

JIFSAN's Training M&E Program and a Case Study on GAP Training in Latin America

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Background

- The U.S. as a produce importer
 - Import volume
 - Foodborne illness associated with produce
- Trade with Latin American countries
 - Trade volumes
 - Top trading partners
 - Import refusals



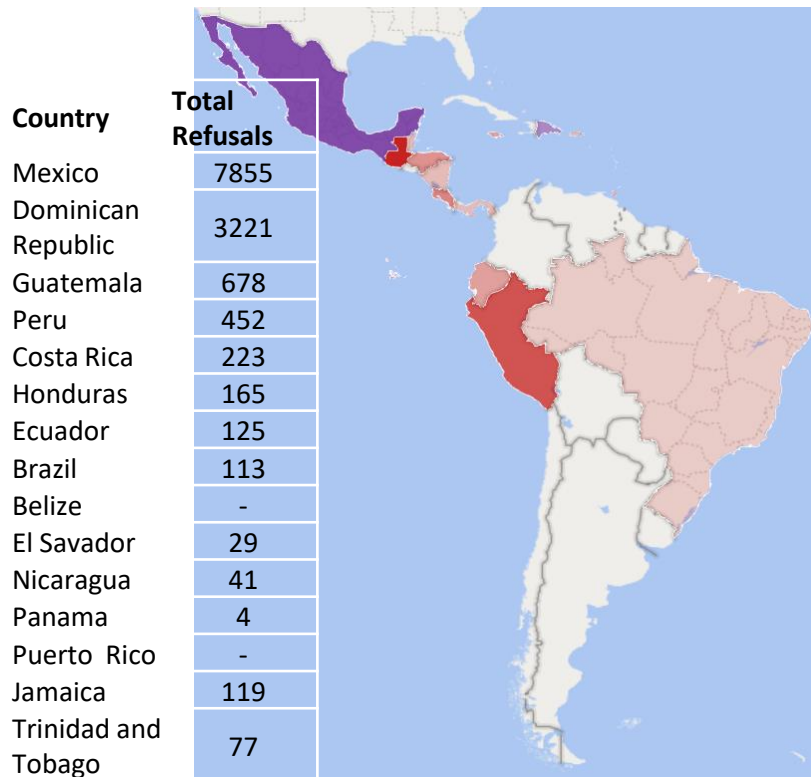
Background

- Good Agricultural Practices and produce safety
 - From store to table
 - From farm to store
- JIFSAN's international GAP training
 - Joint Institute of Food Safety and Applied Nutrition (JIFSAN)
 - Recommended by the FDA
 - Approached by countries
 - Train-the-trainer program

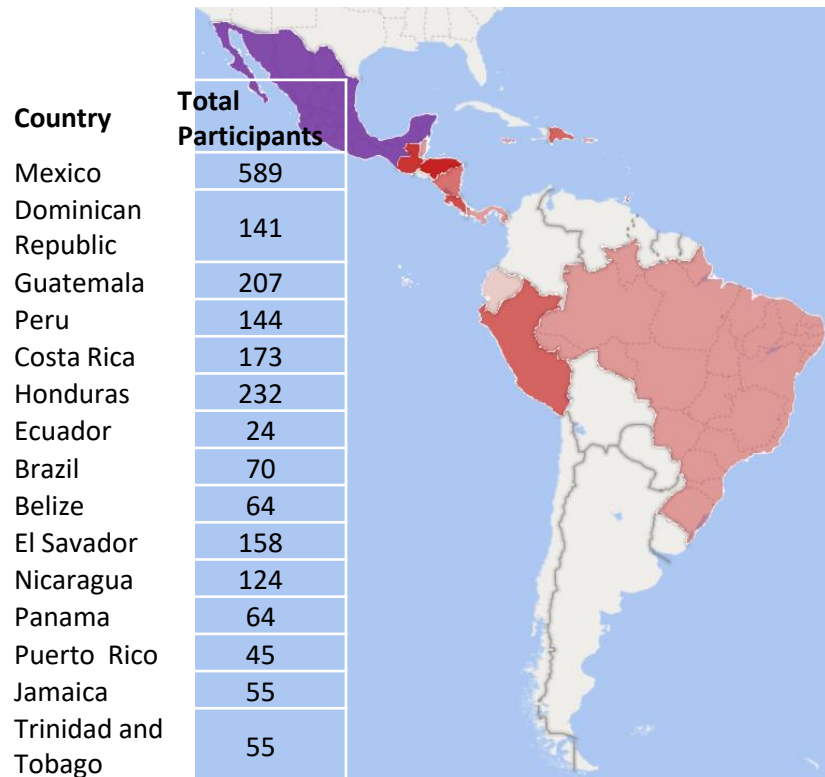


Background

Produce Import Refusal from Latin American Countries (2002 – Jan 2019)

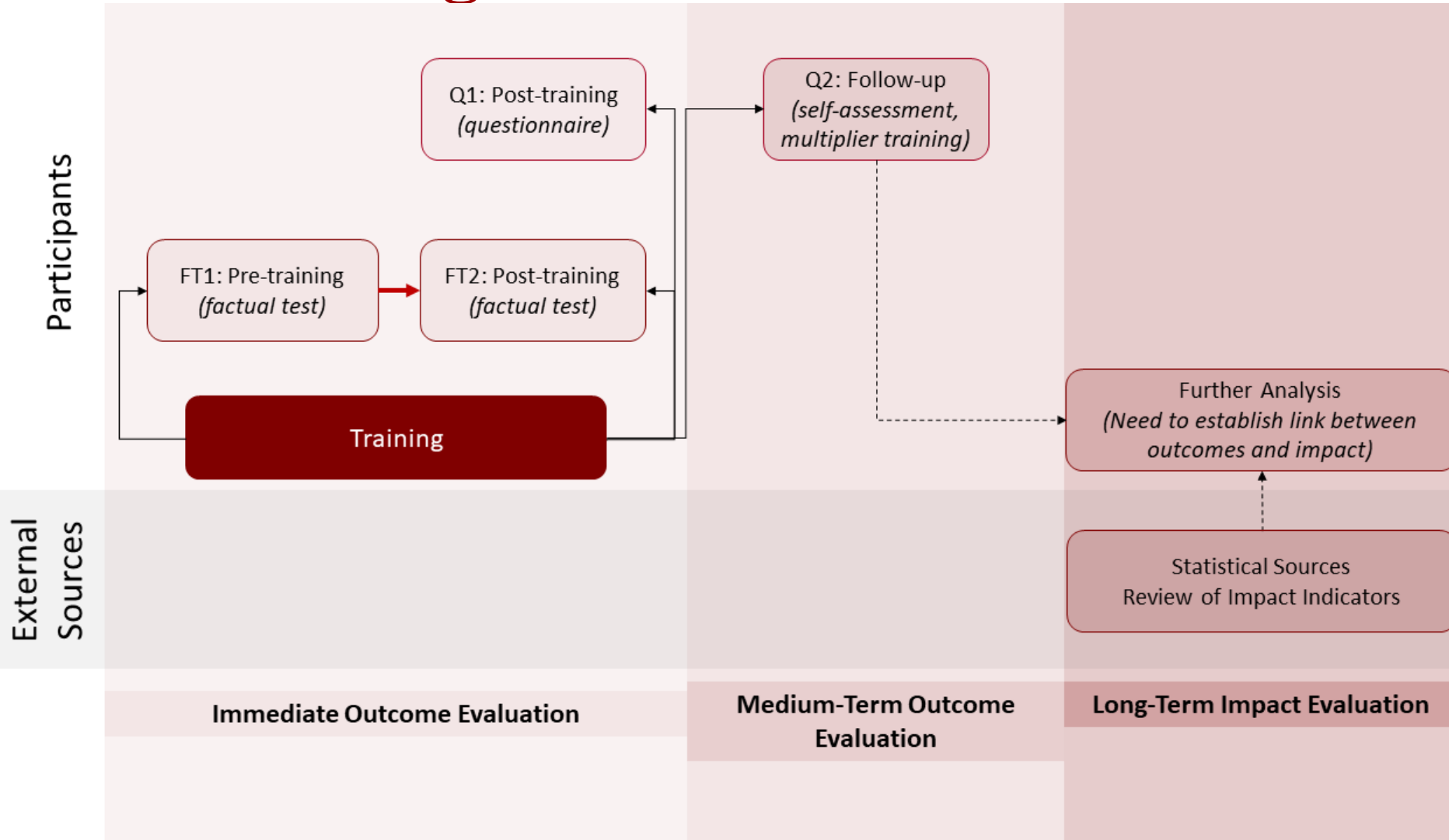


JIFSAN GAP Training in Latin American Countries (2002 – 2017)





Monitoring and Evaluation





Overview

- International GAP trainings 2013-2017
 - Train-the-trainer program
 - Eight Latin American countries
- Three types of measurements
 - Immediate training outcome
 - Scores, self-assessments, and satisfaction
- Main findings
 - Who are our participants
 - Who needed training the most
 - Who benefited from the training the most
- Lessons for future trainings



International GAP trainings 2013-2017

- Training design
 - 5-day program
 - Train-the-Trainer
 - Topics include importance of produce safety training, food safety practices, training development, etc
 - Activities include industry visit and group discussion
- Training language
 - Originally developed in English
 - Bi-lingual slides
 - Some instructors teach in Spanish, and some require local interpreter

- Sample size

	Year	English	Spanish	Total
Belize	2014	15		15
Costa Rica	2016		33	33
Ecuador	2013		17	17
Guatemala	2015		30	30
Honduras	2016		37	37
Jamaica	2013	26		26
Mexico	2013		38	38
Peru	2017		43	
Total		41	198	239



Three types of measurements

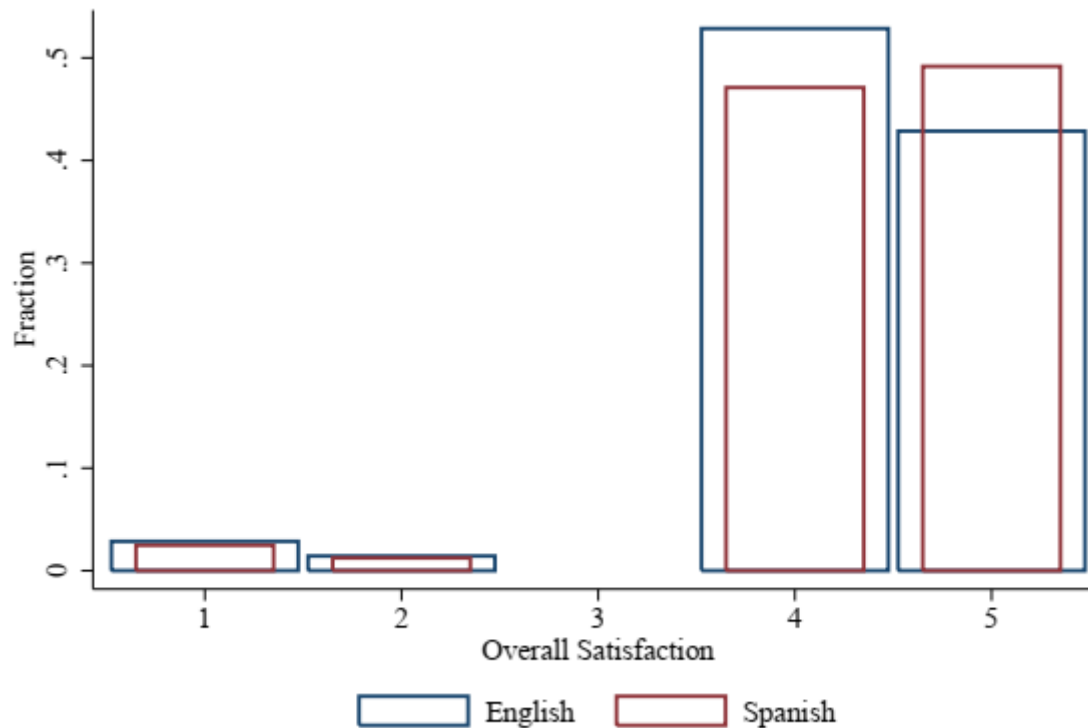
-- *Literature Review*

- Different Training Outcomes
 - ✓ Knowledge and attitude
 - Behavior and performance
- Evaluation Framework
 - Kirkpatrick's four levels (Kirkpatrick, 1976, 1994; Chyung, 2008)
 - ✓ Multidimensional evaluation targets (Kraiger, 1993)
 - Other models (e.g. Clayton et al., 2002; Jolly et al., 2009)
- Methods linking training to outcomes (Egan et al., 2007)
 - ✓ Before and after
 - Control and treatment
 - Randomized experiment
- Measurements of Immediate Training Outcomes
 - Satisfaction
 - Self-assessment
 - ✓ Scores



Three types of measurements

-- *Comparing statistics*



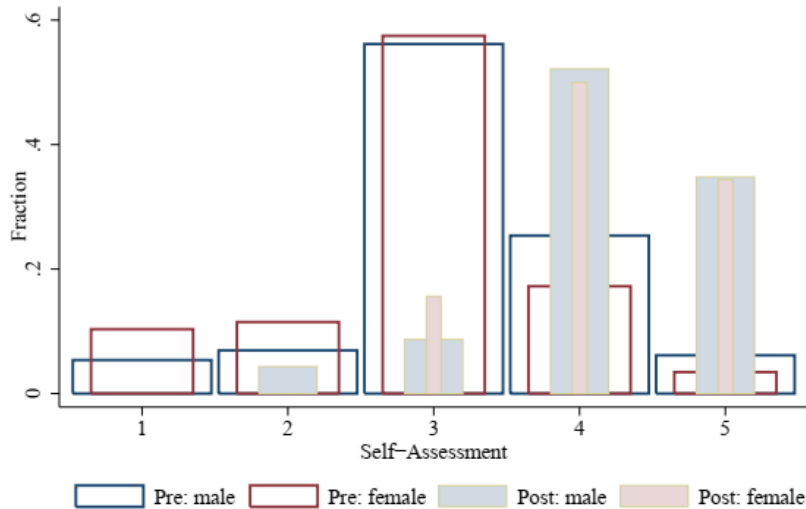
Number of participants with overall satisfaction: 312



Three types of measurements

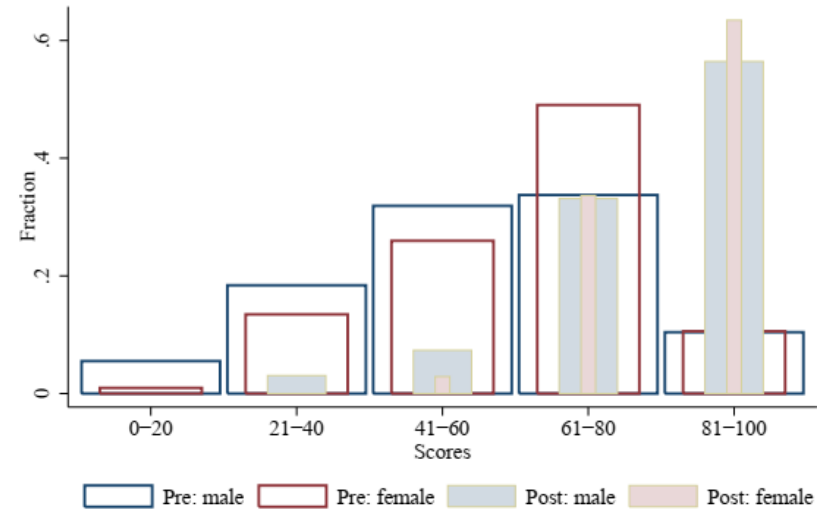
-- *Comparing statistics*

(a) Self-Assessment



Number of participants with pre-training self-assessment: 274
 Number of participants with post-training self-assessment: 83

(b) Test Score



Number of participants with pre-training scores: 282
 Number of participants with post-training scores: 282



Three types of measurements

-- *Advantage of using scores*

- Cardinal
 - allow for the summation over detailed questions to reduce the number of measurement dimensions and increase variation in values
- Objective
 - allow for pooling of individual scores and comparing before and after training;
- Integrated into the learning process to avoid survey fatigue, generating larger sample sizes
- Possibility to conduct rigorous analysis
 - Evaluation and effectiveness (Alvarez et al., 2004)

Main findings

--Who are our participants

	Pooled	English	Spanish	t-Test	
Performance					
PreScore (pct)	54.17	50.89	54.85	-3.95	[3.27]
PostScore (pct)	77.68	83.90	76.40	7.51***	[2.42]
Improvement (pct)	23.51	33.01	21.55	11.46***	[2.99]
Participant Characteristics					
Female	0.36	0.34	0.36	-0.02	[0.08]
Educ: No college	0.18	0.34	0.15	0.19***	[0.06]
Educ: College only	0.54	0.32	0.59	-0.27***	[0.08]
Educ: Post-grad	0.28	0.34	0.26	0.08	[0.08]
Public Sector	0.67	0.85	0.63	0.22***	[0.08]
Main Duty: Tech	0.62	0.56	0.63	-0.07	[0.08]
Main Duty: Admin	0.33	0.54	0.29	0.24***	[0.08]
Main Duty: Teach	0.21	0.07	0.24	-0.17**	[0.07]
Experience: 0-2 yrs	0.13	0.05	0.15	-0.10*	[0.06]
Experience: 3-10 yrs	0.40	0.37	0.41	-0.04	[0.08]
Experience: 11+ yrs	0.46	0.59	0.44	0.15*	[0.09]
Export: all countries	0.29	0.51	0.25	0.26***	[0.08]
Export: US only	0.29	0.15	0.32	-0.18**	[0.08]
Export: regional only	0.06	0.05	0.06	-0.01	[0.04]
Expor: no	0.36	0.29	0.37	-0.08	[0.08]
Observations	239	41	198	239	

Standard errors are reported in [].

* p < 0.1, ** p < 0.05, *** p < 0.01



Main findings

-- Who needed training the most

	Clustered		Spanish		Robust		Spanish	
	Pooled				Pooled			
Spanish	-4.031**	(-3.14)			-4.031	(-1.28)		
Female	5.239**	(3.21)	4.358**	(2.83)	5.239***	(2.67)	4.358*	(1.89)
Private Sector × Educ: No College	0.000	(.)	0.000	(.)	0.000	(.)	0.000	(.)
Private Sector × Educ: College Only	6.353**	(3.39)	5.905*	(2.49)	6.353	(1.34)	5.905	(1.02)
Private Sector × Educ: Grad	7.294*	(2.27)	6.940	(1.60)	7.294	(1.26)	6.940	(1.01)
Public Sector × Educ: No College	-0.644	(-0.11)	-2.738	(-0.36)	-0.644	(-0.11)	-2.738	(-0.34)
Public Sector × Educ: College Only	11.989***	(5.03)	11.735**	(3.82)	11.989**	(2.57)	11.735**	(1.98)
Public Sector × Educ: Grad	8.099*	(2.20)	6.932	(1.69)	8.099	(1.60)	6.932	(1.03)
Main Duty: Tech	-4.681	(-1.41)	-5.581	(-1.50)	-4.681*	(-1.80)	-5.581*	(-1.83)
Main Duty: Admin	0.099	(0.05)	-0.540	(-0.20)	0.099	(0.04)	-0.540	(-0.19)
Main Duty: Teach	6.332***	(4.41)	6.612***	(4.44)	6.332**	(2.29)	6.612**	(2.29)
Experience: 3-10 yrs	-3.562	(-1.49)	-2.719	(-0.97)	-3.562	(-1.13)	-2.719	(-0.78)
Experience: 11+ yrs	-1.462	(-0.54)	-1.430	(-0.47)	-1.462	(-0.45)	-1.430	(-0.40)
Export: all countries	-0.916	(-0.47)	-1.837	(-0.84)	-0.916	(-0.35)	-1.837	(-0.57)
Export: US only	1.222	(1.44)	1.844*	(2.49)	1.222	(0.46)	1.844	(0.61)
Export: regional only	-3.334	(-0.86)	-2.228	(-0.61)	-3.334	(-0.63)	-2.228	(-0.38)
Session Dummies	Yes		Yes		Yes		Yes	
Observations	239		198		239		198	
s.e.	Clustered		Clustered		Robust		Robust	

t statistics are reported in ().

* p < 0.1, ** p < 0.05, *** p < 0.01



Main findings

-- Who benefited from training the most

	Clustered		Spanish		Robust		Spanish	
	Pooled				Pooled			
pre	-1.973*	(-1.97)	-1.903	(-1.60)	-1.973**	(-2.47)	-1.903**	(-2.21)
pre × pre	0.035*	(2.19)	0.035	(1.84)	0.035**	(2.31)	0.035**	(2.17)
pre × pre × pre	-0.000**	(-3.06)	-0.000**	(-2.65)	-0.000***	(-2.75)	-0.000***	(-2.66)
Spanish	-8.818***	(-12.25)			-8.818***	(-3.28)		
Female	2.429	(1.89)	3.002*	(2.24)	2.429	(1.64)	3.002*	(1.83)
Private Sector × Educ: No College	0.000	(.)	0.000	(.)	0.000	(.)	0.000	(.)
Private Sector × Educ: College Only	4.807***	(4.90)	5.884***	(5.82)	4.807	(1.49)	5.884	(1.59)
Private Sector × Educ: Grad	9.047***	(5.31)	10.309***	(4.18)	9.047**	(2.34)	10.309**	(2.42)
Public Sector × Educ: No College	5.794*	(1.93)	7.481*	(2.15)	5.794	(1.33)	7.481	(1.38)
Public Sector × Educ: College Only	4.758*	(2.25)	6.206*	(2.37)	4.758	(1.36)	6.206	(1.51)
Public Sector × Educ: Grad	3.893	(1.45)	6.225	(1.83)	3.893	(1.04)	6.225	(1.35)
Main Duty: Tech	3.371	(1.56)	3.349	(1.18)	3.371	(1.55)	3.349	(1.36)
Main Duty: Admin	-2.862	(-1.30)	-3.909	(-1.45)	-2.862	(-1.39)	-3.909*	(-1.67)
Main Duty: Teach	-0.132	(-0.09)	-0.157	(-0.09)	-0.132	(-0.07)	-0.157	(-0.07)
Experience: 3-10 yrs	2.875	(0.98)	3.702	(1.12)	2.875	(1.09)	3.702	(1.34)
Experience: 11+ yrs	4.458	(1.67)	5.619	(1.85)	4.458	(1.64)	5.619*	(1.97)
Export: all countries	-6.598**	(-2.51)	-5.305	(-1.95)	-6.598***	(-3.11)	-5.305**	(-2.22)
Export: US only	-3.282	(-1.81)	-2.483	(-1.26)	-3.282	(-1.39)	-2.483	(-0.97)
Export: regional only	-3.620	(-0.95)	-3.199	(-0.67)	-3.620	(-0.97)	-3.199	(-0.73)
Session Dummies	Yes		Yes		Yes		Yes	
Observations	239		198		239		198	
s.e.	Clustered		Clustered		Robust		Robust	

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* p < 0.1, ** p < 0.05, *** p < 0.01



Lessons for future trainings

- Voluntary trainings (GAP, GAqP, GFVP, etc)
 - Cultural barrier and input from countries
 - Participant training motivation
 - Communication with countries on training goals
- Mandatory trainings (Produce Safety under FSMA)
 - Train-the-trainer program
 - Candidate qualification