



TECHNICAL BRIEF

# Measuring the Adoption of Nutrition and Sanitation Practices for Sustained Behavior Change

APRIL 2020 | AGRICULTURE AND FOOD SECURITY PRACTICE

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## About this Brief

How do we know our efforts in collaborating, learning, and adapting (CLA) are effective? This brief describes how one project in Tajikistan evaluated its CLA approach by measuring adoption rates of promoted nutrition and sanitation practices. This piece accompanies [an earlier brief](#), which provides further detail about the approach itself.

## Overview

The USAID Feed the Future Tajikistan Agriculture and Water Activity ([TAWA](#)), which aims to raise incomes by engaging rural women directly in agricultural productivity while also boosting awareness of better nutrition and sanitation behaviors, has integrated learning and continuous improvement in its standard operations. As outlined in [an earlier brief](#) *Embedding Collaborating, Learning, and Adapting Practices into the Activity Early on Fostered Improvements in Nutrition, Sanitation, and Farm Production in Southwestern Tajikistan*, TAWA created and implemented an active learning cycle using the collaborating, learning, and adapting (CLA) approach, which is outlined in the graphic below. TAWA used CLA to adjust extension training to target participant needs and interests better and followed up with research on the rates of adoption for promoted practices to measure the effectiveness of these training sessions.

Too often, measuring the adoption of practices involves only a baseline and an endline. As a result, these measurements cannot inform adjustments in training and other interventions during implementation. TAWA's integration of participant feedback to measure practice adoption and inform training adjustments enables data-driven learning and optimization within the project. This technical brief outlines TAWA's process and findings on the rates of adoption for promoted nutrition and sanitation practices, as

## TAWA Learning Cycle



well as lessons learned for TAWA and other development projects to consider about data-driven CLA.

## Survey Methodology

Through its capacity building program, TAWA's 12 Tajik household extension agents (HEAs) have trained more than 43,000 women, focusing on topics most important to them: learning improved farming techniques, safe care of dairy cows, and preparation of nutritious foods. In 2018, the TAWA Monitoring and Evaluation team conducted a small, random sample survey to investigate the sustained adoption rate of women farmers who had previously taken part in TAWA's capacity building program. Although the margins of error were large given the small sample size of the study, the results were positive and indicated that most women were maintaining these practices two years after participating in training with TAWA HEAs. The team followed up with a more statistically rigorous survey in 2019. Chemonics home office staff and TAWA field office staff collaborated to develop the 2019 follow-on survey to capture adoption and sustainability rates accurately on a wider scale.

The survey sampling frame of the 2019 study included women attendees who took part in TAWA's capacity building program from May to September 2017. The survey questions gauged women's recall, comprehension, and frequency of use of nutrition and sanitation practices before and after TAWA training. Respondents answered questions for each of the four training topics that were delivered during their women's groups: care of dairy cattle, drying of vegetables and fruits, canning of vegetables and fruits, and backyard compost production. These four training topics included three to four subtopics, so the women learned 14 different productivity enhancements that increase household incomes and nutritional outcomes (Table 1).

Stratified random sampling was used to select the survey respondents and ensure district representation; the sample size was large enough to ensure a 95 percent confidence level.<sup>1</sup> Tablets were used for the surveying process to minimize potential data collection

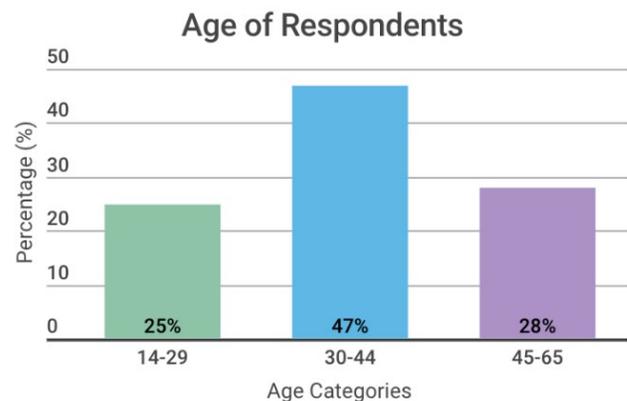
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<sup>1</sup> Margin of error ranged from  $\pm 4\%$  to  $\pm 7\%$  depending on whether the question applied to the women surveyed. Since only 276 of the women surveyed owned dairy cows, the margin of error for dairy cow questions was larger, given that the  $n$  for these questions was smaller. Margin of error is  $\pm 4\%$  for questions where  $n$  is 430 or higher,  $\pm 5\%$  for questions where  $n$  is 298 to 429,  $\pm 6\%$  for questions where  $n$  is 217 to 297, and  $\pm 7\%$  for questions where  $n$  is 165 to 216.

errors. Given funding constraints, the HEAs served as enumerators and pre-training data was obtained by asking the respondents about their behaviors and practices over the previous two years.

## The Respondents

To draw meaningful and context-specific conclusions from the survey results, it is important to understand the key characteristics of the survey respondents. The respondents all resided in one of the 12 districts of the USAID Feed the Future Zone of Influence in Khatlon province, which is in southwestern Tajikistan. Across this province, food insecurity and malnutrition are high; however, productivity enhancements, like the practices introduced by TAWA, have the potential to improve livelihoods and increase consumption of nutrient-rich foods. All respondents were female and slightly more than two-thirds of all households had children living in them. The chart to the right displays the age breakdown of respondents — 47 percent of the women sampled were between 30 to 44 years old. This data demonstrates that a large proportion of TAWA beneficiary households contain women of reproductive age and children, two demographic groups for which the consequences of malnutrition are severe and have long-lasting effects.



### By the Numbers

- **Sample Size:** 501
- **Sex:** 100% Female
- **Median Household Size:** 6
- **Percent of Households with Children (<13 years):** 67.86%

### Snapshot: Khatlon Province

- Tajikistan: Poorest province in the country
- Households headed by women: 17 percent
- Average household size: 7.4 people
- Children under age 5 who are chronically malnourished (stunting): 27 percent; Children under age 5 who are acutely malnourished (wasting): 11 percent (USAID 2018)
- Households possessing agricultural land: 93 percent
- Homestead plot median size: 0.3 hectares

## The Results: Digging into the Data

TAWA's nutrition and sanitation practices consisted of small behavior changes that required little to no resources to adopt, yet the effects they could have on improving livelihoods were immense. For example, learning how to produce and sell canned apricots could provide households with enough fruits and vegetables to make it through the lean winter months, while also empowering women's entrepreneurial abilities. However, it is not safe to assume that just because practices are simple, they will be readily adopted.

The survey to determine adoption rates included various question types that enabled the team to quantify training effectiveness, practice adoption, and sustain behavioral change. For the 14 specific practices, recall and comprehension rates two years after training ranged from 88.78 percent to 100 percent (Table 1). While high recall rates are important, frequency of practice use data provides a more focused data point for actual integration into daily habits. For all specific practices except two, more than two-thirds of the women who were following the practice were doing so all or most of the time. These results are important because they show that a large majority of the women have fully incorporated these practices into their routines. Additionally, these frequency results can be used to inform future programming. For practices with lower frequencies, training approaches can be modified to ensure that the improved practices are truly useful to the women and that the barriers to practice uptake are not too high.

	TAWA Training Topic	Recall Rate		Comprehension Rate		Frequency of practice use					
		n	Proportion	n	Proportion	n	All the time	Most of the time	Occasionally	Rarely	Never
Care of dairy cattle	Wear specific clothes when milking cows	276	99.64%	276	100%	276	80.80%	15.94%	1.45%	0.72%	1.09%
	Wash hands and milk pail with soap prior to milking cow	276	100%	276	100%	276	82.97%	15.94%	0.36%	0.36%	0.36%
	Carefully wipe cow's udder with clean water prior to milking cow	276	100%	276	100%	276	92.03%	7.61%	0%	0%	0.36%
Drying vegetables and fruits	Wash the apricots with clean water	410	99.51%	410	99.02%	409	82.40%	2.69%	7.09%	7.33%	0.49%
	Sort the apricots by appearance and size	410	98.78%	410	98.54%	405	62.22%	19.26%	8.64%	9.38%	0.49%
	Place apricots on clean trays and cover apricots with plastic	410	93.90%	410	93.17%	408	43.38%	10.05%	12.99%	20.34%	13.24%
	Use sulfur during the drying process	410	88.78%	410	89.02%	409	17.36%	2.93%	12.71%	25.18%	41.81%
Canning vegetables and fruits	Place more vegetables or fruits in the jar	501	99.20%	501	99.20%	498	72.49%	13.86%	11.85%	1.41%	0.40%
	Use less water when canning	501	99.40%	501	99.20%	497	59.96%	26.76%	11.27%	1.81%	0.20%
	Use less sugar in order to obtain more natural juice	501	99.20%	501	99.20%	496	66.53%	23.59%	8.47%	1.21%	0.20%
	Properly sterilize the jars	501	99.00%	501	98.40%	497	72.23%	17.10%	3.42%	5.23%	2.01%

Backyard compost production	Compost should include a wide variety of leaves from your land and kitchen waste	501	98.80%	501	98.60%	497	81.69%	11.47%	3.82%	1.21%	1.81%
	Compost should be watered occasionally and covered with a plastic tarp to assist in decomposition	501	98.00%	501	97.41%	497	57.14%	29.58%	6.64%	3.62%	3.02%
	Composting area should be away from the living spaces	501	98.00%	501	97.21%	496	80.44%	12.90%	2.22%	1.21%	3.23%

**Table 1: Recall rate, comprehension rate, and frequency of practice use for each TAWA training topic**

## Adoption Rates

- Care of Dairy Cattle: **99.46%**
- Drying of Fruits and Vegetables: **97.53%**
- Canning of Fruits and Vegetables: **99.74%**
- Backyard Compost Production: **97.33%**

In terms of adoption rates, of the 185 women who owned dairy cows and were not following at least one of the dairy cow practices before TAWA, 184 of those women were following at least one of the dairy cow practices after TAWA (99.46 percent). In addition, 97.53 percent of the 324 women who grew fruits and vegetables and were not following at least one of the drying practices before TAWA were following at least one of the drying practices after TAWA. Similarly, of the 392 women who grew apricots and were not following at least one of the canning practices before TAWA, 391 of those women were following at least one of the canning practices after TAWA (99.74 percent). Lastly, 97.33 percent of the 324 women who grew fruits and vegetables and were not following at least one of the backyard compost practices before TAWA were following at least one of the backyard compost practices after TAWA. These high, sustained adoption rates reveal that most of the surveyed women found the practices to be beneficial and worth applying.

Lastly, for each TAWA training topic category, threefold to fourfold increases were seen in the percentage of survey respondents who were following at least one of the specific practices (see the chart on the right). This is an impressive change in practice following TAWA's training package. The next section details some best practices used during TAWA project implementation that we hypothesize are likely contributors to these high, sustained adoption rates.

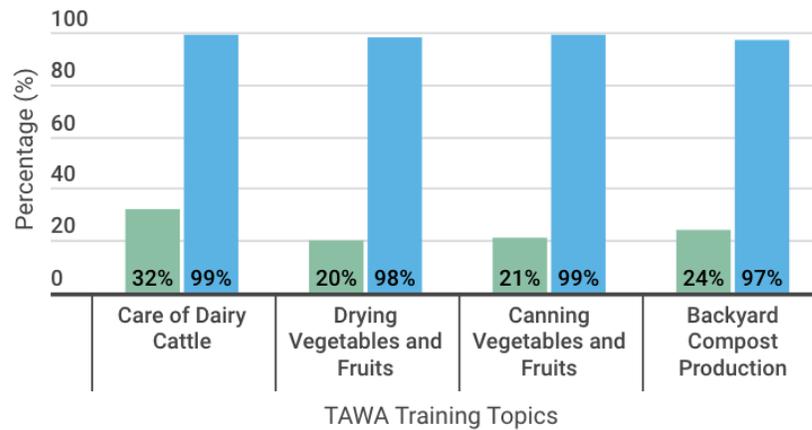
## Analysis of the Data

The high recall and comprehension rates help explain why behavior change occurred and was able to be sustained; when trainees fully understand and recall information, they are more likely to apply that information in their everyday life. The adoption rates, as presented on page 3, are useful in quantifying the extent to which this recall and comprehension led to sustained behavioral change.

For this data to be useful, it is important to understand which best practices and actions during TAWA likely led to these positive results. While this list is not comprehensive, it provides some insight into how the TAWA team designed and implemented training strategically to set the women farmers up for success:

- Training topics were identified jointly between smallholder farmers, TAWA leadership, the HEA team, technical specialists, and village local leaders.

## Practice Use Before and After TAWA



● BEFORE TAWA ● AFTER TAWA

- The practices that were taught helped the women to provide enough food for their families during the lean winter months, when nutritional food is less available and there is less access to fresh fruits and vegetables.
- The barriers to entry for these improved practices were low in terms of time, resources, and cost, which ensured that the women were fully capable of adopting these productivity enhancement activities.
- The TAWA team prioritized cultural sensitivity. For example, training sessions for women were taught exclusively by female HEAs, which ensured that the women felt comfortable and were allowed to attend training to learn the material.
- Training sessions were taught in the community, ideally at the house of one of the women's group members. Culturally, this made it easier for women from more conservative households to attend.
- The practices had the added potential to bring tangible, economic returns from the sale of surplus products.
- A variety of training delivery formats were used, including illustrated booklets, interactive demonstrations, and electronic tablets, which made the training easy to learn from and apply.

- The training groups were small, which made it possible for the HEAs to spend one-on-one time with the women's group members.
- Training content was tailored to the season so that the women could apply what they had learned immediately.
- Women were allowed to bring their children to the training sessions, which reduced the need for child care during the sessions and had an additional benefit in that the children could sample fruit and vegetable dishes to explore their tastes. When the children enjoyed the new dishes and supported their mothers in the activities, practices and skills were also more likely to be adopted by the household.

Several of these best practices were modifications that the TAWA team made to the initial training approach, based on feedback from participants. TAWA was always learning and adjusting to ensure that the women understood and retained the subject matter. This constant use of CLA is likely a strong contributor to such high recall, comprehension, and adoption rates.



**Malika Almatova displays her dried apricots after being trained on modern harvesting and drying techniques.**

## Constraints and Validation

Some potential limitations and sources of bias should be considered in conjunction with these survey results. Using HEAs as the enumerators for the survey may have increased the likelihood of

social desirability bias (response bias), since the respondents may have answered the questions in the way that they thought the HEAs would want to hear. While the presence of this bias is not ideal, it was unavoidable, given resource constraints for carrying out the survey. Additionally, recall bias may have affected the data collection, as the respondents were asked about their behaviors and practices over the prior two years. Lastly, the survey did not include a control group, so the ability to conduct regression analysis to elucidate causality quantitatively between the TAWA trainings and the subsequent behavior change was limited.

Although the strength of the conclusions from the data may have been affected by these sources of bias, qualitative feedback from participants and TAWA performance on measurement indicators both point to the same conclusions. By triangulating the conclusions from this data with both of those data sources, the strength of these conclusions can be evaluated more holistically. For example, as of September 2019, TAWA exceeded all life of project performance indicators significantly. The number of households that have benefitted directly from TAWA reached 140,442, which far surpassed the project target of 50,000 households. The number of female farmers who have applied improved technologies or management practices after TAWA assistance is reported at 83,750, compared to a 35,000 target. Further, the value of smallholder incremental sales generated with TAWA assistance reached \$3,807,228 of a targeted \$3 million life of project target. By triangulating these measurement indicators with the results of this survey analysis, it can be concluded that these survey results align with what would be expected based on TAWA's overall successful performance. Therefore, the high adoption rates that were seen in the data were likely representative of the real adoption rates.

Best practices such as those below are good to follow as development implementers when collecting and analyzing data to validate results:

- Triangulate the self-reported data with observations of behavior
- Conduct a survey with a control group
- Share and discuss results with survey participants

## Data-Driven Lessons Learned

TAWA's user-driven, evidence-based decision-making process for designing training facilitated key adjustments within the project. The many lessons learned through data collection and analysis can inform development practitioners' approaches to behavioral change programming:

- By conducting quantitative surveys frequently and providing participants with opportunities to provide qualitative feedback throughout project implementation, training can be tailored to the needs of trainees, and modifications can be made throughout implementation.
- Minimizing barriers to accessing technology is important. The data revealed that practices requiring fewer supplies and shorter time commitments tended to have higher uptake rates.
- Focusing project activities on one province made it possible to tailor programming to the local context and allowed for greater penetration and greater depth, which likely contributed to the positive results that were seen above.
- The data allows TAWA staff to continue focusing resources on approaches that work and diverting resources away from tasks or activities that do not produce results.

## Conclusion – Evidence-based Interventions

**Engage early and often to better understand participants.** For a behavior change program to be successful, it needs to be tailored to the population group in question by engaging them actively and frequently and by addressing their unique needs and barriers to adoption. By developing a learning cycle that revolved around the target beneficiaries, TAWA's focus was always on the individual. This resulted in a deep understanding of their needs, wants, and capabilities. The CLA approach ensured that TAWA never lost sight of the true goal of the project, which was to increase household incomes and improve nutritional outcomes by engaging rural women directly to boost agricultural productivity in southwestern Tajikistan.

**Embed data collection into learning cycles.** True transformation requires sustained behavior change. TAWA's efforts to embed

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measuring the adoption of practices into the project enabled the team to identify whether the training was accomplishing their goals and to pinpoint practices where more support may be needed.

**Act upon what the data reveals.** When projects obtain early or mid-project data on actual behavior adoption rates, it opens the door for crucial learning regardless of survey findings. If results are poor, then the implementation team can focus on identifying what the barriers are to this behavior change and what adjustments need to be made within the program to improve results. When results are quite positive, as in TAWA's case, the team can investigate which factors contributed to this success and document the approach for replication and sharing.

## CONTACT

Founded in 1975, Chemonics is an international development consulting firm. In more than 70 countries around the globe, our network of approximately 5,000 specialists shares a simple belief: that the challenges we face today are best solved through the right partnerships – sharing knowledge, expertise, and experience to deliver results. Where Chemonics works, development works. Follow us on [Facebook](#) and [Twitter](#) or visit us at [www.chemonics.com](http://www.chemonics.com).

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