Session 1D: Good Agricultural Practices Impacting Small Acreage Farmers in New Mexico

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Gaps implementation in NM

- NM food producers
- Farmers markets in NM
- 2001 collaborative grant with Cornell Univ.
  - Gap basics
  - Training in NM
  - Gap hang ups
  - Gap resources
Good Agricultural Practices

2001 began Collaborations with partners
2007 Agriculture statistics
New Mexico

321 organic farms - 71,000 acres -
10,000 in crop production
2007 Agriculture statistics
New Mexico

Market value ($1000)
Vegetables, melons, potatoes 88,996
Fruits, tree nuts, berries 105,867
Grains, oilseed, dry peas and beans 132,548
(includes potatoes, chile peppers and peanuts)
Farm to School program

• 10 farmers actively participate in the program, sales last year were approximately $200,000 and consisted primarily of sales of apples, pears, peaches and plums.
• 8 school districts throughout New Mexico
• $1.2 Million from federal agencies to purchase local fresh food to offer in schools
Good Agricultural Practices

A “PREVENTION” FOCUSED FOOD SAFETY MANAGEMENT PROGRAM

The goal is to reduce microbial risks in fresh or minimally processed fruits and vegetables—making produce safer.
Ready To Eat or Minimally Cooked
GAP – Why Now?

• Consumption of fresh produce steadily increasing.

• Increases in the number of produce associated with foodborne disease outbreaks in the U.S.


• A variety of fruits and vegetables implicated--domestic and imported
What are the Issues?

• The Consumer
  – Increase in “at risk” populations
  – Awareness
  – Activism and concerns/perceptions
  – Buyer demands
  – Health concerns

• The Micro World
  – Increase “virulence” and adaptation
  – Better detection

• Technology/transportation

• Global food supply

• Media
Approaches to Food Safety

• Become proactive—anticipate challenges
• Make communication a priority
• Everyone—from farm to table—needs to take responsibility for food safety. We need to talk with each other and work together to improve the safety of our food supply
• We need to inform and educate the industry and the public about public policy issues & risk analysis
What Are the Potential Sources of On-Farm Contamination?

- Soil
- Irrigation Water
- Animal Manure
- Wild and Domestic Animals
- Inadequate Field Worker Hygiene
• Transport Containers (field to packing facility)
• Wash and Rinse Water
• Inadequate Processing Equipment

Cleaning and Sanitation - equipment used to soak, pack, or cut produce
FOOD SAFETY EDUCATION: IS ANYONE REALLY INTERESTED?
How confident are you that fruits and vegetables sold in the U.S. are safe to eat?

(NE GAPs consumer survey 2000)
Consider these in your operation:

• Water safety
• Safe use of manure and biosolids
• Worker health and hygiene
• Sanitation in the field, packing area, and PYO operations
• Temperature control
• Traceback
ORAL FECAL ROUTE

Modified from Beuchat, 1996
Wash your hands before we eat.

You think they're clean. Your hands are covered with germs.

I don't see any germs!
Farm Food Safety Plan Describes:

- Manure storage and handling
- Animal exclusion (domestic & wild)
- Irrigation and drainage management
- Harvest and post harvest handling
- Employee training program
- Restroom & hand washing facilities
- Crisis management strategy

Record It or Regret It!
GAP plan implementation

• Training in New Mexico since 2001
  – awareness training 1200 producers
  – implementation training 300 producers

• Operation and risk evaluation
  – “things to do better”
  – Un-acceptable practices
# Irrigation and Spray Water Quality

## Good Agricultural Practices

<table>
<thead>
<tr>
<th>Management Area</th>
<th>Best Practice</th>
<th>Minor Adjustments Needed</th>
<th>Concerns Exist; Examine Practice</th>
<th>Needs Improvement: Prioritize Changes Here</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source of irrigation water for produce crops</td>
<td>Irrigation water is from a municipal, treated water source or from ground water obtained from a properly constructed, capped well, in good condition, that could be readily treated if indicator organisms were detected in annual water tests.</td>
<td>Irrigation water is sourced from an uncapped well.</td>
<td>Irrigation water is drawn from a surface water source with no knowledge of its microbial quality.</td>
<td>Irrigation water is sourced from a pond or other water source that has daily visits by livestock or wild animals OR little is known about irrigation water source.</td>
</tr>
<tr>
<td>Source of water for topical sprays</td>
<td>Spray water is from a municipal, treated water source or from ground water obtained from a properly constructed, capped well, in good condition, that could be readily treated if indicator organisms were detected in annual water tests.</td>
<td>Spray water is sourced from an uncapped well.</td>
<td>Spray water is drawn from a surface water source with no knowledge of its microbial quality.</td>
<td>Spray water is sourced from a pond or other water source that has daily visits by livestock or wild animals OR little is known about the water source.</td>
</tr>
<tr>
<td>Water Testing. See Water Use introduction for more specific recommendations</td>
<td>All water sources are tested for indicator organisms such as thermotolerant coliforms and generic E.coli AND these records are kept on file.</td>
<td>All water sources are tested BUT records are not maintained.</td>
<td>Water used for washing and cooling produce is tested BUT surface water used for irrigation is not tested. No records are kept.</td>
<td>No water tests are done and no attempt is made to get water test results from municipalities. No water records are kept.</td>
</tr>
</tbody>
</table>
# Irrigation and Spray Water Quality Action Plan

<table>
<thead>
<tr>
<th>Management Area</th>
<th>Best Practice</th>
<th>Minor Adjustments</th>
<th>Concerns Exist</th>
<th>Prioritize Changes Here</th>
<th>Action for Improvement</th>
<th>Person Responsible</th>
<th>Estimated Cost</th>
<th>Target Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source of irrigation water for produce crops</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
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</tbody>
</table>
| Water Testing  
See Water Use introduction for more specific recommendations | | | | | | | | |
| Awareness of watershed concerns | | | | | | | | |
| Monitoring of sediment levels in surface water used for irrigation | | | | | | | | |
GAP implementation

- Plan written for operation
- Signage and log sheets
- GAP/GHP audit

Certification of Crop
Signs (18) in production areas
## Documentation-logs (10)

### GAP's Pact Sheet

<table>
<thead>
<tr>
<th>Date</th>
<th>Product</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GAP's Pact Sheet (continued)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product type</td>
</tr>
<tr>
<td>Address</td>
</tr>
<tr>
<td>Phone</td>
</tr>
<tr>
<td>Email address</td>
</tr>
</tbody>
</table>

### THERMOMETER CALIBRATION LOG

<table>
<thead>
<tr>
<th>For week of</th>
<th>Through</th>
<th>Date</th>
<th>Temperature</th>
<th>Re-calibrated</th>
<th>If yes, New year started</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

### Prep area

<table>
<thead>
<tr>
<th>Date</th>
<th>Mon</th>
<th>Tues</th>
<th>Weds</th>
<th>Thurs</th>
<th>Fri</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

### Sanitation checklist

**Comments:** Reduce sanitary conditions by cleaning and sanitizing equipment and prevent contamination of product contact surfaces.

### Ingredient and supplies Inventory Log

<table>
<thead>
<tr>
<th>Product name</th>
<th>code</th>
<th>date received</th>
<th>Quantity</th>
<th>Company address and contact information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

### Crop rotation

<table>
<thead>
<tr>
<th>Company</th>
<th>FSD Verification</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

### Finished Product Inventory Log

<table>
<thead>
<tr>
<th>Product &amp; product code</th>
<th>Pack date</th>
<th>Distribution date</th>
<th>Quantity</th>
<th>Name and address distributed to</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

### Chemical Inventory Log

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Use</th>
<th>Use date and location</th>
<th>Quantity used</th>
<th>Person approving</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

### Visitor Log

<table>
<thead>
<tr>
<th>Name</th>
<th>Company</th>
<th>Address</th>
<th>Phone</th>
<th>Reason for visit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

### Physical Address

- **Total acres:**
  - **For week of:**
    - **Date:**
      - **Mon:**
        - **Temp:**
          - **Number of recording locations:**
            - **Date:**
              - **Mon:**
                - **Temp:**
                  - **Tracing date:**
                    - **GAP safety training:**
                      - **Field handled:**
                        - **Field size:**
                          - **Map update:**
                            - **Pick up plan:**
                              - **Crop rotation:**
                                - **Initials:**
                                  - **Date:**
                                    - **Code:**
                                      - **Product name:**
                                        - **Date received:**
                                          - **Quantity:**
                                            - **Company address and contact information:**
Good Agricultural Practices (GAPs) Program for New Mexico

In response to the increase in fruit and vegetable associated food borne illnesses, the goal of this project is to provide educational materials to food producers and educational professionals associated with agriculture in order to reduce microbial risks in fruits and vegetables through good agricultural practices (GAPs) education. Seminars and display presentation have been done throughout the state.

GAP on‐farm documents
- GAPS Forms

GAP on‐farm signs
- GAPS signs (PowerPoint)

Key Background Information
Between 1970 and 1997, the U.S. per capita consumption of fruits and vegetables increased 24% (577 lbs to 718 lbs per year)

Food borne Illnesses
As produce consumption has increased, scientists at the Centers for Disease Control and Prevention (CDC) in Atlanta, Georgia, noticed some important trend. From 1973 through 1998, there was a significant increase in the number of food borne disease outbreaks associated with fresh produce.

A summary of the food borne outbreaks from 1987

http://aces.nmsu.edu/ces/foodtech/gap-nm.html
http://www.gaps.cornell.edu/educationalmaterials.html
THANK YOU!!