

# Making On-Farm Food Safety Easy Using an Online Application



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## BACKGROUND

- Foodborne illness costs the US \$164 billion per year [1]
  - Outbreaks can not only risk public health, but could also lead to financial ruin or even jail time for the farmers found responsible
- In an effort prevent such outbreaks, the Food Safety Modernization Act (FSMA) implemented new Produce Safety Standards for:
  - Agricultural water and soil quality and testing
  - Land assessment for animal contamination
  - Worker health and hygiene training
  - Sanitation of food contact surfaces
- However, results from our preliminary survey of 200 Northern California farmers indicated that [2]:
  - 68% viewed laws and regulations as a barrier
  - 79% did not have a documented food safety plan
  - 71% wanted food safety trainings to ensure FSMA compliance
- Previous funding supported a food safety training program to help farmers apply FSMA standards to their own unique situations in response to farmers indicating that food safety training and plan development is costly and difficult to obtain [3]
- The current study focusses on the development and refinement of a version of the program specifically for stone fruit farmers

## OBJECTIVE

- To develop, refine, and test the effectiveness of the [EASY GAP for Stone Fruits](#) program's 13 on-farm food safety training videos.

## METHODS

### Study Design

- Between-subjects design
- Participants were 68 stone fruit farmers from California
  - They were assigned to one of two groups:
    - Group #1:** draft EASY GAP videos (n=34)
    - Group #2:** revised EASY GAP videos (n=34)
  - Both groups were required to watch 13 EASY GAP food safety training videos and take a survey about the effectiveness of the programming

### Enhancing Agricultural Safety Year-Round: Good Agricultural Practices (EASY GAP)

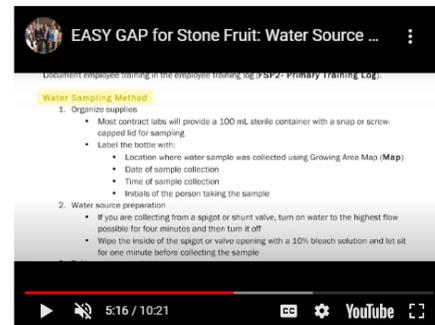
- A multi-component, interactive, online program aimed at educating farmers about on-farm food safety
- The current study focused on the program's training video series, which featured 13 videos of stone fruit-specific information on the following topics:



## METHODS

### Draft Versus Revised EASY GAP Videos

- The draft EASY GAP training videos were revised after running a field test and getting feedback from Group #1
- Videos were revised to be slower-paced by:
  - Reducing the number of video transitions by displaying fewer still images over a period of time
  - Reducing or eliminating movement from still images of photos and documents



Revised videos used highlighting instead of zoom effects to draw viewer's attention.



Revised videos showed fewer images that remained onscreen for a longer time period.

### Survey Instrument

- An online survey was emailed to participants and was administered through Survey Monkey
- Participants were presented with statements about the effectiveness and ease of use of the training videos
  - They responded using a 3-point scale of "completely agree," "Agree Somewhat," "Do not Agree," or "Do not know"
- Survey statements included:
  - "I learned what causes foodborne illness and the risks it poses to others"
  - "The information in the videos was presented in an organized manner"
  - "The pace of the videos was too fast"

### Analysis

- Mann-Whitney tests** compared differences in survey responses between Group #1 and Group #2
  - Scale responses were recoded into "agreement" or "disagreement" with each statement
- All analyses were performed using SPSS version 25.0
- P-values of .05 or less were considered to be significant

## RESULTS

### EASY GAP Video Survey Results

- Participants were asked if each video had new/helpful information or was difficult to understand /follow

Table 1. Frequency of responses indicating videos had new or helpful information (n=68)

Video	Yes	%
Introduction	4	5.9%
Why Food Safety is Important	13	19.1%
Marketing Food Safety	12	17.6%
Food Safety Plan and Self-Verification	29	42.6%
Employee Hygiene	26	38.2%
Traceability & Recall	14	20.6%
Land Assessment	5	7.4%
Soil Amendments	6	8.8%
Water Source & Use	3	4.4%
Pesticides & Herbicides	8	11.8%
Crop Handling	8	11.8%
Conclusion	3	4.4%

Table 2. Frequency of responses indicating videos were difficult to understand or follow (n=68)

Video	Yes	%
Introduction	0	0.0%
Why Food Safety is Important	0	0.0%
Marketing Food Safety	1	1.5%
Food Safety Plan and Self-Verification	4	5.9%
Employee Hygiene	2	2.9%
Traceability & Recall	6	8.8%
Land Assessment	0	0.0%
Soil Amendments	2	2.9%
Water Source & Use	2	2.9%
Pesticides & Herbicides	4	5.9%
Crop Handling	1	1.5%
Conclusion	1	1.5%

## RESULTS

### EASY GAP Video Survey Results

- The proportion of participants who felt that the videos increased their knowledge about the causes of foodborne illness and the public health risk associated with it was significantly higher in Group #2 (revised videos) than in Group #1 (draft videos) ( $P = 0.035$ ).
- There was a significantly greater number of Group #2 participants who believed that the videos were well-organized compared to Group #1 ( $P = 0.024$ ).
- The number of participants who reported that the pacing of the videos was too rapid was significantly lower in Group #2 compared to Group #1 ( $P < 0.01$ ).

Table 3. Mann-Whitney comparison of survey responses across participants that watched draft versus revised versions of EASY GAP videos (n=68)

Survey Statement	Treatment Group		P
	Draft Videos (n=34)	Revised Videos (n=34)	
	Mean Rank	Mean Rank	
I learned what causes foodborne illness and the risks it poses to others.	30.26	38.74	0.035
The information in the videos was presented in an organized manner.	30.41	38.59	0.024
The pace of the videos was too fast.	47.50	21.50	<0.01

## CONCLUSION AND FUTURE IMPLICATIONS

- Participants found the revised videos to be more informative and easier to use compared to the draft videos
- Future studies involving programming targeted at farmers should take participant feedback into account and make necessary changes to ensure that all educational materials are as accessible and effective as possible.
- Future funding is needed to create these EASY GAP materials in Spanish and other languages needed for California Farmers

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