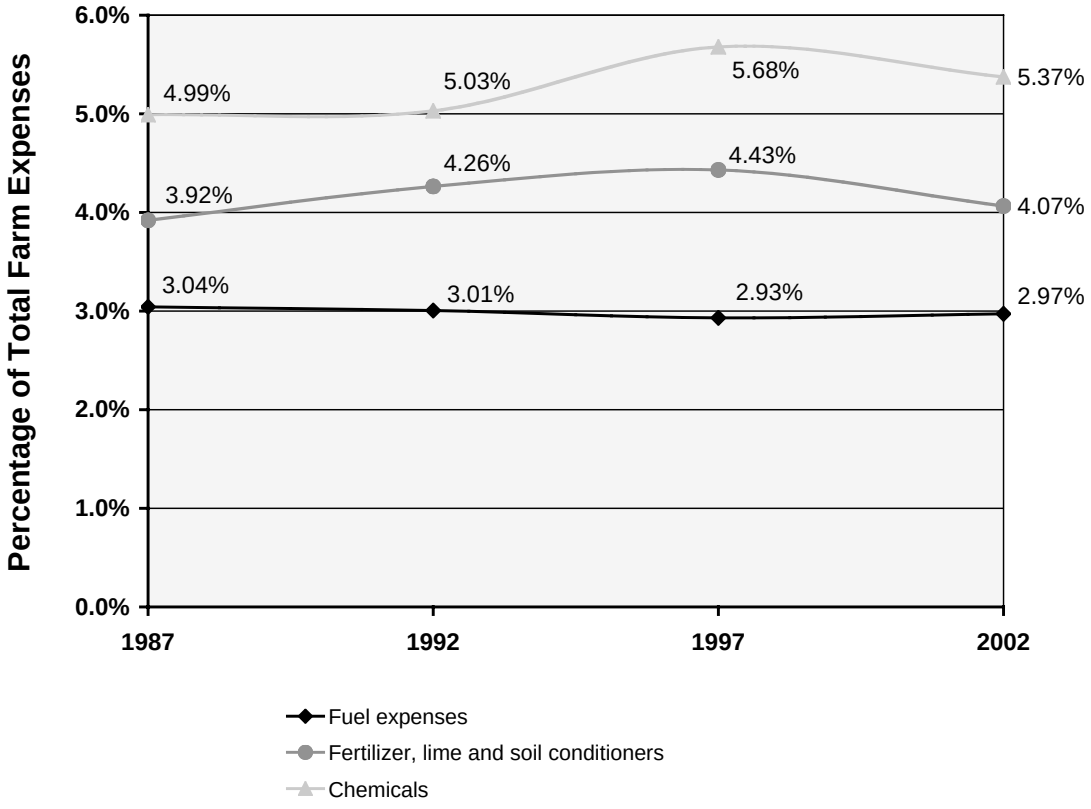
- Statewide jurisdictions that report having one of the following composting programs in operation: Food Waste Composting, Backyard and On-Site Composting/Mulching, and School Composting Programs.
- Only programs that have been implemented are reported in PARIS.
- A jurisdiction is defined as a city, county, a combined city and county, or a regional agency with the responsibility for meeting Integrated Waste Management Act requirements.

STRENGTHS AND LIMITATIONS:

The proportion of jurisdictions with these three types of composting programs is a good indication of the extent to which incentives for waste recycling are provided. AB 939, the Integrated Waste Management Act, requires every jurisdiction to reduce the amount of waste going to landfills by 25% in 1995 and 50% in 2000, and was passed in California in 1989. One of the foremost responses by jurisdictions was to promote diversion programs. The indicator is limited in that the number of programs likely does not correlate directly to volume of material diverted from the food waste stream, nor does it indicate the extent to which waste is reduced in the first place.

13f. Fuel, fertilizer and chemical expenses in agriculture; as % of total expenses





SOURCE INFORMATION:

Values are based on the USDA Census of Agriculture—State Data Census. Table 4: Farm Production Expenses: 2002 and 1997.[26] Available at www.nass.usda.gov/census/census02/volume1/us/st99_2_004_004.pdf .

DATA PARTICULARS:

- Total gasoline, fuels and oils; chemicals and fertilizer, lime and soil conditioners (in 2002 dollars). Annual expenses.
- For 1992 and 1987 expenses, see category Petroleum Products. There are some differences between the numbers under this category and the ones for the 2002 Census, which breaks it down into gasoline, fuel, and oil purchased. These expenses include the cost of all gasoline, diesel, natural gas, LP gas, motor oil, and grease products for farm use. They exclude fuel for personal automobile use, fuel used for cooking and home heating, and other non-operational uses. In the 1997 census, fuel costs were divided into four groups.[27]
- Prices corrected for inflation to 2002 dollars.

STRENGTHS AND LIMITATIONS:

The cost of fuel, fertilizer and chemical inputs is the closest available measure of their use. As these expenses decline, it can be assumed that their use is also waning and that farmers are turning to production practices that rely less on non-renewable inputs. However, if, for example, the cost of fuel fluctuates significantly from Census year to Census year, interpretation of the data may be skewed. As such, this indicator is more valuable when longer-term trends are considered. Ideally, the volume of fuel used would be included as an indicator, but this is not readily available at this time.

Goal 14: Employs humane practices in animal care

SELECTION PROCESS:
Indicators for this goal were selected to reflect the humane animal husbandry practices for animals that provide food. There are very few statewide sources of animal welfare data available; as such, rigorous indicators of animal welfare were difficult to find. The indicators team explored possible measures of the number of animals and pounds of meat that were produced in humane ways, but data for such measures have not been generated. The distance animals travel to slaughter was another indicator considered but no sources for such data were located at this time. The indicators selected for Goal 14 include certification programs with internalized criteria for animal welfare that certified farms must meet and a measure of producers who rear animals on grass in pasture, rather than keeping them indoors (a practice considered by many to be inhumane).

14a. Number and identity of humane animal certification programs

1. Number of "Certified Humane Raised and Handled" animal producers (label)

Number of California producers certified as of July 2005: 1

SOURCE INFORMATION:

Information was provided directly by Humane Farm Animal Care.[28] See also Humane Farm Animal Care webpage: www.certifiedhumane.org

DATA PARTICULARS:

- The "Certified Humane Raised and Handled" certification is designed to certify that animals raised for dairy, lamb, poultry and beef products are treated in a humane manner. Under the program, growth hormones are prohibited and animals are raised on a diet without antibiotics. Antibiotics can be used only in the treatment of sick animals. Access to clean and sufficient food and water and a safe and healthful living environment are also required from birth through slaughter. Producers must also comply with environmental standards. Processors must comply with the American Meat Institute Standards, which is a higher standard for slaughtering farm animals than required by the Federal Humane Slaughter Act. The standards for the "Certified Humane" program were developed by a team of animal scientists and veterinarians that make up the program's Scientific Committee and were based in part on the Royal Society for the Prevention of Cruelty to Animals standards developed in the United Kingdom. The United States Department of Agriculture (USDA) Agricultural Marketing Service (AMS) Livestock and Seed Program is also involved in verifying the inspection process.

2. Number of AHA-certified animal producers (Free-Farmed Certification Program)

Number of California Producers Certified as of July 2005: 4

SOURCE INFORMATION:

The American Humane Association. Producers are listed at:
www.americanhumane.org/site/PageServer?pagename=pa_farm_animals_ff_producers

DATA PARTICULARS:

- Certified producers are permitted to use the "Free Farmed" label
- The Free Farmed Certification Program is designed to certify that animals raised for dairy, lamb, poultry and beef products are treated in a humane manner. The standards were based, in part, on other similar standards such as those used by the Royal Society for the Prevention of Cruelty to Animals and the 1999 Federation of Animal Science Societies Guide.
- This program is administered through the American Humane Association (AHA) and began in 2000.
- Guidelines include access to clean and sufficient food and water and a safe and healthful living environment. Standards must be met before a product can be

certified. Managers and stock keepers are required to be professionally trained in animal husbandry and welfare.

- The USDA Agricultural Marketing Service is paid to conduct on-site assessments of 25% of the certified farms as a verification check on requirements for certification of the Free Farmed Program.

STRENGTHS AND LIMITATIONS:
These certification programs are two rigorous and reputable programs in existence in the US, and were obtained from the Consumers Union Guide to Environmental Labels webpage, [29] which provides a filter to assure the quality of the certification programs. Certification and labeling encourage high standards in animal welfare practices. Currently, enrolment is currently very low, suggesting that the indicator would not be sensitive to change. However, since these are both new certification programs, it is expected that enrolment will increase in coming years.

14*b. Number of Grass Fed Animal Producers*

In 2005, there were 46 producers enrolled in the CSU Chico College of Agriculture Grass Fed Beef Program, including 23 beef producers, 10 sheep producers, 1 pig producer and 12 goat producers.

SOURCE INFORMATION:

CSU College of Agriculture (2004, September 15). Producer Contacts. Available at www.csuchico.edu/agr/grsfdbef/producer-contacts/index.html

DATA PARTICULARS:

- The Grass Fed program allows producers to be self-identified as Grass Fed. They are not third party certified.
- The Chico Program is a cooperative project between California State University, Chico College of Agriculture and University of California Cooperative Extension.

STRENGTHS AND LIMITATIONS:

"Grass fed" indicates that these animals are raised on pasture rather than indoors or in confined animal feeding operations. As such, these animals live in more natural conditions, a good indicator of humane treatment. The figure for number of grass fed producers is limited because producers are permitted to self-identify as grass fed producers—there are currently no widely-accepted criteria for this category of producers, although many groups are working on developing quantitative criteria. In addition, the number is limited to producers who have signed up on the CSU Chico website and does not represent all grass fed producers in California.

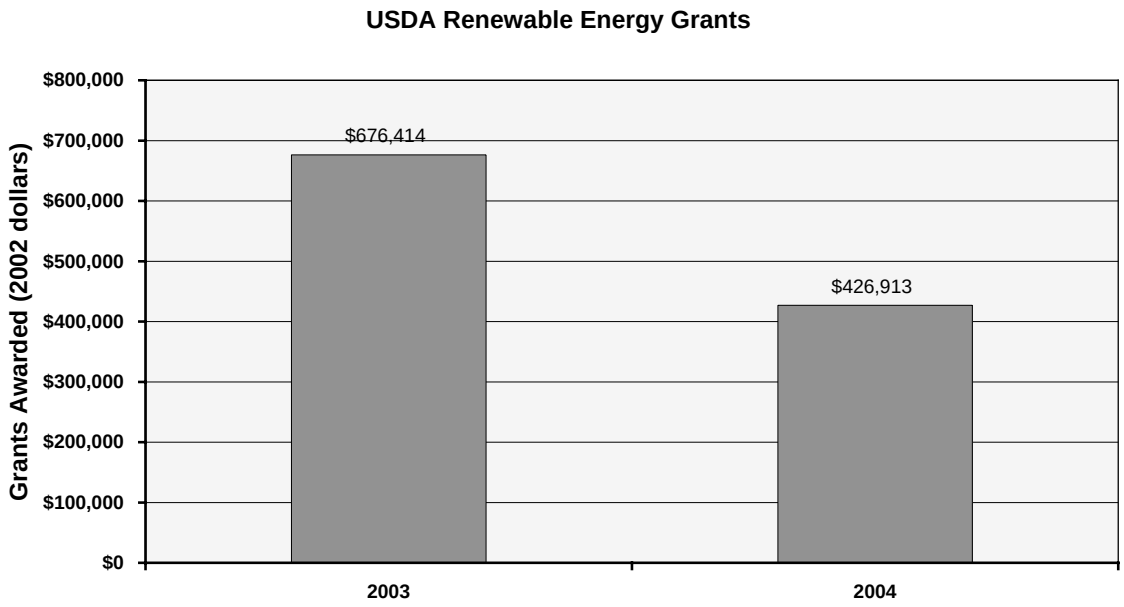
Goal 15: Provides opportunities for revenue from on-farm energy production, tourism, education, and other value added services (in addition to food production).

SELECTION PROCESS:
This goal is related to goal 16 in that both deal with non-agricultural sources of income on the farm. Indicators for goal 15 aim to outline sources of income that help stabilize small- and medium-scale family farms against vicissitudes such as weather, an unpredictable commodity market, etc. Farms that are multi-use tend to be more economically stable and help connect producers and the broader community. Fundamentally, if the agricultural community can meet many of the needs of society, this will diversify their income base as well as enriching connection to the rest of the community. The indicators selected address two important ways in which farmers supplement their agricultural activities—energy production and agricultural tourism. Since these are both relatively new phenomena (at least on a significant scale), there is currently not a lot of data available. It would be useful, for example, to collect data on the revenue generated by agricultural tourism. At this time, the number of farms is the only measure available.

15a. Number of farms engaged in agricultural tourism

See indicator 7e for details

15b. Dollars for renewable energy programs



SOURCE INFORMATION:
USDA Renewable Energy Grants: USDA Rural Development Department. *Business Programs Report*. Available for each fiscal year at: www.rurdev.usda.gov/rbs/pub/bpfy2000.htm

DATA PARTICULARS:

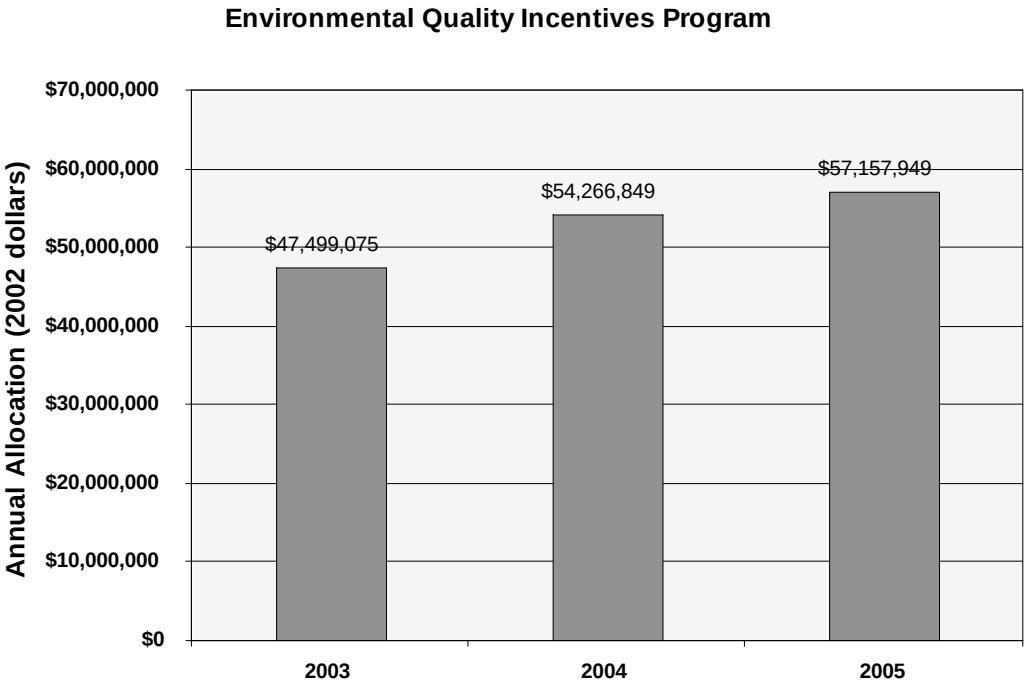
- In 2002 dollars
- 2003 is the first year for which data were posted by state.
- There were three grants each in 2003 and 2004 for California.
- See www.rurdev.usda.gov/rbs/farmbill/what_is.html for the program definition.
- Eligible projects are described at www.rurdev.usda.gov/rbs/farmbill/what_projects.html .

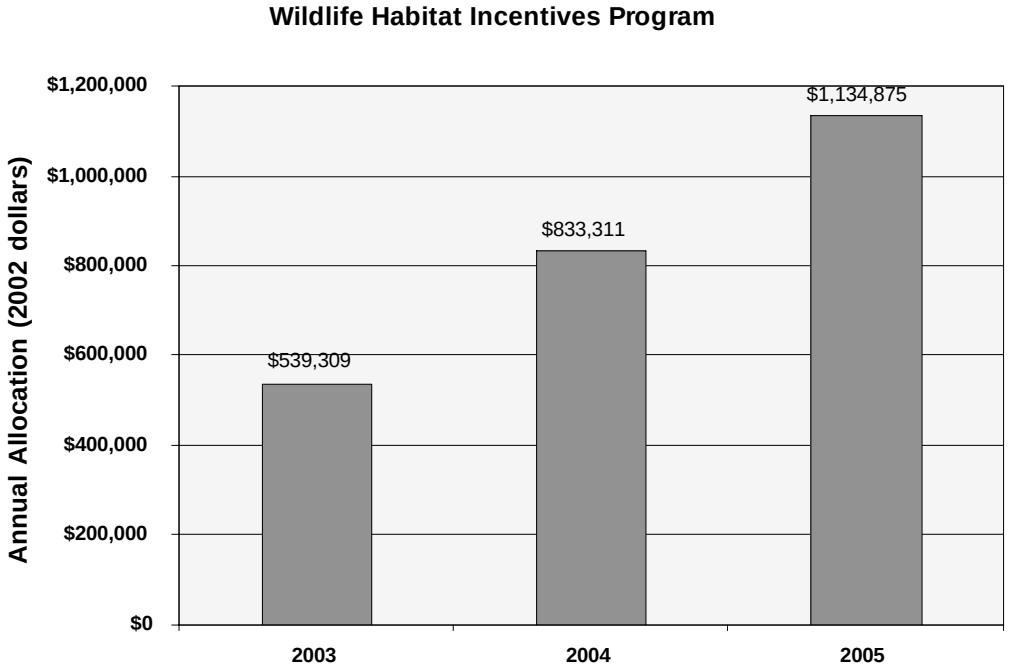
STRENGTHS AND LIMITATIONS:
This indicator shows the amount of funding granted to farmers under the USDA's renewable energy programs. The program is not well funded, nor are many grants given, but this is the best incentive program for on-farm energy production. On-farm energy production has not yet been adopted on a meaningful scale, but it is expected to become so. Ultimately, other measures may emerge as the industry takes shape. For example, farms may lease pad space for wind power generators. Unfortunately, many of the sources of such information are proprietary and may not be gathered in a way that is meaningful to the Vivid Picture project.

Goal 16: Rewards farmers, fishers, and ranchers for conservation services

SELECTION PROCESS:
Indicators for this goal aim to measure the progress of producers toward increasing ecological conservation efforts within the scope of their operations. Currently, incentives to this end tend to be government-sponsored programs to encourage certain on-farm activities that, for example, promote wildlife and prevent pollution. There are very few private initiatives that promote conservation on the farm. The indicators selected reflect the existing programs that promote conservation services and for which we could obtain data. This collection reflects the interest of farmers in taking on the challenge of making their land compatible with wildlife and the surrounding ecosystem.

16a. Total dollars paid and number of contracts to CA for conservation practices
1. Total dollars paid in NRCS EQIP program
2. Total dollars paid in CSP (Conservation Security Program)
3. Total dollars paid WHIP (Wildlife Habitat Incentives Program)
4. Number of contracts for each program





Program	Number of Contracts
EQIP	1901 (in 2004)
CSP	NA
WHIP	30 (2004)

SOURCE INFORMATION:

EQIP: National Resource Conservation Service (2005). *FY-2004 EQIP Allocations to States.* Available at: www.nrcs.usda.gov/programs/2004_Allocations/EQIP_2004_alloc.pdf

CSP: National Resource Conservation Service (2005). *Conservation Security Program FY-2004 Financial and Technical Assistance Dollars to States.* Available at: www.nrcs.usda.gov/programs/2005_allocations/CSP04allocations.pdf

WHIP: National Resource Conservation Service (2005). *Wildlife Habitat Incentives Program FY-2005 Financial Assistance Obligated.* Available at: www.nrcs.usda.gov/programs/whip/wihipfy2005allocation.pdf
30

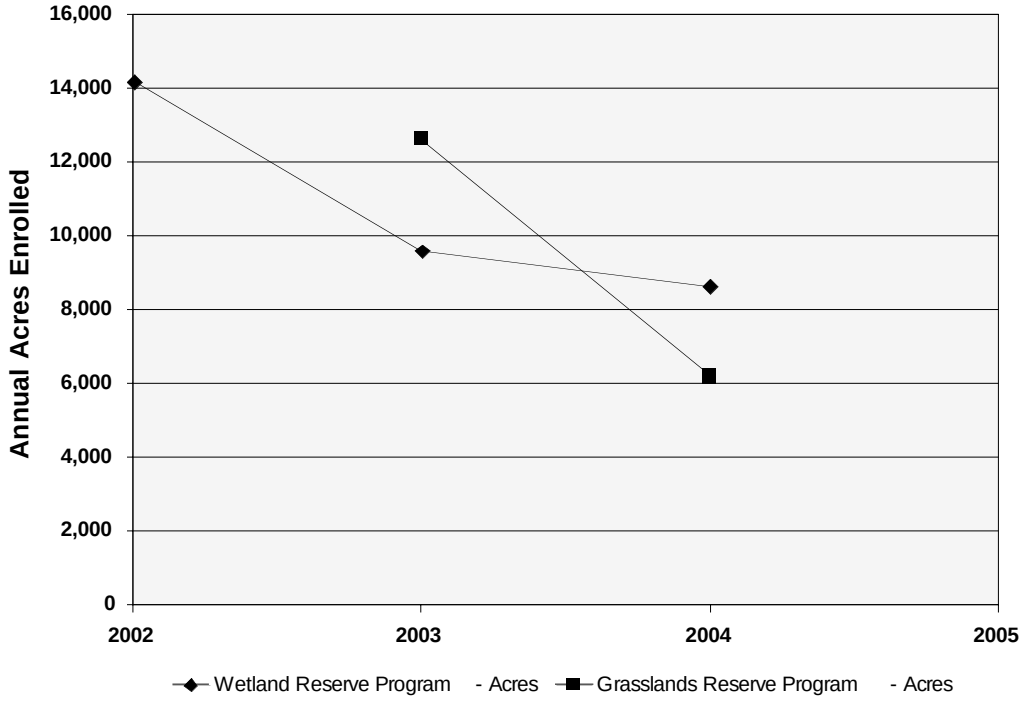
DATA PARTICULARS:

- *EQIP*:
  - Data are annual allocations
  - The Program was authorized in the 1996 Farm Bill and reauthorized and modified in 2002.
  - The program supports a number of conservation practices and changes to cropping, grazing management, etc. that are compatible with productive agricultural use.
  - For more details on the program, visit: and http://policy.nrcs.usda.gov/scripts/lpsiis.dll/M/M_440_515.htm
- *CSP*:
  - No chart is included for the CSP as no funds have been spent in California.
  - The program is administered by the Commodity Credit Corporation (CCC) through the Farm Service Agency (FSA)
  - The CSP was authorized in Farm Bill of 2002. 2004 was the pilot year for this program. 2005 was the first year in which California watersheds were identified as being eligible.
  - The program pays rent and provides cost sharing assistance for the establishment of long-term conservation cover on eligible land
  - For more information on the Conservation Reserve Program, see: www.nrcs.usda.gov/programs/csp/ and www.fsa.usda.gov/dafp/cepd/crp.htm
- *WHIP*:
  - The program is administered by the Natural Resources Conservation Service (NRCS)
  - It provides technical and financial support for portions of participant's conservation plans that create, restore, or enhance wildlife habitat.

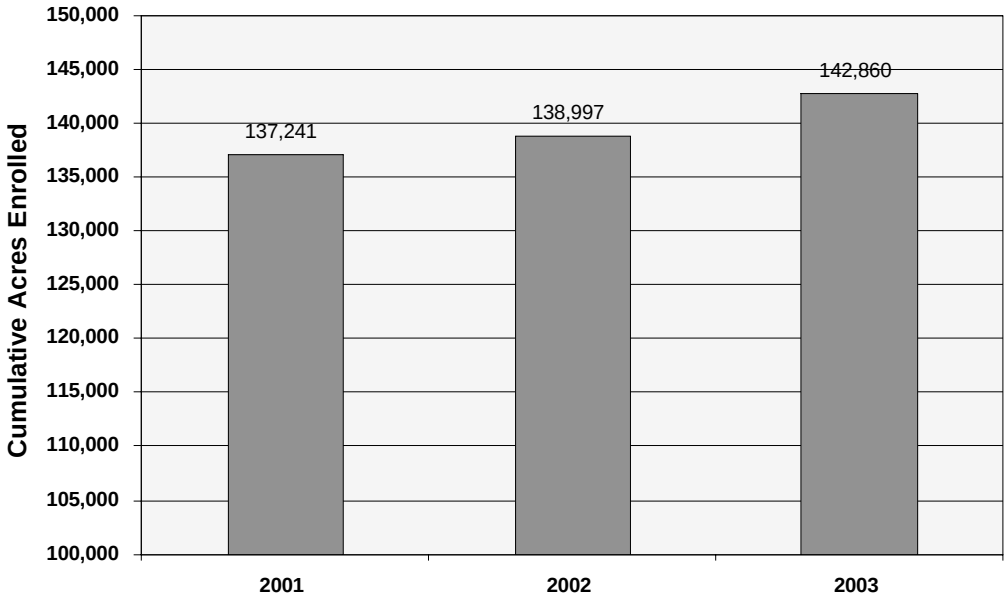
- For general provisions of WHIP, see: http://policy.nrcs.usda.gov/scripts/lpsiis.dll/M/M_440_517_a_01.htm
- Authorized in Farm Bill of 2002
- For more details on the program, visit: www.nrcs.usda.gov/programs/whip/

STRENGTHS AND WEAKNESSES:
Currently, these are the main programs in existence for supporting on-farm conservation practices. While there is debate about the effectiveness of certain aspects of the programs, they are the main programs being administered today. The number of producers served by these programs was considered but the data on allocations was more current, and the expenditures were felt to be more of an indicator of the magnitude of the program. These data are reliable and it is likely that the programs will continue well into the future, so data will be easily obtainable for some time to come.

16b. Total CA acreage earmarked for being retired under conservation programs
1. Total acres enrolled under Conservation Reserve Program (CRP)
2. Total acres enrolled under Wetland Reserve Program (WRP)
3. Total acres enrolled under Grasslands Reserve Program (GRP)
4. Number of contracts per program



Conservation Reserve Program



Program	Number of Contracts
CRP	519 (2004)
WRP	22(2004)
GRP	7(2004)
Williamson Act	NA

SOURCE INFORMATION:

CRP: USDA Farm Service Agency (2004, November). *Fiscal Year Summary, FY 2003.* p.3. Available at: www.fsa.usda.gov/dafp/cepd/crp_statistics.htm.

WRP: www.nrcs.usda.gov/programs/wrp Links for each year located under "WRP Contract and Funding Information."

GRP: www.nrcs.usda.gov/programs/GRP/ Links for each year located under "GRP Project and Funding Information."

DATA PARTICULARS:

- CRP:
  - Figures are cumulative acreage.
  - Dollar figures in monthly reports provide annual rental payments. Numbers of contracts are also listed in annual reports.
  - For additional program information, see: www.fsa.usda.gov/dafp/cepd/crp.htm
- WRP:
  - Figures are annual enrolments.
  - Administered by the Natural Resources Conservation Service, in agreement with the FSA and with consultation from the Fish and Wildlife Service.
  - The program purchases conservation easements and supports wetlands restoration practices.
  - The program was authorized through the Food Security Act of 1985
  - For additional program information, see: http://policy.nrcs.usda.gov/scripts/lpsiis.dll/M/m_440_514_a.htm
- GRP:
  - Figures are annual enrolments.
  - Coordinated by the Natural Resources Conservation Service, the Farm Service Agency and the Forest Service
  - The program was authorized by the Farm Security and Rural Investment Act of 2002 amending Food Security Act of 1985
  - The program provides assistance for protecting and rehabilitating grasslands
  - For additional program information, see: www.nrcs.usda.gov/programs/GRP/

STRENGTHS AND LIMITATIONS:

The number of acres enrolled in these programs for retiring farmland gives a broad indication that more land is being made available for conservation purposes. While they do not specify what quality of farmland is being retired, nor its conservation value, the programs target wetlands and grasslands, translating to a positive contribution to wildlife habitat. The compensation given to farmers for retiring farmland for conservation purposes is clearly a direct measure of rewarding producers for conservation services and the data are reliable and stable.

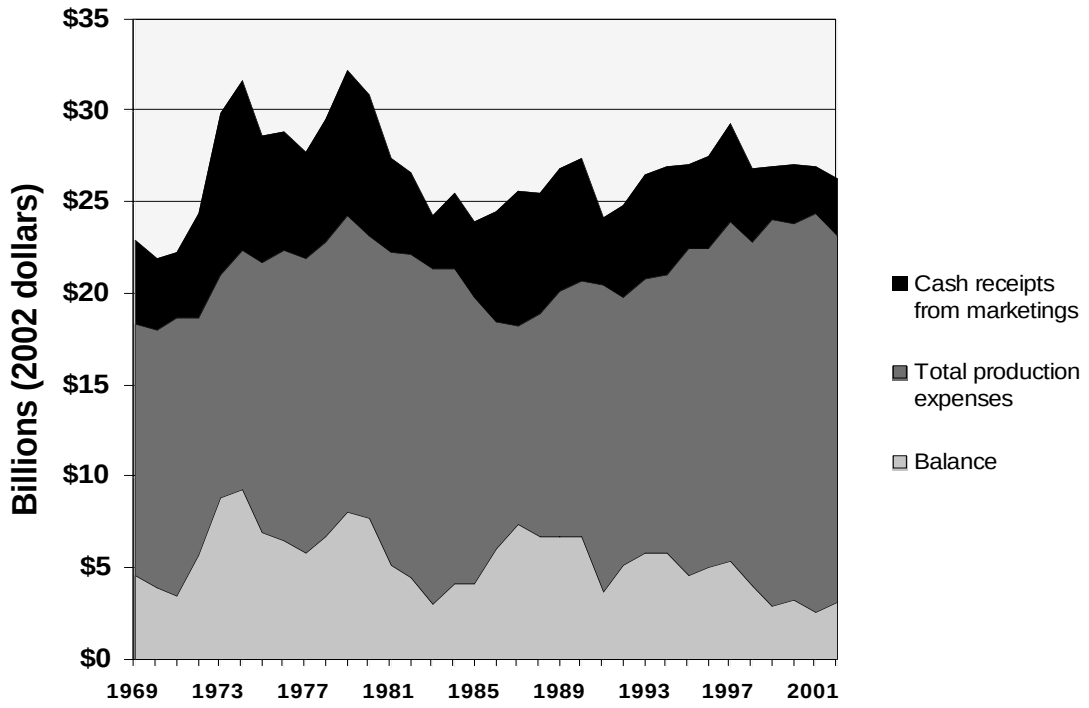
16*c. Total acreage in Williamson Act*

See indicator 12c.

Goal 17: Provides opportunities for food, fishing, and farming operations to be profitable.

SELECTION PROCESS:
Direct data on the profitability of businesses by sector exists at the national level (compiled by the Bureau of Economic Analysis), but is not compiled at the state level. Nor would profitability calculations for all firms in California necessarily reflect the strength of sustainable food systems in the state, since California boasts a number of globally-oriented food manufacturers and businesses that are profitable without actually channeling a significant proportion of food or benefits to Californians. Ideally, indicators of the success of firms that are involved in community-based food systems that maintain profitability within the local food system would be available. For this goal, a number of partial measures are put forth. Each is useful in assessing profitability of agriculture and food firms and together give a good indication of the state of California's food and agriculture businesses.

17*a. Farm production balance*



SOURCE INFORMATION:

Bureau of Economic Analysis; Regional Economic Accounts. Local Area Personal Income query tool. Available at: www.bea.doc.gov/bea/regional/reis

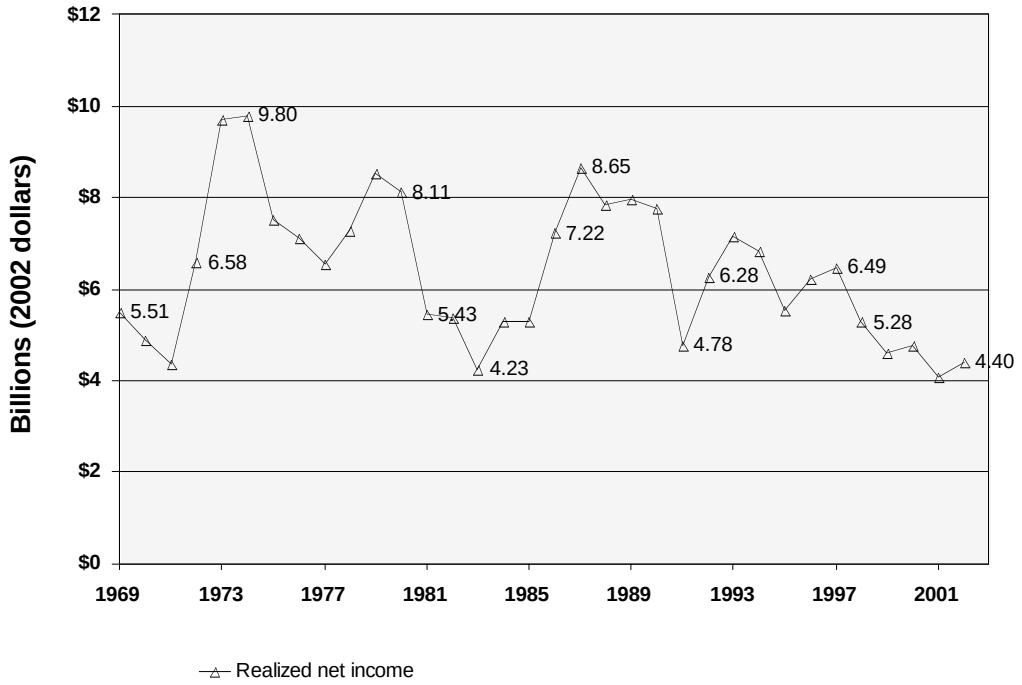
DATA PARTICULARS:

- Annual farm income available electronically from 1969 onwards.
- Adjusted to 2002 value using CPI from the Federal Reserve Bank.

- The farm production balance is cash receipts minus production expenses.
- BEA data are slightly different from USDA Census of Agriculture data that reports similar numbers. BEA makes use of Census data to produce estimates of how money from farm operations flows through a given county. BEA data are available annually by internet from a web site that is easy to use, whereas Census of Agriculture data are only compiled in 5-year intervals and is slightly more difficult to access.

STRENGTHS AND LIMITATIONS:
The farm production balance measures the underlying health of the production economy, stripped of other sources of income. Thus, it assesses the underlying dynamics that make the farm economy healthy or weak. These data are both easy to access and typically overlooked, which makes it all the more important to consult. It is a measure of how much income farm families earn from producing the crops and livestock they raise on their farms, as well as other farm-related income. This is not the same as farm profitability (since farm profits also depend on investments specific to a given farm and include non-farm income sources), but it is closely related and reveals information not provided by net farm income, for example if farms in the region were making money while losing on production costs.

17*b. Net farm income*



SOURCE INFORMATION:

Bureau of Economic Analysis; Regional Economic Accounts. Local Area Personal Income query tool. Detailed farm income tables 1969 – 2002 (CA45). Available at www.bea.doc.gov/bea/regional/reis/

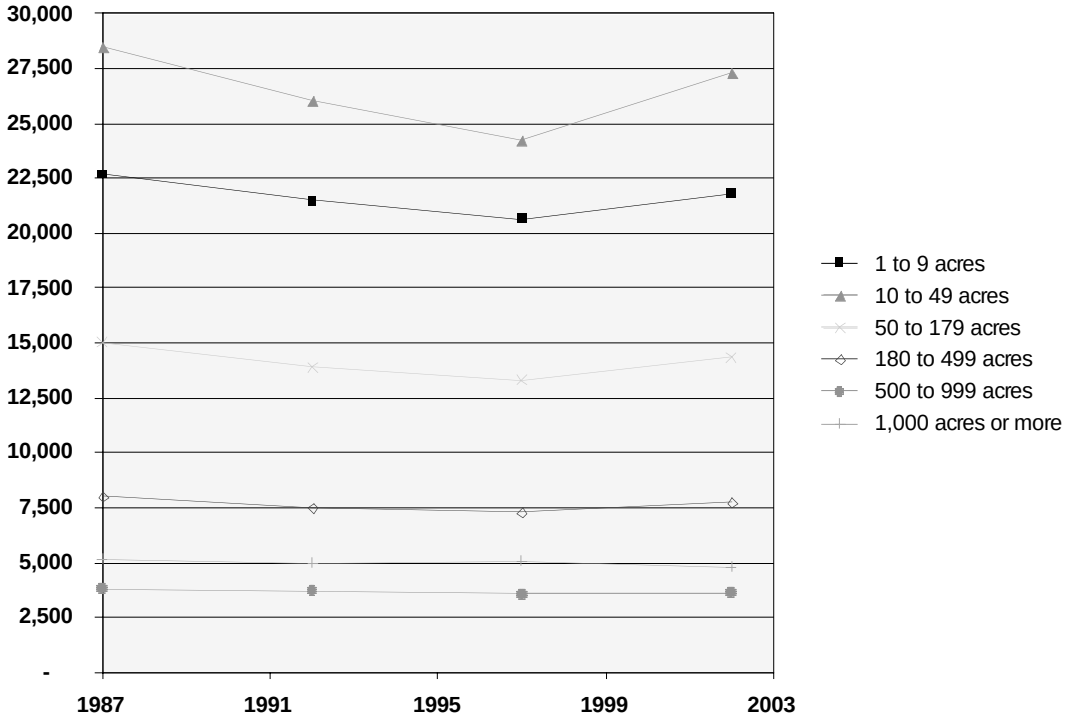
DATA PARTICULARS:

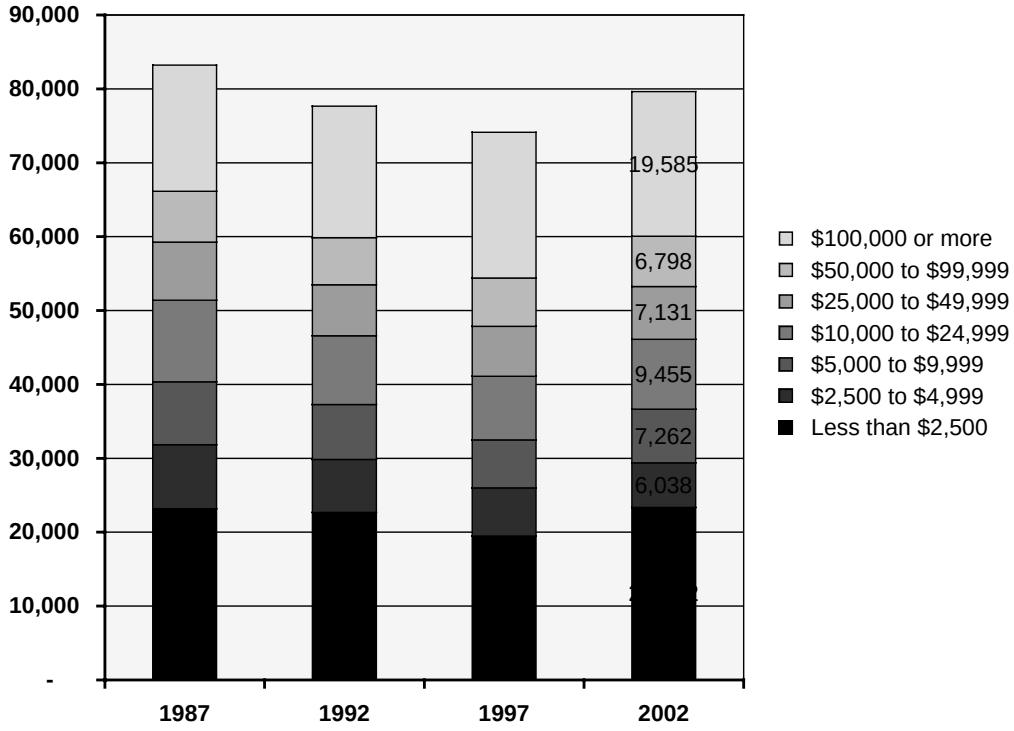
- Historical data available electronically from 1969 to 2002.
- Net farm income differs from the farm production balance by including two important sources of farm income: federal subsidies and farm-related "other" income (such as custom combining for a neighbor, or commodity futures trading). This does *not* include additional income from non-farm occupations.

STRENGTHS AND LIMITATIONS:

Although net farm income is a little closer than farm production balance to showing the overall profitability of all farms in a region, comparing it with farm production balance (see previous indicator) is particularly useful in demonstrating the extent to which farms are profitable as a result of commodity production versus other income. Together, the two provide a measure of overall farm profitability at the state level.

17c. *Number of farms by size/sales category*





SOURCE INFORMATION:

USDA 2002 Census of Agriculture, available at www.nass.usda.gov/census

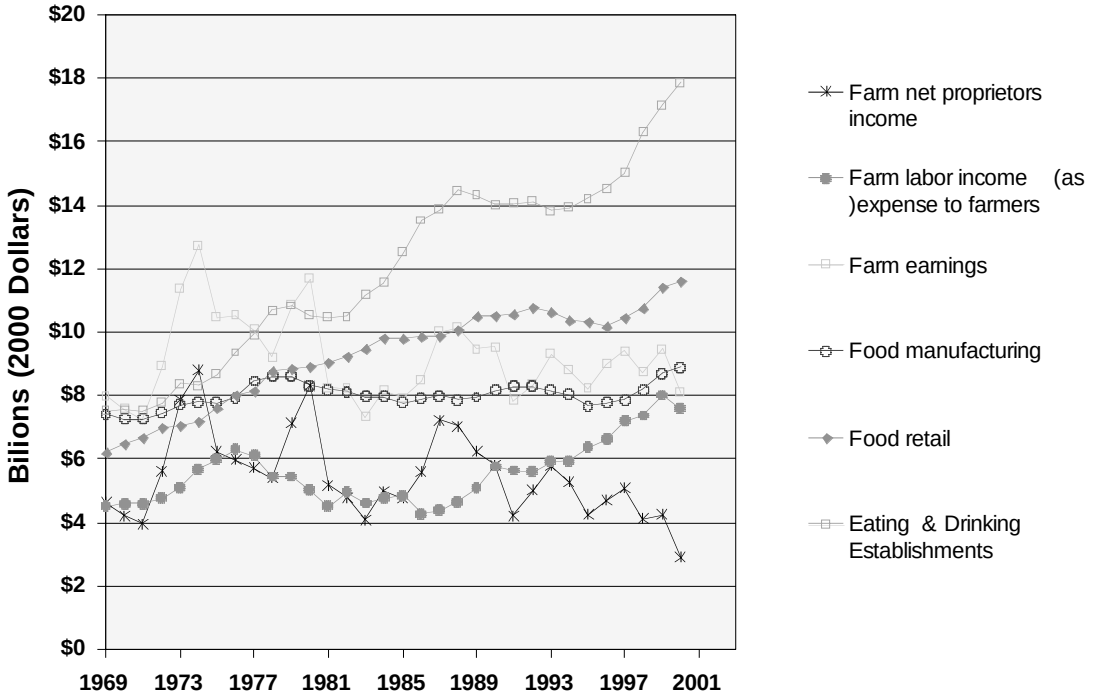
DATA PARTICULARS:

- Sales category is gross farm income.

STRENGTHS AND LIMITATIONS:

Number of farms by size and sales categories brings out some of the finer details of farm profitability. Whereas indicators 17a and b give a picture of the overall profitability of the agriculture sector, this indicator illuminates how this profitability is distributed across different classes of farms. Furthermore, reporting both sales and acreage categories measures different attributes. For example, some high-value crops may require a small amount of land, and some large farms (such as ranches) may not return high sales. The data are easily collected and reliable.

17*d. Personal income generated by farm, manufacturing, retail food and eating/drinking establishments*



SOURCE INFORMATION:

Bureau of Economic Analysis, Regional Economic Accounts. Available at: www.bea.doc.gov/bea/regional/reis.

DATA PARTICULARS:

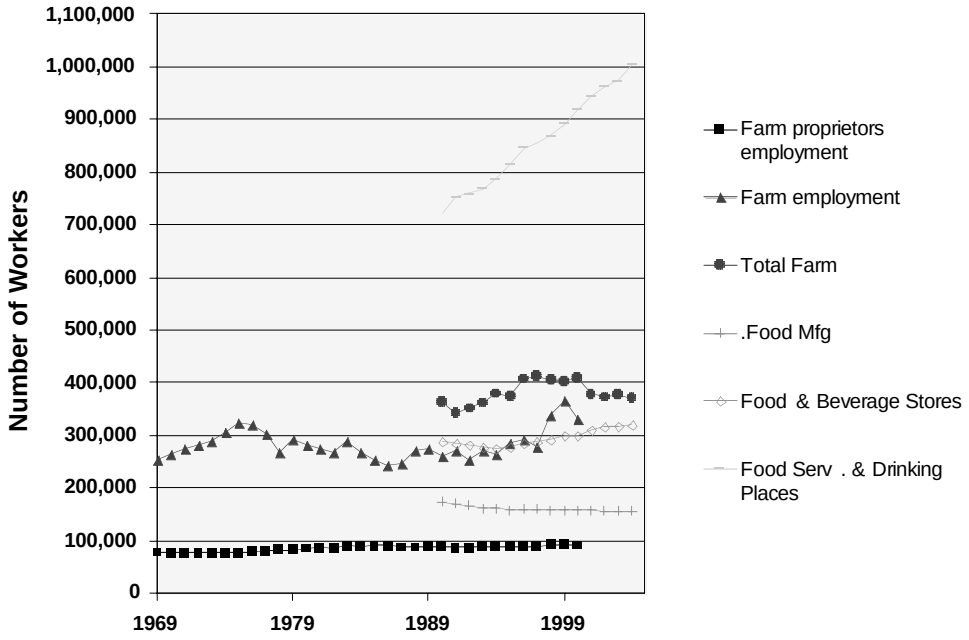
- Adjusted to 2002 value using CPI from the Federal Reserve Bank.
- Detailed income and employment tables by NAICS industry codes for 2001 (CA05 and CA25). Detailed income and employment tables by SIC industry codes for 1969 – 2000 (CA05 and CA 25).

STRENGTHS AND LIMITATIONS:

This indicator is particularly interesting when the balance of income among various sectors is considered. This indicator compares total personal income in each sector rather than per capita income. For example, food service workers are the lowest paid, but represent the highest total due to growth among restaurants. This indicator reports on the impact on the economy, not on individuals. One would expect that in a future scenario of local firms that create local advantage, there would be intentional efforts to bring personal income into balance to avoid the long-term costs associated with income inequality. By forming explicit agreements to cooperate for the benefit of the region (for example by sharing the risks of climate, the rewards of economies of size, the benefits of federal investment, etc.), local stakeholders would ensure that income earned by workers would become more balanced. In particular, farm laborers and farmers would be rewarded at rates similar to other workers in the food industry, perhaps even the region as a whole. Since aggregate food demand does not change rapidly (and until recent years

remained remarkably stable over time) there is a relatively constant "pie" to be divided, at least for firms that focus their efforts on meeting local food demand. The new industrial classification system (NAICS) put into place in 2001 can make historical comparisons difficult, but does not affect the time frame of the Vivid Picture Project.

17*e. Number of workers in various food sectors*



SOURCE INFORMATION:

Income and employment data covering farm proprietors and farm laborers: Bureau of Economic Analysis, Regional Economic Accounts. Detailed income and employment tables by NAICS industry, 2001 – 02 (CA05 and CA25) and detailed income and employment tables by SIC industry, 1969 – 2002. Available at: www.bea.doc/gov/bea/regional/reis

Income and employment data for other food-related industries:

(a) California Employment Development Department. Available at: www.labormarketinfo.edd.ca.gov

(b) U.S. Department of Commerce: County Business Patterns. Available at: http://censtats.census.gov/cgi-bin/cbpnaic/cbpcomp.pl

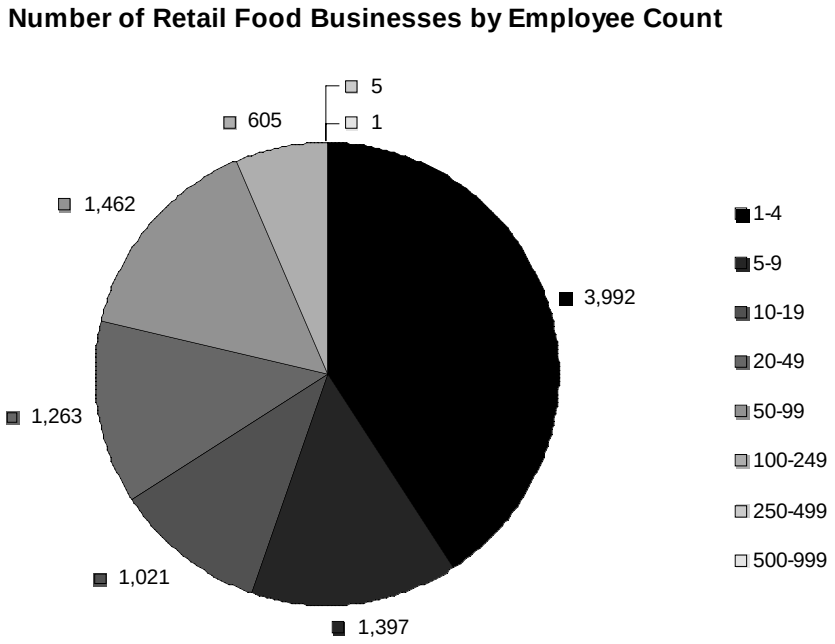
DATA PARTICULARS:

- Numbers reflect all workers (not just owners), with the exception of farm proprietors

STRENGTHS AND WEAKNESSES:

This indicator gives a sense of the significance of various food sectors as employers in the economy. One limitation of data sources here is a possible incompatibility between data sets delivered by different agencies. The new industrial classification system (NAICS) put into place in 2001 can make historical comparisons difficult, but does not affect the time frame of the Vivid Picture Project. For small locales, or for especially large or dominant firms, data are suppressed to protect confidentiality. No data are available about income per worker. Firms are reported in categories (for example, firms with 50 – 99 employees), so ascertaining actual employment is difficult.

17*f. Number of retail food businesses by size classes (# of employees)*



SOURCE INFORMATION:

U.S. Department of Commerce: County Business Patterns. Available at: http://censtats.census.gov/cgi-bin/cbpnaic/cbpcomp.pl

DATA PARTICULARS:

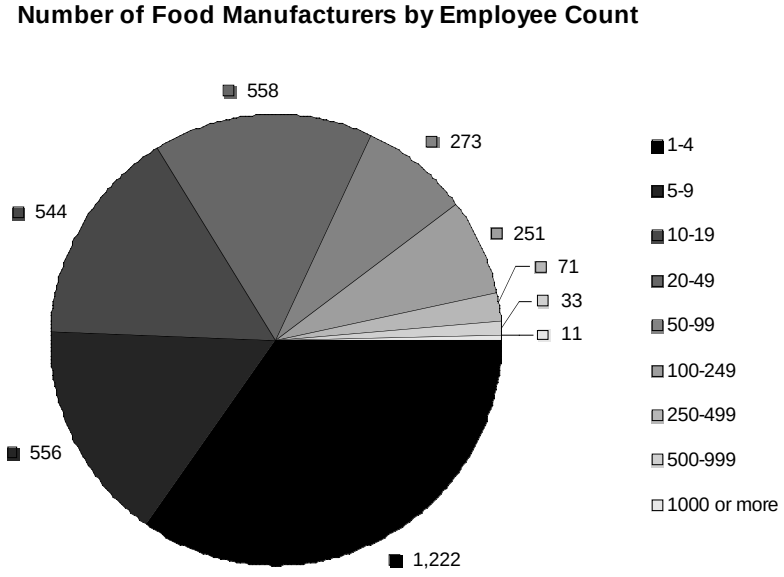
- Data represents a statewide aggregate of county level data.

STRENGTHS AND LIMITATIONS:

Clearly, the number of firms and number of employees does not equate to profitability, so this indicator must be used with care. From the firms' perspective, a larger firm that has more technology may be more profitable; from the community perspective, a greater number of smaller firms may lead to greater community profitability as more local business owners will tend to funnel greater profits into the local community. For small locales, or for especially large or dominant firms, data are suppressed to protect confidentiality. No data are available about income per worker. Firms are reported in categories (for example, firms with 50 – 99 employees) so ascertaining actual employment is difficult.

In the long term, a measure of the number of full-time employees who work for community-based foods businesses or workers that support sustainable food systems would be ideal. In this case, a worker might not be counted simply by being in the food industry, but only if they were part of an industry cluster that commits itself to sustainability. At that point we may be able to also measure sales for the cluster, etc.

17*g. Number of food manufacturers by size classes (# of employees)*



SOURCE INFORMATION:

U.S. Department of Commerce: County Business Patterns. Available at: http://censtats.census.gov/cgi-bin/cbpnaic/cbpcomp.pl

DATA PARTICULARS:

- "Food manufacturers" are also known as "food processors".

STRENGTHS AND LIMITATIONS:
The Bureau of Economic Analysis data offer annual tallies of the numbers of, and aggregate income for, farm proprietors and farm laborers. County Business Patterns data includes number of employees (and aggregate payroll) in food manufacturing, grocery stores, eating and drinking establishments, and agriculture production support industries. Combined, this offers a fairly complete view of employment in clusters of food-related firms. For small regions and for especially large or dominant firms, data are suppressed to protect confidentiality. No data are available about income per worker. Firms are reported in categories (for example, firms with 50 – 99 employees) so ascertaining actual employment is difficult.

17h. Number of federal and state inspected slaughterhouses

	Number	
	2004	**2005**
Under federal inspection	34	33
Other	38	39
Total	72	72

SOURCE INFORMATION:

National Agricultural Statistics Service (NASS) (2005, March 4). Livestock Slaughter 2004. Summarized by the U.S. Department of Agriculture Agricultural Statistics Board. See Table: "Livestock Slaughter Plants: Number by Type of Inspection,

State, and United States, January 1, 2004 – 05" at:
http://usda.mannlib.cornell.edu/reports/nassr/livestock/pls-bban/

DATA PARTICULARS:

- This indicator presents the total number of inspected slaughterhouses in California
- Reports on slaughterhouses are released by NASS on the first quarter of the given year.
- "Other" refers to plants inspected inspection officials at the state level.

STRENGTHS AND LIMITATIONS:
The consolidation of the meat industries has been particularly profound, driving producers to shift toward producing under contract for large, integrated companies. An important marker of this trend has been the elimination of meat processing facilities across the state and the increased transportation of animals to large, consolidated processing plants. A greater number of slaughterhouses would increase market options for producers and allow greater opportunity for value added. The indicator is very straightforward and consistent throughout time; trend data can be tracked to 1960.

17i. Income/employment from commercial fishing and processing

	2001	2002	2003	2004*
Commercial fishing (NAICS 11411)				
Employees	1,879	2,776	3,715	4,701
Annual pay (2002 Dollars)	33,573	38,487	43,572	47,136
Fish processing (NAICS 3117)				
Employees	3,030	2,530	2,738	2,605
Annual pay (2002 Dollars)	21,647	25,898	29,383	35,358

*Preliminary data

SOURCE INFORMATION:

Bureau of Labor Statistics (2004). Quarterly Census of Employment and Wages.

Data query tool available at: http://data.bls.gov/PDQ/outside.jsp?survey=en

DATA PARTICULARS:

- Industry codes:
  - NAICS 11411: Fishing
  - NAICS 3117: Seafood product preparation and packaging
- Employment data represent the number of covered workers who worked during, or received pay for, the pay period that included the 12th day of the month. Workers are reported in the state in which their jobs are located.

STRENGTHS AND LIMITATIONS:

This is a straightforward indicator to show the level of income of workers involved in fishing and fish processing activities. Unpaid family workers and self-employed workers are not included in the count of employment done by the Occupational Employment Statistics Survey. Data are reliable and collected on a regular basis.

Goal 18: Is characterized by many locally owned and operated food and farming businesses.

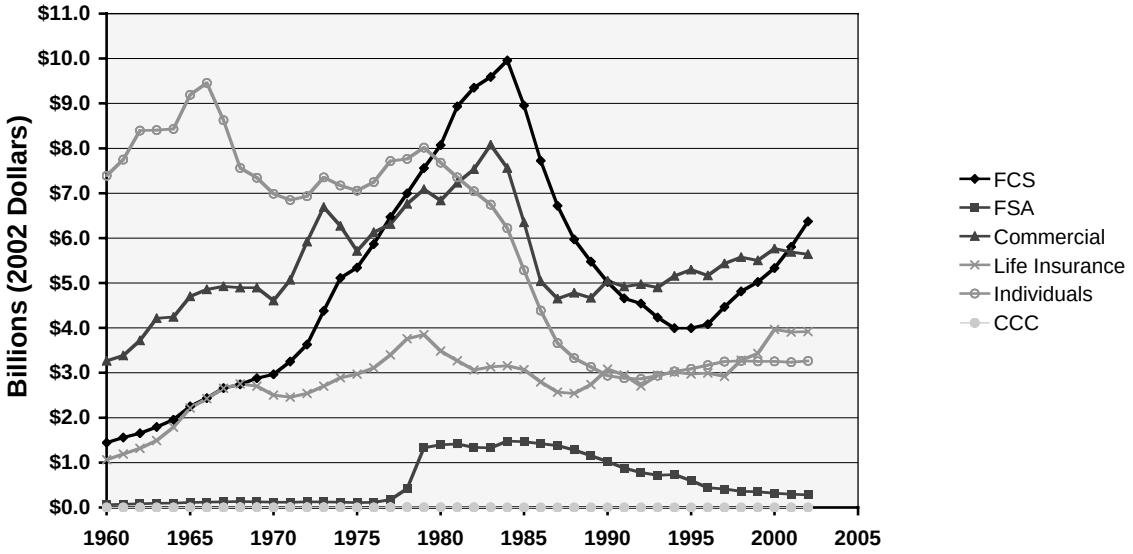
SELECTION PROCESS:
Direct data on local ownership was not possible to locate. The data below show distribution of businesses across size classes, providing a picture of the number of small, medium and large businesses. Although small businesses are not *necessarily* locally owned and large businesses are not necessarily owned by outside interests, we want to see a healthy proportion of small and mid-sized businesses in the community. These indicators are supplemented by an indicator of the type of debt held, which further suggests local investment in businesses. The number of workers and their income were selected because more businesses locally will translate to more jobs—if this is done in a healthy local economy, it will also lead to higher wages. The number of fish retail licenses is a direct measure of the number of local fish related businesses.

18a. Total number of farms by size classes (by sales volume and acreage)
See indicator 17c

18b. Total number of retail food businesses by size classes (number of employees)
See indicator 17f

18c. Total number of food manufacturers by size classes (number of employees)
See indicator 17g

18d. Percent of CA farm debt held (by various types of lenders)



SOURCE INFORMATION:

Economic Research Service: Farm Balance Sheet data. Table 1—Farm business balance sheet, December 31, 1960-2002. Available at: www.ers.usda.gov/data/farmbalancesheet/fbsdmu.htm

DATA PARTICULARS:

- FCS: Farm Credit System
- FSA: Farm Service Agency
- CCC: Commodity Credit Corporation
- Adjusted to 2002 value using CPI from the Federal Reserve Bank.

STRENGTHS AND LIMITATIONS:

This indicator emerges from comments made by Midwestern farmers in the late 1970s. When asked how they determined that their farm economy was healthy, they responded, essentially, that when conditions were good for farmers, the community had its own sources of credit.[31] This indicator uses the debt held by what ERS calls "individuals and others" as a surrogate for measuring the health of local credit sources. For the purposes of Vivid Picture project, this data illuminates the relative importance of commercial lenders, federal lenders, and individuals. While the category "individuals and others" is somewhat vague, it is assumed that this is primarily community-based or from local sources. However, in an increasingly global economy, it is quite possible, for example, for a Jordanian oil magnate—or a relative in Bangkok—to loan money to a California farmer to develop an irrigation system. Still, this category does accurately reflect that the transaction is not strictly a commercial one. Whether is has a “community” basis cannot be determined from this data set. This indicator also gives an indication of the extent to which broader society supports agriculture through the provision of loans.

Credit is a powerful indicator of sustainability, since the community's capacity to assume debt depends both on flows of money into communities, and also flows outward. Credit

is, in this sense, a measure of the balance of inflows and outflows. When the system is balanced, local credit sources are strong. Empowered and informed local lenders can respond with greater flexibility to unique local, or changing conditions, than can distant lenders or managers who do not share local priorities. Two benchmarks for measuring a strong farm economy are suggested: (1) farm debt held by "individuals and others" as defined by ERS should be the most important source of farm debt; and (2) at least 40% of all farm debt in the state should be held by lenders in this category. This second target is open to change based on further research and experience, but makes a useful goal for our initial efforts. Currently 20% of California farm debt is held by individuals. While it may seem illogical that any debt should be held, businesses should carry an amount of debt that does not expose it to undue risk, as long as the cost of debt is less than the expected return on capital. The target proportions refer to the way that debt is carried, rather than the amount of debt.

18e. Aggregate income earned by workers in various food sectors

See indicator 17d

18f. Total number of workers in various food sectors

See indicator 17e

18g. Number of fish retail licenses/transfer tickets

Number of fish retail licenses	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Fish processor's license	73	64	53	56	57	51	49	53	40	44
Fish receiver's license	311	329	311	318	282	286	323	337	307	268
Fish wholesaler license	321	352	353	379	371	353	345	322	307	273
Fisherman's retail license	526	527	655	674	565	556	573	533	486	369

SOURCE INFORMATION:

Department of Fish & Game, License and Revenue Branch (2005). Commercial fish business licenses statistics available at: www.dfg.ca.gov/licensing/pdffiles/fb_items_10yr.pdf

DATA PARTICULARS:

- Data retrieved from the Table: “Items Reported by License Year,” which shows all “commercial fish business licenses” as of July 31, 2005
- Transfer tickets are operation permits, limited in number, that are transferable among vessel owners for commercial fishing.

STRENGTHS AND LIMITATIONS:

This indicator reflects the ability of fishermen to enter into commercial fishing, retailing and processing. This in turn provides insight about the degree of the industry’s evolution

toward consolidation. A broader spectrum of accessibility into the fish retail and processing translates to more local employment, owners and businesses related to commercial fish retailing in California.

Goal 19: Encourages capitalization and business structures that provide investment and ownership opportunities to workers and community members.

This goal was included after the indicator selection process had occurred. As such, no indicators are currently listed.

Goal 20. Facilitates the graceful exit of farmers, fishers, foresters, ranchers, processors, retailers, and restaurateurs.

This goal was included after the indicator selection process had occurred. As such, no indicators are currently listed.

Goal 21: Promote efficient markets that share information and proceeds equitably among all players in the food chain.

This goal was included after the indicator selection process had occurred. As such, no indicators are currently listed.

Goal 22: Allows businesses of all sizes to participate in the system as long as they are abiding by sustainable practices and principles.

This goal was included after the indicator selection process had occurred. As such, no indicators are currently listed.

SUPPLEMENTAL INDICATORS

The following indicators represent additional data that measure progress toward the Vivid Picture goals. They were not included on the primary list for various reasons, including limitations in the methodology of their collection, a surfeit of good indicators for a particular goal or non-compliance with one or more of the selection criteria. These indicators are included here as they do give valuable additional information about progress toward the VP goals.

Goal 1:
- Overweight children
- Per capita weekly expenditures on produce

Goal 2:
- Number of food banks
- Money granted to Senior Nutrition Program and WIC Program in CA

Goal 3:
- Percentage of the population that is ≥ 125% of poverty
- Percentage of the population that is ≥ 185% of poverty

Goal 5:
- FSA loans for new entries in farming

Goal 6:
- Percentage of consumers inclined to buy CA products
- Percentage CA-grown food purchased

Goal 8:
- Number of unique regionally based branding efforts, or place-based marketing programs

Goal 10:
- Number of crops statewide for top 75% of Ag value
- Percentage of farms growing only one crop -horticultural/tree & nut crops
- Total number of cheese varieties produced in CA

Goal 13:
- Total compost sold to agricultural sector (cubic yards)
- Pesticides listed on the State's Proposition 65 list of chemicals “known to cause reproductive toxicity”
- Pesticides that are listed by U.S. EPA as B2 carcinogens or that are on the State’s Proposition 65 list of chemicals “known to cause cancer”
- Cholinesterase-Inhibiting Pesticides
- Pesticides on DPR's groundwater protection and toxic air contaminants lists
- Oil pesticides
- Reduced-risk pesticides

Goal 15:
- Total tons approved for tax credit for CA growers for rice straw bales

WISH LIST

What follows is a list of indicators that the indicators team considered to be excellent indicators, but for which there are no data sources currently. They are listed here in the hope that data may one day become available. These research gaps may also serve to help guide particular research agendas in the future.

Goal 1:
- Per capita weekly expenditures (by demographic per product categories)
- Variety in the average diet

Goal 6:
- Percentage of direct agricultural sales that are destined for CA
- Food miles
- Percentage of food consumed in California which is produced in California

Goal 10:
- Number of plant breeding research programs and $ spent

Goal 15:
- Revenue from agricultural tourism
- # of people that know a farmer
- # acres in production with products that will be consumed locally
- # of retailers that have country of origin labeling
- # of acres in urban agriculture

Endnotes

[1] Gail, Eileen, Carolina, Steve, Katy, Astrid, Mike and Analisa and Debby

[2] Indicators for goals 15b and 17-20 have not yet been finalized due to the late addition of these goals.

[3] Indicators that were used for 2 different goals are only counted once.

[4] For more information, see: www.cooperinst.org/ftginfo.asp#FITNESSGRAM

[5] Sharon B. Sugerman, Research Scientist II, California Department of Health Services, Cancer Prevention and Nutrition Section, Research and Evaluation Unit.

[6] For more information, see: Understanding Economic and Behavioral Influences on Fruit and Vegetable Choices, at: www.ers.usda.gov/AmberWaves/April05/Features/FruitAndVegChoices.htm

[7] Tetrad (2001). 2000 Census SF3 Data. Available at: www.tetrad.com/pcensus/usa/c2ksf3.html

[8] For more information, see: www.infousa.com

[9] This is explained in detail in Appendix D (Changes in Prevalence Rates of Food Insecurity and Hunger by State, 1996-98 (average) to 2000-02 (average)) from the report Nord, Mark, Margaret Andrews and Steven Carlson (2003, October). *Household Food Security in the United States, 2002.* Food Assistance and Nutrition Research Report No. (FANRR35) 58 pp.

[10] Bickel, Gary, Mark Nord, Cristofer Price, William Hamilton and John Cook (2000). Guide to Measuring Household Food Security. USDA Food and Nutrition Service, Office of Analysis, Nutrition, and Evaluation. Currently available at: www.ers.usda.gov/Briefing/FoodSecurity/readings.htm#statistical. See also www.ers.usda.gov/publications/fanrr42/fanrr42b.pdf

[11] Data for 2001-2003 are also available in "Table 19: Percent of Persons in Poverty, by State: 2001, 2002, 2003", currently at: www.census.gov/hhes/www/poverty/histpov/hstpov19.html. Detailed data for 2003, for example, are located at http://pubdb3.census.gov/macro/032004/pov/new46_100125_01.htm

[12] For a detailed list of thresholds, see the US Census Bureau's Poverty Thresholds at: www.census.gov/hhes/www/poverty/threshld.html

[13] www.nass.usda.gov/census

[14] There are several reasons for this. (1) Farmers may not wish to report all their sales because it is a source of cash income that can otherwise stay off their books, or it may be sold informally or bartered. Assigning an actual value is tricky. (2) Farmers' markets often do not track sales by any individual farmer for the same reasons, or due to confidentiality concerns. (3) USDA is more focused on the commodity economy and thus it tracks major commodity sales more reliably than smaller produce sales. (4) The amount of direct sales, or acreage devoted to food crops, may change considerably from year to year since this is an informal market.

[15] Press releases: (2003, March): www.californiagrown.org/content/media_latestpr.asp?prID=44; (2003, September): www.californiagrown.org/content/media_latestpr.asp?prID=46

[16] This could potentially be geocoded and included in a GIS distribution analysis.

[17] www.nass.usda.gov/census

[18] United States Department of Agriculture (2002) Census of Agriculture, A-26 APPENDIX A National Agricultural Statistics Service.

[19] See for example: Payne, Tim (2002, May) *U.S. Farmers Markets—2000: A Study of Emerging Trends*. USDA Marketing Services Branch. Available at: www.ams.usda.gov/tmd/MSB/PDFpubList/FarmMark.pdf

[20] Chefs Collaborative (2005). "Mission and Principles". Available at: www.chefscollaborative.org/index.php?name=Mission

[21] Slow Food USA (2005). "About Us." Retrieved July 14, 2005, from www.slowfoodusa.org/about/index.html

[22] www.nrcs.usda.gov/technical/NRI/1997/summary_report/glossary.html.

[23] AW=(ET-EP)/CF

[24] It is also worth noting that the numbers gathered by Klonsky differ from those presented by the USDA, since they correspond to different data bases. Klonsky has taken the data from the California Department Food and Agriculture required registration for growers and handlers of commodities labeled as organic, while the USDA tracks records of growers and acres based on information provided by acredited certifiers that certify growers and handlers grossing $5,000 or more (farmers grossing beyond $5,000 require to be certified in order to market their product as organic).

[25] See Table 6. in the 2004 Solid Waste Characterization Study, available at www.ciwmb.ca.gov/Publications/default.asp?pubid=1097

[26] Data for 1997 and prior available at: www.nass.usda.gov/census/census97/volume1/ca-5/toc297.htm

[27] See definitions in www.nass.usda.gov/census/census02/volume1/us/us2appxa.pd

[28] Personal communication with Holly Bridges April 20, 2005.

[29] Available at www.eco-label.org

[30] All WHIP documents can be found at www.nrcs.usda.gov/programs/whip/ , under WHIP Contract and Funding Information. Each year was individually extracted from the appropriate document.

[31] Meter, Ken (1990). *Money with Roots.* Minneapolis: Crossroads Resource Center, 3. Available at www.crcworks.org/roots.pdf.