

# Demonstration with Lecture and Guided Tour: Effective Technology Transfer Methods on Mango Postharvest Technologies

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**Abstract:** Seventy (70) mango grower-respondents were exposed to trainings on mango postharvest technologies jointly conducted by the Southern Davao Development Corporation (SODACO) and the Department of Agriculture (DA) in San Isidro, Davao Oriental. Five technology transfer methods were used namely lecture, demonstration, guided tours, seminar and workshop. More than 50% of the respondents had either moderate or high level knowledge of postharvest post-harvest technologies on mango. The Z and t-test analyses showed those who belonged to the 36-45 age bracket had higher knowledge level on the technologies over those who belonged to the 26-35 age bracket. However, the knowledge levels between the age brackets 46-55 and 5-65 did not vary. Other socio-demographic characteristics included in the analysis like tribe, occupation, marital status, sex and religion did not affect the respondents' knowledge of postharvest technologies. Demonstration was the most effective method followed by lecture and guided tour. The respondents claimed that these methods were the most effective since they gave real first-hand experience. Problems encountered during the training include the lack of patience in sharing skill by the trainers. Lack of management skills of the facilitators, poorly ventilated, and dim-lighted training venues were also identified as some barriers in effective learning. .

**Keywords:** Knowledge level, training problems, training methodologies, mango post-harvest technologies.

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## I. INTRODUCTION

Since the Philippines had participated in an open economy characterized by open trade system, there is a need to improve the products of the farmers for global competitiveness that hoped to effect an improved quality of life for Filipinos. Thus, intensive endeavor should be done to increase farm income through a more market-driven extension strategy that will enable farmers to intensify and diversify their farming systems based on market demand ( Swanson, 2010)

Consequently, the province of Davao Oriental supported the thrust of the Department of Agriculture in developing the mango industry under the Key Commercial Crops Development Program (KCCDP). Under such plan, capability building was one of the activities provided to the mango growers in identified mango crop productions areas. This was done through training the package of technology transfer on mango production and post-harvest technologies through the Department of Agriculture (DA) and the Southern Davao Development Corporation (SODACO), a private company.

The series of trainings on mango postharvest technologies lasted for 2 years. The cooperators were mango growers who were willing to develop their agricultural lands into mango farms.

Training is one of the most popular strategies in the implementation of an extension program. Coordinating with other agencies and action research are also important strategies (Librero, 1986). It is a persuasive activity through which human resources can be developed to meet the dynamic needs of the society and at the macro level; training is concerned with

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individual development through cognitive and behavioral changes (Buendia, 1989). Thus this is a shift from the traditional methods of education which involve the mere transfer of knowledge of an expert trainer to the learner-trainee (Jacobsen, 1985). However, the effectiveness of training and the amount of knowledge that participants can acquire greatly depends on the methodologies employed, hence this study.

### II. OBJECTIVES OF THE STUDY

This study was conducted to find out the effectiveness of training methodologies on mango post-harvest technologies among mango growers in San Isidro, Davao Oriental. Specifically it aimed to:

1. Determine the socio-demographic and economic characteristics of the respondents;
2. Find out the most effective training methodologies based on the perception of the respondents;
3. Ascertain their experienced problems during training as to trainer, venue, and facilitators;
4. Establish the knowledge gained on mango post-harvest technologies after their exposure to training; and
5. Correlate some socio-demographic characteristics of the respondents and their knowledge levels on mango postharvest technologies.

### III. METHODS AND PROCEDURES

This study was conducted in the municipality of San Isidro, Davao Oriental where SODACO and DA extended trainings on postharvest technologies among mango growers. This evaluation was conducted after the exposure of the respondents to the different training methodologies.

One shot survey design was employed and complete enumeration of all mango growers who had attended the training on postharvest technologies served as respondents.

A questionnaire was used in gathering the data. It was divided into four parts, namely: the socio-demographic characteristics of the respondents and their perception towards the methodologies; the training methodologies availed by the respondents; the problems encountered by the respondents during the training; and knowledge level of the respondents on postharvest management technologies for mango.

Descriptive data were analyzed through simple frequencies, percentages and averages. In order to establish the difference between some of the socio-demographic characteristics of the respondents and their knowledge level, the Z and t tests were employed.

### VI. RESULTS AND DISCUSSION

**The respondents:** Majority (52.86%) of the respondents were middle-age (36-55 years old) with an average age of 48 years. Most (81.43%) of the respondents were males. Most mango growers either have received some primary or secondary education with a minority (18.57) who either have started or finished a college degree. Catholic was more prevalent religion and majority (85.71%) claimed belonging to the Visayan tribe. Only a few were Mandayans (14.28%) Most of them (54.28%) planted less than one hectare of their land to mango and had been mango growers for the last 3 to 4 year. Moreover, not all mango growers were full-time farmers since 10% were businessmen while 9% were employees. Mango growing then was regarded by some respondents as additional source of income. The respondents had average monthly income of P2,528.57. The income level shows that the mango grower-respondents had income below the poverty line which is PhP 7,500.00 for a family member of 6. The low income level can be attributed to the fact that their average area devoted to mango was less than 1 hectare plus other factors like price situations in the market and most importantly is the relatively absence of sources of extension services for small-scale farm households (Swatson, 2010).

**Training methods:** There were five methods of training which the respondents were exposed to. Table 1 shows that lecture was ranked as the most attended method (28.25%). Other methods used were demonstration (20.90%), guided tour (19.21%), workshop (16.95%) and seminar (14.69%), respectively. Out of these identified methods, the respondents perceived that the most effective methods were demonstration (39.13%), lecture (32.61%) and guided tour (28.26%).

They reasoned out that these first three methods were the most effective since these gave first-hand experience (52), was an organized and systematic way of learning (34.72%), and it clarified difficult points (29.17%). This finding agrees with Wilson and Gallup (1956) that demonstration is preferred among teaching methods in extension education. Moreover, this method has its greatest influence in those subject matter fields much depends upon acquiring specific operating skills. Meanwhile, field trip has variety of forms that can satisfy different needs of the students and can improve deep, active learning. Along with the engagement with concepts that is required by these experiences, the student bonding that occurs on field trips enhances the learning experience and creates a learning community as students continue onward in a discipline. Knowing the students in-depth is an opportunity of teachers during field trip. The instructors can understand how the students see the world differently than the apart from their point of view. This insight facilitates for better communication between students and them as far as their subject matter is concerned. Hence, he believes that using field experiences as an overall part of integrative experiences provides the best education for the students Knapp, et al. (2006).

**Table 1: Training methodologies to which the respondents were exposed to, their perceived most effective training methods and reasons.**

Method	Frequency	Percentage
Lecture	50	28.25
Demonstration	37	20.90
Guided Tour	34	19.21
Workshop	30	16.95
Seminar	26	14.69
<b>Total</b>	<b>177*</b>	<b>100</b>
<b>Most effective method</b>		
Demonstration	54	39.13
Lecture	45	2.61
Guide tours	39	28.26
<b>Total</b>	<b>138*</b>	<b>100</b>
<b>Reasons for affectivity</b>		
It gives real first hand experience	52	36.11
It presents an organized and systematic way of learning	50	34.72
It clarifies difficult points	42	29.17
<b>Total</b>	<b>144*</b>	<b>100</b>

**Training problems:** Some problems are usually encountered during trainings. These problems are generally classified as trainer, venue and facilitator problems. On the trainer problem, respondents claimed that some trainers were not patient in sharing their skills. The venues were not well ventilated and lighted. Hence, the venues were not conducive for learning skills. As for the facilitators, many (48.96%) claimed that some facilitators lacked the skills in managing trainings; while others perceived that the facilitators were not ready to supplement what have been missed by the trainers (44.79%). With this finding, it is timely that extension curriculum designers should review their existing programs to underscore some important factors like knowledge and skills inputs to the participants, better attitudes, new facilities and equipment (Shao, 2005). Moreover, continuing training of extension educators is prerequisite for sustainable extension delivery. Technologies for diffusion must be available to Extension Managers and Supervisors and should as much as possible be user-driven for better adaptability of the clientele (Adesope, et al, 2007).

Some respondents answered that some facilitators were not supportive; and that the materials for training were not prepared and available (Table 2). Thus it is most applicable in this scenario the recommendations of Singh (2009) that aside that extension educators should help both the economically productive sector that has access to technology and those without resources that want to acquire and use new technology, they must be knowledgeable and trusted consultants. On the psychological parlance, it holds through the writing of Wilson and Gallup (1954) that participants of extension activities desire for affection or response hence extension educators need to be social-minded. The bottom line is that extension educators need to plan well their extension methods to be effective.

Table 2: Respondents' perceived training problems

Trainer problem	Frequency	Percentage
Trainer was not patient in sharing their skills	64	54.24
Trainer cannot explain the procedure very well	48	40.68
Trainer has no expertise of the skill he is handling	4	3.39
Trainer is not approachable	1	0.85
Over-all performance of the trainer is not efficient	1	0.85
Voice of the trainer cannot be heard	0	0
<b>Total</b>	<b>118*</b>	<b>100</b>
Venue problem		
Venue was not well ventilated and lighted	51	36.69
Venue was not conducive for learning the skill	46	33.09
Area was not spacious	23	16.55
Venue was not the best place for training	19	13.67
<b>Total</b>	<b>139*</b>	<b>100</b>
Facilitator problem		
Conduct of the training was not well manage	47	48.96
Facilitator was not ready to supplement what have been missed by the trainers	43	44.79
Facilitator was not supportive	4	4.17
All of the materials needed were not prepared	2	2.08
<b>Total</b>	<b>96*</b>	<b>100</b>

Multiple responses

**Knowledge level:** The knowledge levels of the respondents were classified into five categories which corresponded to their scores obtained from the test about postharvest technologies (Table 3). These categories were the following very low (1-2), low (3-4), moderate (5-6), high (7-8) and very high (9-10).

Out of 70 respondents, a considerable number (44.29%) have moderate knowledge on mango postharvest technologies. This number did not however reach the majority. Twenty-six (37.14%) respondents had a high level of knowledge, while 2.86% had a very low level of knowledge. Only six percent showed very high knowledge level. The mean knowledge of the respondents was 6.07 or moderate level of knowledge. As described above, the trainers and their course plan were not so tailored to the nature and conditions of the learners thus resulted that many got only moderate knowledge on the technology transferred.

Table 3: The respondents' level of knowledge on mango postharvest technologies

Category	Frequency	Percentage
Very low (1-2)	2	2.86
Low (3-4)	7	10
Moderate (5-6)	31	44.29
High (7-8)	26	37.14
Very High (9-10)	4	5.71
<b>Total</b>	<b>70</b>	<b>100</b>

Mean knowledge = 6.07

The t test results showed that the knowledge level of the respondents under the age brackets 26-35 and 36-45 were significantly different from each other (Table 4). This implies that the younger adult respondents had lower knowledge level on postharvest management technologies compared to the slightly older respondents (i.e., 36 to 45 years old). It was so since younger individuals had less experience in mango farming than the older ones. This finding do not agree the

assertion of Adesope (2012) that farming experience is negatively correlated with adoption of organic farming practices. In his finding, that there exist an inverse relationship between farmers experience and adoption which means that those with less farming experience have higher adoption level. There was no difference however with the knowledge levels of slightly older respondents (i.e, 46-55 and 56-65 years old).

On the other hand, results of the Z test showed that the knowledge level between male and female mango farmer-respondents did not vary. There were also no significant difference on the knowledge level between a Visayan and a non-Visayan; between farmers and non-farmers, between the married and singles, and between Catholic and non-Catholic respondents (Table 4).

**Table 4: Some socio-demographic characteristics of the respondents and their**

Knowledge levels on mango postharvest technologies, using t and Z tests.

Variable	Mean Score		Computed		Significance
	X <sub>1</sub>	X <sub>2</sub>	t	Z	
• Age 26-35 vs. 36-45	5.07	6.53	-2.599		*
46-55 vs. 56-65	6.23	6.42	-0.560		ns
• Sex Female vs. Male	5.77	6.12		-0.754	ns
• Tribe Visayan vs. non-Visayan	5.08	5.62		0.965	ns
• Occupation Farmers vs. non-Farmers	5.96	5.54		0.662	ns
• Religion Catholic vs. non-Catholic	6.29	5.12		1.550	ns

= Significant; ns = not significant

## V. CONCLUSIONS AND RECOMMENDATIONS

Results of the study showed that most of the mango growers-respondents belonged to the 36-55 age bracket. Majority of the respondents were male and married. Majority were Roman Catholics, with most having received either primary or secondary schooling. Farming was the main occupation of the respondents. Most have less than one (1) hectare planted to mango and have grown the crop for the last 3 to 4 years.

The most frequently used methods during the trainings were the lecture demonstration, guided tour, workshop and the seminar. Respondents determined that the demonstration method was the most effective, followed by the lecture and the guided tour, respectively.

These three methods were effective since it gave them real first-hand experience, it presented an organized and systematic way of learning and it clarified difficult points.

On the other hand, most of the respondents perceived that one of their problems was the trainers. They pointed out that some trainers were not patient in sharing their skills. They added that the venues were not well ventilated and lighted. Some facilitators also did not know how to manage the training.

The knowledge level of the respondents on postharvest technologies showed that more than 50% of the respondents either belonged to moderate or high level of knowledge. They had an average knowledge level of 6.07 which fell under the moderate knowledge level.

The knowledge level between the 36-45 age brackets was higher than the knowledge level of those who belonged to the 26-35 age brackets. The knowledge level between 46-55 and 56-65 age brackets did not vary. The same was noted between the knowledge levels of farmers and non-farmers, male and female, Visayan and non-Visayan, Catholic and non-Catholic respondents.

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The most effective method of training used was the demonstration method. Lecture and guided tour ranked second and third, respectively.

These methods were effective since it gave real first-hand experience, it was an organized and systematic way of learning and it clarified difficult points. However, some problems encountered during the trainings included trainer, venue, and facilitator problems. It was pointed out that the trainers were not patient in sharing their skills. Venues were not well-ventilated nor well-lighted. They also revealed that some of the facilitators did not know how to manage the training.

The knowledge level of the respondents on mango postharvest technologies was moderate. Hence, based on these findings, this study recommends the following:

- Trainers should be patient in sharing their skills to their participants, with sufficient consideration on the highest education attained by the trainees in order to ensure that the trainees benefit from training.
- The venue should be conducive to learning.
- Facilitators should have enhanced skills in training management.
- Trainers in mango postharvest technologies and other techno-based topics should continue to use demonstration, lecture and guided tour methods.

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