

# A GROWER SURVEY

## Reconciling Food Safety and Environmental Protection

 *Resource Conservation District of Monterey County*



EX 23

# **A Grower Survey: Reconciling Food Safety and Environmental Protection**

**August 2007**



**Prepared by the Resource Conservation District of Monterey County**

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*Resource Conservation District  
of Monterey County*



*Agricultural Commissioner*



*Grower-Shipper Association  
of Central California*



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## INTRODUCTION

California is a global leader in agricultural production and economic strength, and has some of the world's most expensive land. In addition, the Central Coast of California boasts some of the highest concentrations of biologic diversity in the world. Providing safe, quality produce to consumers is the number one priority for the produce industry. Since the 1990's, the issue of food safety has increased in importance, especially with respect to outbreaks of *E. coli* O157:H7 associated with leafy greens (e.g. lettuce, spinach, cabbage, chard, etc...). Simultaneously, agricultural producers face increasing environmental demands and have taken a proactive approach to voluntarily improve water quality on the Central Coast of California. The efforts of agricultural producers on the Central Coast and throughout the state to protect water quality and the environment may be compromised as some food safety guidelines, or interpretation thereof appear to be in conflict with management practices intended to improve water quality and enhance natural habitat. Growers of fresh produce, particularly leafy greens, are caught in the middle between these competing priorities and in many cases are being put in a position of having to choose between being able to sell their crops or protect the environment.

In response to grower concerns over this mounting conflict between food safety and environmental protections, the Resource Conservation District of Monterey County (RCD) conducted a survey of more than 600 irrigated row crop growers on the Central Coast. The survey was co-sponsored by the Grower-Shipper Association of Central California, Central Coast Agriculture Water Quality Coalition, and the Monterey County Agricultural Commissioner's Office. The purpose of the grower survey was to better understand the impacts of the conflict and guide efforts to reconcile conflicting demands for food safety and environmental protection being placed on Central Coast growers. The survey was conducted in the spring of 2007 and this report shares the most significant results.

### *Background: Protecting California's Natural Resources*

Since the 1970's, federal, state and local jurisdictions have enacted laws to protect vital environmental resources such as water, air, plants and animals. In California the environmental regulatory landscape is complex and growers may face significant legal restrictions for the use of their lands for agricultural purposes, depending on location and local resources on or around their lands. The landmark 1973 US Endangered Species Act and the California Environmental Quality Act (CEQA) passed in 1970 provide the foundation for protecting species of concern and their associated habitats. CEQA now affects local jurisdictions throughout the state of California, and any project that may have an environmental impact is subject to CEQA compliance. The US Fish and Wildlife Service and National Marine Fisheries Service work with private and public landowners nationwide to protect federally listed plant, animal and fish species. The California Department of Fish and Game has jurisdiction over the protection of California listed species of concern as well as stream and riparian corridors.

The Federal Water Pollution Control Amendments of 1972 and 1977, commonly known as the Clean Water Act, is the primary federal law governing water pollution. Since the 1987 Clean Water Act amendments, California has been developing a non-point source pollution (NPS) program to address agricultural runoff. Under California's Porter Cologne Water Quality Control Act of 1969, water resources are managed through the State Water Resources Control Board and nine Regional Water Quality Control Boards (RWQCB). Beginning in 2006, the Central Coast RWQCB ended its Agricultural Waiver for non-point source discharge and now requires that all irrigated agricultural operators apply for a Non-point source discharge waiver under the Conditional Waiver Program.

The Central Coast of California has the greatest biodiversity in temperate regions of the world. At the heart of the Central Coast lies the Monterey Bay National Marine Sanctuary, the largest marine sanctuary in the United States and the Elkhorn Slough National Estuarine Research Reserve. While the Central Coast houses



many natural resources, according to the Central Coast RWQCB, it also has some of the most polluted waters in the state. The CCRWQCB identifies the Pajaro and Salinas Rivers as priority water bodies for sedimentation and nutrients and the Salinas River for pesticides. As unique as the natural resources on the Central Coast, so are the local partnerships for conservation. For the past decade, the Central Coast farming community has been proactively working with resource agencies to develop and implement voluntary conservation practices to improve water quality and reduce water consumption through the adoption and implementation of the Monterey Bay National Marine Sanctuary's Agricultural and Rural Lands Plan<sup>1</sup>. In 1998, the Elkhorn Slough Watershed Permit Coordination Program was developed and adopted in Monterey County. This first of its kind program was designed to streamline the environmental regulatory process for landowners and growers wanting to implement conservation practices and environmental improvements on their land. As state and national leaders in collaboration, the Central Coast farming community has made great strides toward protecting our natural resources.

#### Background: Keeping California Leafy Greens Safe

Overall, food safety has become a critical issue to be addressed by all stages of the produce industry in California, especially on the Central Coast. There have been 20 outbreaks of food-borne illness from *E. coli* 0157:H7 on leafy greens since 1995. Since the late 1990's, industry, research, and governmental entities have been working cooperatively to develop industry guidelines and standards to minimize risks of microbial contamination of fresh produce. By 2006, government agencies, university researchers and the produce industry had developed several sets of recommended guidelines to address food safety concerns associated with leafy greens, from the farm to the consumer.

In September 2006 an outbreak of *E. coli* 0157:H7 associated with bagged spinach affected consumers in over 25 states, drawing national attention. While the relative food safety risk associated with leafy green products is low -- the spinach associated with the September 2006 outbreak totaled only 1,000 pounds, less than 0.0002% of the more than 600 million pounds of spinach that was purchased by U.S. consumers in 2005 -- the impacts of this *E. coli* and two smaller outbreaks associated with leafy green products in 2006 have been considerable. The 2006 *E. coli* outbreaks resulted in the loss of 3 lives and caused illness in more than 200 individuals. These outbreaks have also had a devastating effect on the fresh produce market and the farming community of the California's Central Coast. The economic impact has been significant to the industry. The 2006 annual Monterey County Crop Report<sup>2</sup> shows that concerns over food safety affected the production values of some commodities in 2006 as compared to the previous year; spinach saw a 41% drop of \$77 million and salad products also declined by 8%. These outbreaks have also altered production and management practices at every level from crop production in the field to product delivery at the supermarket in an effort to better protect consumer health and put safeguards in place to more quickly recall and identify products if contamination does occur in the future.

The produce industry responded immediately to the September 2006 outbreak, mobilizing key players in the industry in an effort to create uniform food safety standards for leafy greens. With oversight by the Department of Food and Agriculture, the produce industry developed a California Leafy Green Products Handler Marketing Agreement<sup>3</sup> affecting the majority of leafy greens production in California. More than 100 handlers -- companies that move fresh produce products from growers to the retail and food service buyers -- are signatories to the agreement. As signatories to the Marketing Agreement these handlers,

<sup>1</sup> Monterey Bay National Marine Sanctuary, Water Quality Protection Program (1998). *Agriculture and Rural Lands Action Plan*. Available at <http://www.montereybay.noaa.gov/resourcepro/ag.html>.

<sup>2</sup> Monterey County Agricultural Commissioner's Office (2006). *Monterey County Crop Report 2006*. Available at <http://www.co.monterey.ca.us/ag/pdfs/cropreport2006.pdf>

<sup>3</sup> *California Leafy Green Products Handler Marketing Agreement*. Available at <http://www.caleafygreens.ca.gov/applications/DocumentLibraryManager/upload/LGMA%20MARKETING%20AGREEMENT.pdf>



representing more than 99% of the leafy green production in California, are obligated to handle leafy green produce only from growers that adhere to the best management practices detailed in the *Commodity Specific Food Safety Guidelines for the Production and Harvest of Lettuce and Leafy Greens*, know as the “Metrics”<sup>4</sup>.

#### Background: Conflicting Demands on Growers of Leafy Greens

The Metrics (discussed above) were developed and continue to be updated through an open process involving the produce industry, government agencies, natural resource organizations, and scientists. In addition to the Metrics, many companies and retailers who handle or sell leafy greens have developed their own Food Safety Program Requirements affecting farm management practices. As a result, growers of leafy greens now face meeting at least one if not several different sets of food safety requirements in order to sell their crop, as well as different field interpretations of those guidelines (see Attachment 1: The Leafy Green Market and Pre-Harvest Food Safety). Depending on the size and type of operation, a grower may conduct self-audits as well as be subjected to food safety inspections from the California Department of Food and Agriculture, processors, grower-shippers, or third-party auditors representing the companies that purchase a grower’s product.

Specific measures stated or implied in the Metrics and individual company Food Safety Program Requirements have the potential to conflict with grower efforts to improve and protect water quality and support wildlife habitat. For example, the Metrics identify “animals of significant risk” for contaminating crops and provide guidelines to remediate these risks. Measures available to growers to deter animals and be in compliance with food safety requirements such as fencing and bare ground buffers around fields can result in adverse impacts to the environment in addition to deterring the target animals. The state of our scientific understanding of pre-harvest risks for contamination is incomplete, making it an even greater challenge to minimize risks to food safety while protecting the environment. However, an analysis of existing literature focusing on the nexus between in-field food safety and practices for environmental protection suggests that certain practices to protect water quality and/or provide habitat have the potential to actually reduce the risk of pre-harvest contamination, depending on the circumstances<sup>5</sup>. Understanding the extent that growers are receiving conflicting demands and subsequently altering their management practices in ways that could compromise efforts to protect water quality and the environment is paramount to maintain the viability of Central Coast agricultural and environmental resources.

#### SURVEY INFORMATION

As coordinated efforts to protect food safety continue it is critical that food safety guidelines continue to be evaluated for their efficacy to protect consumer health and potential to impact the environment. A survey was conducted to obtain information to help stakeholders and decision makers work collaboratively to reconcile perceived and actual contradictions between food safety and the protection of environmental quality. This survey aimed to assess the extent that growers are facing conflicting pressures regarding food safety and environmental practices, and to identify the possible range of impacts the interpretation and adoption of food safety standards could have on environmental quality (see Attachment 2: *Grower Survey of Food Safety and Environmental Protection*).

Growers of row-crops were the target of the survey. The survey was mailed out to 600 Central Coast row-crop growers in the spring of 2007 using the Regional Water Quality Control Board (Region 3) Ag Waiver mailing list. These growers had operations in Monterey, San Benito, Santa Barbara, Santa Clara, Santa Cruz,

<sup>4</sup> Commodity Specific Food Safety Guidelines for the Production and Harvest of Lettuce and Leafy Greens. June 5, 2007 is currently published version. Available at [http://www.caleafygreens.ca.gov/applications/DocumentLibraryManager/upload/metrics\\_070418.pdf](http://www.caleafygreens.ca.gov/applications/DocumentLibraryManager/upload/metrics_070418.pdf)

<sup>5</sup> Stuart, D. (2006). *Reconciling Food Safety and Environmental Protection: A Literature Review*. Available at [http://www.rcdmonterey.org/pdf/Food\\_Safety\\_Environmental\\_Protection\\_2006.pdf](http://www.rcdmonterey.org/pdf/Food_Safety_Environmental_Protection_2006.pdf)





and/or San Luis Obispo Counties. Of these growers surveyed, 181 responded, a 30% response rate. The 181 respondents own and/or operate more than 140,000 acres of land on the Central Coast, and primarily grow leafy greens and vegetables (Figure 1).

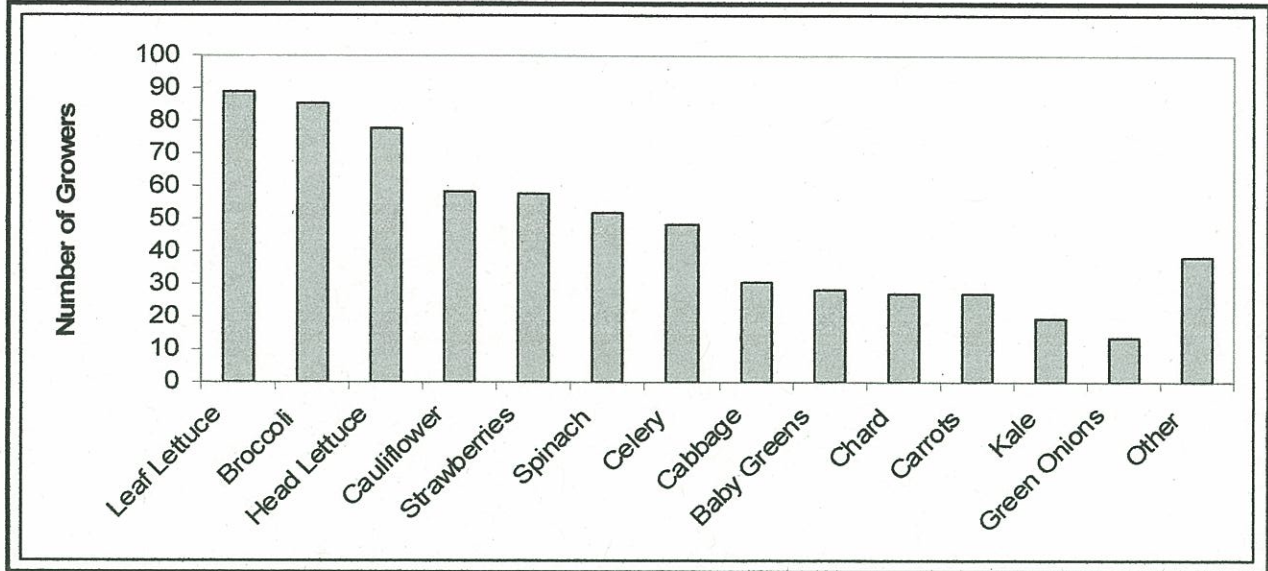


FIGURE 1: Growers who participated in the survey sorted by crops grown (most grow more than one crop.)

**RESULTS SUMMARY**

*Growers Actively Plan and Implement Practices to Protect the Environment*

More than 80% of respondents participated in the Farm Water Quality Planning Short Course and had completed Farm Water Quality Plans. Ninety-one percent (91.1%) of survey respondents have adopted one or more conservation practices aimed to improve water quality and/or wildlife habitat. Sixty-three percent (62.8%) had voluntarily received technical assistance from a local resource agency and/or expert such as the Resource Conservation District or USDA Natural Resources Conservation Service. The most commonly adopted practice was Cover Cropping, with 72.1% of all respondents adopting this practice (Table 1).

Conservation Practice	Percent (%) Respondents	Conservation Practice	Percent (%) Respondents
Constructed Wetland	6.1%	Hedgerow	25.7%
Irrigation Reservoir	30.2%	Tailwater Recovery Pond	29.6%
Cover Crop	72.1%	Storm Water Pond	38.5%
Filter Strip	36.3%	Riparian Restoration	18.4%
Grassed Waterway	33.5%	Other	3.9%

TABLE 1: Percent of Responding Growers Who Have Adopted Specific Environmental Practices (most growers adopted more than one practice)

*Growers Encouraged to Eliminate Presence of Vegetation, Waterbodies, and Wildlife near Crops*

Central to insuring consumer health and minimizing risks of contamination are field-level food safety inspections and formal audits. Understanding the circumstances under which auditors/buyers have rejected



crops due to food safety concerns as well as the economic impact to growers of these rejections is critical to reconciling potential conflicts between food safety and environmental protection goals. Growers were asked a series of questions related to food safety and the nexus with practices to protect water quality and the environment. Three main categories of practices and/or natural features were discussed: 1) non-crop vegetation; 2) ponds or waterways; and 3) wildlife. Non-crop vegetation includes common conservation practices such as filter or buffer strips, grassed waterways, riparian habitat, natural lands, hedgerows or windbreaks. Ponds and waterbodies can include practices such as water and/or sediment detention basins, irrigation tailwater recovery ponds, irrigation reservoirs, natural waterways, or agricultural drainage ditches. These conservation practices are vital to protect water quality and the environment, yet in some circumstances they may also attract and/or support wildlife.

Growers reported that crops had been rejected based on the presence of practices to improve water quality and/or wildlife habitat on the farm. Growers were asked (question 26) “If any of your crops have been rejected based on the presence of projects or practices designed to improve water quality or wildlife habitat, please describe the circumstances in space below.” Based on responses, crops were rejected for the following reasons:

- ✓ Lost \$17,500 worth of crop due to deer tracks
- ✓ 1 acre romaine rejected due to proximity to horse pen
- ✓ 23 acres head lettuce & 2 acres mixed lettuce due to contact with Salinas River flood water
- ✓ Crop rejected due to potential frog habitat
- ✓ Portions of fields rejected by *processor* if frogs, tadpoles, snails, mice, etc. are found
- ✓ Harvest stopped due to presence of frogs and tadpoles in creek
- ✓ Crop rejected due to deer intrusion
- ✓ Lost 25 acres worth \$75,000 (\$3,000/acre)
- ✓ Crops planted for *processor* along tree rows must have a buffer of 100-150 feet due to “foreign matter”

In many cases crops are not rejected outright; however growers responded that their buyers, auditors or others had suggested to them to either discourage and/or eliminate the presence of non-crop vegetation, waterbodies, and wildlife around fields. In many cases growers had lost points on their food safety audits, the basis for which their crop is approved and purchased, due to the presence of non-crop vegetation, waterbodies, and wildlife near their crops. Table 2 summarizes the survey responses.

Percent (%) Respondents	Responded that
18.6%	“It has been suggested that I should remove <i>non-crop vegetation</i> ”
9.6%	“I have lost points on audit reports because of <i>non-crop vegetation</i> ”
9.5%	“It has been suggested that I should remove <i>ponds or waterbodies</i> ”
10.8%	“I have lost points on audit reports because of <i>ponds or waterbodies</i> ”
39%	“It has been suggested that I should remove <i>wildlife</i> ”
13%	“I have lost points on audit reports because of <i>wildlife</i> ”

TABLE 2: Summary of survey responses to questions 20, 21, and 22 regarding food safety audits experience with respect to the presence of non-crop vegetation, ponds/waterbodies, and wildlife

Growers also indicated that in some cases they acted in response to suggestions and actively removed these features or adopted mitigation measures accepted by their auditors or buyers. In all three categories (non-crop vegetation, waterbodies, and wildlife) growers of leafy greens were more likely to have been told to discourage or eliminate these features than growers of other crops. In two of the three categories (non-crop



vegetation and wildlife) leafy green growers were more likely than growers of other crops to have acted on these suggestions to remove the features in question. Table 3, below displays some of these results.

Percent (%) Leafy Green Growers	Percent (%) Non-Leafy Green Growers	Responded that
32.1%** <sup>6</sup>	2.8%	"It has been suggested that I should remove <i>non-crop vegetation</i> "
32.1%**	6.9%	"I have actively removed <i>non-crop vegetation</i> in response to auditors or others comments"
14.8%**	3.0%	"It has been suggested that I should remove <i>ponds or waterbodies</i> "
7.4%	6.0%	"I have actively removed <i>ponds or waterbodies</i> in response to auditors or others comments"
47.7%*	27.9%	"It has been suggested that I should remove <i>wildlife</i> "
40.7%**	23.5%	"I have actively removed <i>wildlife</i> in response to auditors or others comments"

TABLE 3: Comparison of leafy green versus non-leafy green grower responses to suggestions to remove conservation or natural features in or adjacent to cropland

Approximately 14.6% of all growers surveyed indicated that they have removed or discontinued use of previously adopted environmental practices in response to pressures exerted by auditors and/or buyers due to food safety concerns. As shown above (Table 3), growers of leafy greens were more likely to have taken out environmental practices than other growers. Overall, 21.1%\*\* of the survey respondents that grow leafy greens indicated they had actively taken out one or more environmental practice due to food safety concerns, as compared to 7.4% of respondents that grower non-leafy green crops.

Practices that have been removed or are planned for removal include: 1) Ponds and/or reservoirs (e.g. irrigation reservoirs, duck habitat, ponds); 2) Irrigation reuse systems (e.g. tailwater recovery ponds, water reuse); and 3) Non-crop vegetation (grassed waterways, filter/buffer strips, trees/shrubs). In addition, some growers stated that although they have not yet removed environmental practices, they are planning to or feel they will be required to in the near future. Several growers suggested a follow-up survey would reveal more changes being made in the future.

Approximately 88.9% of all growers who responded to the survey indicated that they have adopted at least one measure to actively discourage or eliminate wildlife from cropped areas. These mitigation measures have been recommended and/or accepted to deter wildlife that may be migrating through cropped fields. In some cases these wildlife deterrence measures have been accepted by auditors, buyers or others as an alternative to crop rejection or removing non-crop vegetation and waterbodies adjacent to leafy green crops.

The most commonly adopted measures to discourage or eliminate wildlife are bare ground buffers, fencing, trapping, and poisoned bait stations. Bare ground buffers and poisoned bait stations are each used by more than half (>50%) of the respondents to protect crops from wildlife intrusion. Trapping and fencing are each used by approximately 40% of the respondents. Growers of leafy greens were found to be significantly more

<sup>6</sup> The star symbols indicate that there is a significant difference between growers of leafy greens and growers of other crops in the response. Significance was determined using Pearson's Correlation Coefficient. One star (\*) indicates significance at  $p < 0.10$ , and two stars (\*\*) indicates significance at  $p < 0.05$ .



likely to have adopted these measures compared to growers of other crops. Figure 2 illustrates the extent to which each mitigation measure has been adopted by all the growers who participated in the survey.

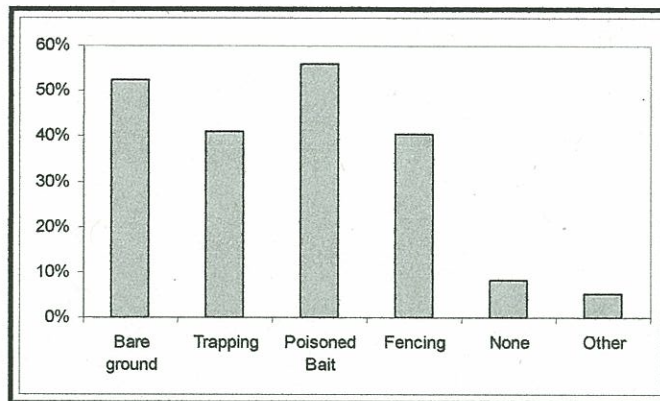


FIGURE 2: The percentage of growers indicating the adoption of specific mitigation measures for wildlife.

#### Growers Experience Different Food Safety Pressures Depending on their Operation Characteristics

Eighty-seven percent (87.8 %) of respondents that reported they actively removed conservation practices for water quality or wildlife habitat sell to shippers/packers, whereas 67% of all respondents sell to shippers/packers. Nearly 89% of respondents who have removed conservation practices operate >500 harvested acres, as compared to 39% of all respondents that operate >500 harvested acres. Of the respondents who have removed conservation practices, 100% are conventional growers (72% conventional only; 28% both conventional and organic). However, only 86% of all respondents grow conventional only or both conventional and organic, whereas 13% were organic only growers. These results suggest that the conflict between food safety and environmental protection disproportionately affects growers who sell to shippers/packers, operate >500 acres, and grow conventionally (as opposed to organic only).

#### Food Safety-Environmental Protection Conflict May Impact Significant Acreage on Central Coast

The growers that responded to the survey own and/or rent more than 140,000 acres of row crop land on the Central Coast. Of these, the respondents that have actively removed conservation practices for water quality or wildlife habitat in response to pressures exerted by food safety concerns own/rent nearly 30,000 acres. In addition, respondents who have adopted measures to actively deter and/or eliminate wildlife own and/or rent more than 133,000 row crop acres. Survey respondents that use: bare ground buffers own/rent a total of 91,889.5 acres (65%); trapping own/rent a total of 87,279 acres (62%); poisoned bait stations own/rent a total of 108,282.5 acres (77%); and fencing own/rent a total of 66,380 acres (47%).

#### Growers Are Concerned About Conflicting Measures for Food Safety and the Environment

More than 30% of all respondents chose to share their personal opinions and feelings in a space for comments at the end of the survey. These comments indicate that many growers are facing serious pressure regarding food safety and are concerned about doing things that may have negative impacts on the environment. Some of the comments are shared below:

*"I am afraid many positive environmental programs and practices are going to be abandoned due to retailers/shippers new food safety practices. I am all for the environment and safe food, but feel many new food safety ideas are being driven by fear and uncertainty rather than sound science."*



*"We have definitely been put in a conflicting position with new Leafy Green Guidelines and Watershed Management. For now until more scientific studies produce the needed information I choose to err on the side of Food Safety, not environmental and water quality."*

*"Ultimately, clean margins and no compost or recycling irrigation water will only hurt the farmers, since they will be liable for ground and surface water pollution."*

*"My concern is that they want us to kill all wildlife. This is not the threat. We all need wildlife."*

*"There is too much fear about food safety and not enough good science. Providing habitat for wildlife is very important to me."*

*"I am concerned about the substantial increase in poison bait stations that growers have put out to control small vertebrate pests. I am concerned because this amount of control is going to have an effect on the predator population which will cause things to be out of balance."*

*"Our experience has been that the food safety auditors have been very strict about any vegetation that might provide habitat. We are very concerned about upsetting the natural balance, but we have to comply with our shipper's requests."*

## **CONCLUSION**

Protecting human health and insuring the viability and sustainability of California agriculture demands safe food, clean water and biodiversity. However, the virulence of *E.coli* 0157:H7 as compared to other human pathogens as well as the predominant raw consumption of leafy green products poses an unprecedented challenge to the produce industry. Providing safe food may require some environmental concessions for food safety and certain practices to protect environmental quality, but these compromises should not be at the expense of either goal.

The results of this survey illustrate that growers are in the middle of a clear conflict between current food safety standards and continued efforts to address water quality and environmental concerns on the Central Coast. Growers are incurring economic hardships due to the rejection of crops based on the presence of practices to protect the environment. Some growers are being encouraged to and/or are actively removing environmental practices for water quality in response to food safety audits and concerns. In addition most growers are taking action to discourage or eliminate wildlife. These actions could have impacts over large areas of land in the region. In addition, comments from growers indicate that these actions are likely to increase over time. The survey also indicates that growers are very concerned and upset about being put in the unfair position of choosing between being able to sell their crops or protect the environment.

There is no one solution that will reconcile this conflict; however, based on the results of this survey and ongoing efforts of the agricultural community, RCD, and local and state partners, there is opportunity to alleviate conflicting pressures facing growers. Through open dialogue, innovation and partnerships, we can reconcile the apparent conflicts between food safety and environmental protection and reduce the on the ground impacts. As a global leader in agricultural production and a model for environmental partnerships and protection, California can and must rise to this challenge.



**ATTACHMENT 1**

*The Leafy Green Market and Pre-Harvest Food Safety*

# THE LEAFY GREEN MARKET & PRE-HARVEST FOOD SAFETY DEFINITIONS & DESCRIPTIONS

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## Leafy Green Market

**Consumers:** Individuals that purchase fresh and/or value-added leafy green products for direct consumption.

**Retail and Foodservice Buyers:** Grocers, restaurants, others that purchase fresh and/or value-added leafy green products from wholesale buyers, shippers, processors, and growers for sale to consumers. Some corporate grocers and restaurants provide their own trucking/shipping fleet to transport products from wholesale buyers or processors.

**Wholesale Distributors:** Distributors that purchase fresh and/or value-added leafy green products from shippers, processors, and growers, for sale and distribution to retail and foodservice buyers.

**Grower-Shippers:** Companies that grow, pack, and ship fresh and/or value-added leafy green products to wholesale distributors and retail and foodservice buyers.

**Shippers:** Companies that transport fresh and/or value-added leafy green products to wholesale distributors and retail and foodservice buyers.

**Processors:** Companies that contract for product to be grown and/or buy, receive and process leafy green products for “value added” packaged products such as bagged iceberg and romaine lettuce, spinach, spring mix, etc... Many processing companies also ship their product to wholesale distributors and retail and foodservice buyers.

**Packers:** Companies that provide labor crews and transportation from field to cooler or processing plant for the harvest of leafy green products.

**Harvesters:** Labor crews that harvest and field pack leafy greens products. May be employed by the grower-shipper or hired through a contract harvesting company.

**Growers:** Individuals and/or companies that grow and sell leafy green products to processor and grower-shippers. Most growers have contracts to grow for one or more processors or grower-shippers. Some independent growers directly sell and deliver produce to retail and foodservice buyers (e.g. farmer’s markets, local restaurants). These are typically smaller, sometimes organic or specialty farms.

## Leafy Green Marketing Agreement

**Leafy Green Marketing Agreement (LGMA):** California Leafy Green Products Handler Marketing Agreement issued by the Department of Food and Agriculture of the State of California.

**Commodity Specific Food Safety Guidelines for the Production and Harvest of Lettuce and Leafy Greens (“Metrics”):** Food Safety Best Management Practice for Lettuce and Leafy Greens Guidance document developed by Western Grower’s Association working with regulatory agencies, scientists, produce industry representatives, and other interested parties. Document is accepted by the Leafy Green Marketing Agreement Board and applies to all signatory handlers and associated growers under the Leafy Green Marketing Agreement.

**Food Safety Program:** Some individual companies that buy leafy green products from growers have food safety program requirements that must be adhered to, in addition to the Commodity Specific Food Safety Guidelines for the Production and Harvest of Lettuce and Leafy Greens (“Metrics”), to sell their product.

**Handler:** Defined by the Leafy Green Marketing Agreement as any person who handles, processes, ships or distributes leafy green product for market, whether as owner, agent, employee, broker or otherwise. This definition does not include a retailer.

**Signatory Handler:** Any handler who has signed the Leafy Green Marketing Agreement.

## Food Safety Regulatory Agencies

**US Food and Drug Administration (FDA):** The FDA is responsible for protecting the public health by assuring the safety, efficacy, and security of our nation’s food supply.

**California Department of Food and Agriculture (CDFA):** CDFA’s mission is to help the governor and Legislature ensure delivery of safe food and fiber through responsible environmental stewardship in a fair marketplace for all Californians.

**California Department of Health Services (CDHS):** CDHS’s food safety program’s mission is to protect and improve the health of consumers by assuring foods are safe, and are not adulterated, misbranded, or falsely advertised.



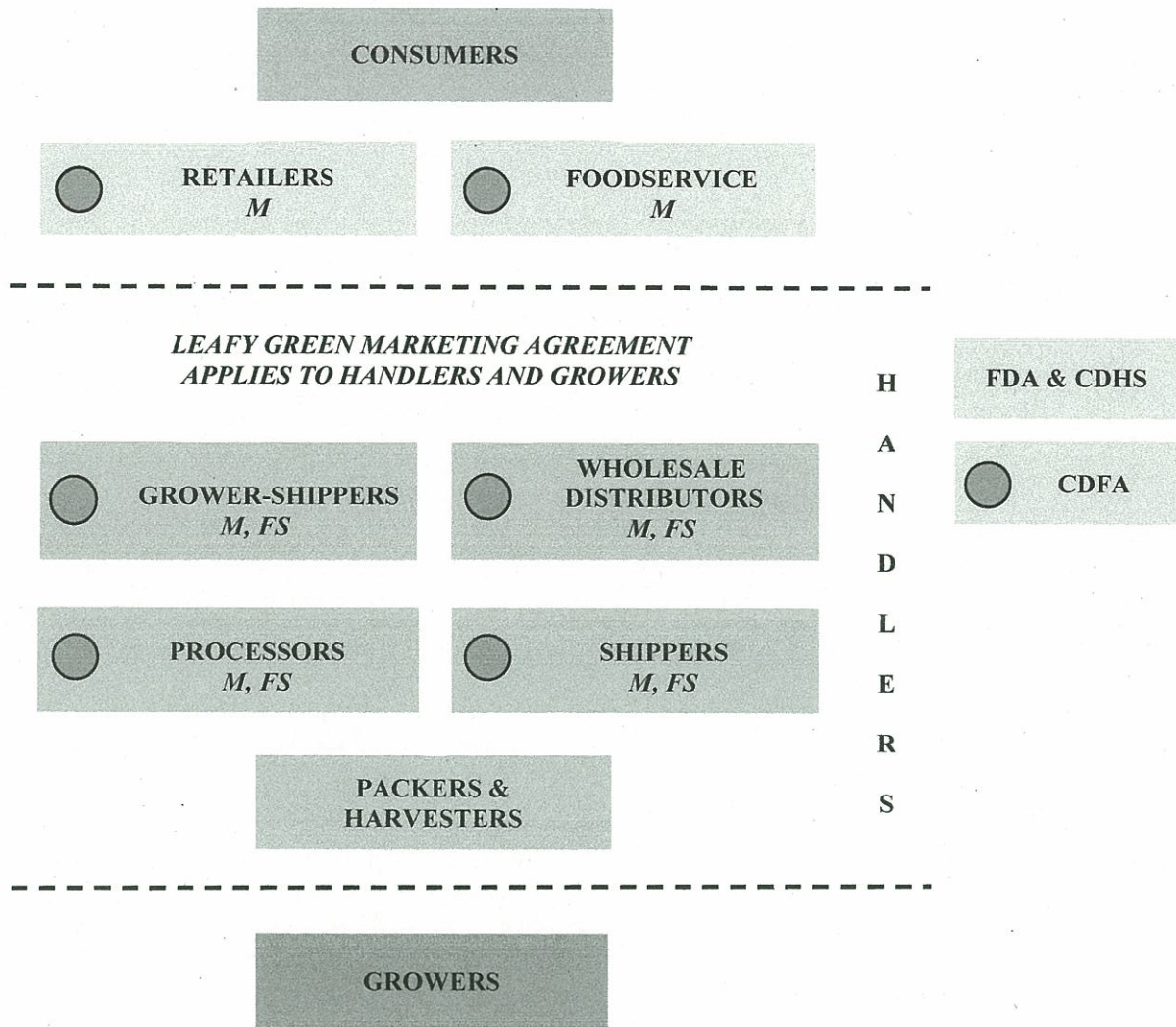
*Resource Conservation District of Monterey County*

744 LaGuardia St., Bldg A

[www.rcdmonterey.org](http://www.rcdmonterey.org)

831-424-1036 ext.3

# THE LEAFY GREEN MARKET & PRE-HARVEST FOOD SAFETY



**KEY**

- = May require and/or conduct field level food safety inspections or formal audits. Companies typically have in-house auditors or contract with a third-party
- M* = As a condition of leafy green product sale, most companies require growers adhere to the Metrics
- FS* = As a condition of leafy green product sale, many companies require leafy green growers adhere to the company's Food Safety Program requirements (in addition to the Metrics)



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## ATTACHMENT 2

*Grower Survey of Food Safety and Environmental Protection*



Resource Conservation District  
of Monterey County



Agricultural Commissioner



Grower-Shipper Association  
of Central California



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March 9, 2007

Dear Grower,

We need your help to find a balance between food safety goals and water quality and environmental protection on the Central Coast!

Enclosed, please find a **confidential** survey that will help us better understand the relationship between food safety guidelines and agricultural management practices to improve water quality. This survey is sponsored by the Resource Conservation District of Monterey County (in collaboration with your local RCD), Monterey County Agricultural Commissioner's Office (in collaboration with your local Ag Commissioner), Grower-Shipper Association of Central California, and Central Coast Agricultural Water Quality Coalition. All responses will be anonymous, and the information obtained through this survey will help us work proactively with stakeholders and decision makers to resolve perceived and actual contradictions between food safety and the protection of water quality.

Over the past decade, the agricultural community has taken a proactive approach to voluntarily improve water quality on the Central Coast. Simultaneously, the issue of food safety has increased in importance, especially with the most recent outbreaks of E.coli O157:H7 associated with leafy greens. The efforts of the agricultural industry to protect water quality may be compromised as some food safety guidelines appear to be in conflict with management practices intended to improve water quality. Growers are caught in the middle between these competing priorities.

Please help us by completing the enclosed questionnaire and returning it to the Resource Conservation District of Monterey County using the enclosed postage-paid envelope. This **confidential** survey is being conducted under independent contract by a University of California researcher.

Thank you for your time.

Sincerely,

Emily Hanson, Executive Director  
Resource Conservation District of Monterey County

Eric Lauritzen, Agriculture Commissioner  
Monterey County Agricultural Commissioner

Jim Bogart, President & General Counsel  
Grower-Shipper Association

Dawn Mathes, Executive Director  
Central Coast Agricultural Water Quality Coalition

# GROWER SURVEY: FOOD SAFETY AND ENVIRONMENTAL PROTECTION

## I. Operation & Business Information

1. What 'ready-to-eat' crop(s) do you grow?  
Check all that apply.

- |   |                                       |
|---|---------------------------------------|
| <input type="checkbox"/> Baby greens            | <input type="checkbox"/> Leaf lettuce |
| <input type="checkbox"/> Green onions           | <input type="checkbox"/> Spinach      |
| <input type="checkbox"/> Broccoli               | <input type="checkbox"/> Celery       |
| <input type="checkbox"/> Head lettuce           | <input type="checkbox"/> Cauliflower  |
| <input type="checkbox"/> Cabbage                | <input type="checkbox"/> Chard        |
| <input type="checkbox"/> Kale                   | <input type="checkbox"/> Carrots      |
| <input type="checkbox"/> Strawberries           |                                       |
| <input type="checkbox"/> Other, please specify: |                                       |

2. Do you pack 'ready-to-eat' crops?  
 Yes      If yes, which ones?  
 No

3. Do you ship 'ready-to-eat' crops?  
 Yes      If yes, which ones?  
 No

4. Please indicate the number of acres you own  
and/or rent to grow crops.

Own: \_\_\_\_\_ Rent: \_\_\_\_\_

5. How many irrigated *crop acres* did you harvest  
this year?

- |                                   |                                    |
|-----------------------------------|------------------------------------|
| <input type="checkbox"/> 0-9      | <input type="checkbox"/> 500-999   |
| <input type="checkbox"/> 10-49    | <input type="checkbox"/> 1000-1500 |
| <input type="checkbox"/> 50- 179  | <input type="checkbox"/> 1500-2000 |
| <input type="checkbox"/> 180- 499 | <input type="checkbox"/> >2000     |

6. How would you classify your operation?  
 Conventional  
 Organic  
 Both

7. Who primarily buys the crops that you grow?  
 Shippers/Packers  
 Processors  
 Grocers  
 Farmers Market  
 Community Supported Agriculture  
 Other:

8. Who inspects for crop quality and food safety on  
your farm and who hires them? (Please be specific)

## II. Farm Description and Details

9. Are any of the fields you farm next to natural  
waterbodies such as creeks, rivers, or ponds?

- Yes  
 No

10. Are any of the fields you farm next to a man-  
made waterbody such as a reservoir, stock pond or  
drainage ditch?

- Yes  
 No

11. Is any part of your farm within a quarter of a mile  
to an open space or natural area?

- Yes  
 No

12. Have you had any issues with flooding on or  
around cropped fields?

- Yes  
 No

13. What wild animals do you see on or around the  
farm, and have any of them caused a problem or  
concern with crop production or sales?  
(Check all that apply)

Animal:	Problem?	
<input type="checkbox"/> Geese	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<input type="checkbox"/> Ducks	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<input type="checkbox"/> Seagulls	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<input type="checkbox"/> Birds of Prey	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<input type="checkbox"/> Other Small Birds	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<input type="checkbox"/> Deer	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<input type="checkbox"/> Mice	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<input type="checkbox"/> Rabbits	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<input type="checkbox"/> Squirrels	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<input type="checkbox"/> Rats	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<input type="checkbox"/> Wild Pigs	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<input type="checkbox"/> Frogs	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<input type="checkbox"/> Gophers	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<input type="checkbox"/> Other, please specify:		

32. I think that the presence of wildlife threatens the safety of food crops.

Strongly Agree 1 2 3 4 5 Strongly Disagree

33. I feel it is my duty as a land manager to support clean water and a healthy environment.

Strongly Agree 1 2 3 4 5 Strongly Disagree

34. I think that most farms can also serve as wildlife habitat in addition to producing food.

Strongly Agree 1 2 3 4 5 Strongly Disagree

35. Food safety concerns have made me less likely to adopt or maintain conservation projects and practices that include non-crop vegetation and/or may attract wildlife.

Strongly Agree 1 2 3 4 5 Strongly Disagree

36. Practices for conservation and water quality seem to conflict with what I am being told to do in order to protect crops from contamination.

Strongly Agree 1 2 3 4 5 Strongly Disagree

37. I think that with proper mitigation measures we can produce safe food while also using practices to support clean water and a healthy environment.

Strongly Agree 1 2 3 4 5 Strongly Disagree

38. If time and money was not an obstacle, I could meet both the goals of food safety and environmental quality in my operation.

Strongly Agree 1 2 3 4 5 Strongly Disagree

39. Please use the space below for comments regarding your personal experiences with food safety concerns, how you think food safety and environmental quality may or may not be compatible, or suggestions on how to achieve both goals.

Please Return Survey To:  
The Resource Conservation District of Monterey County  
744 La Guardia Street, Building A  
Salinas, CA 93905

**A Grower Survey: Reconciling Food Safety and Environmental Protection**  
**August 2007**



**Prepared by the Resource Conservation District of Monterey County**

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