Monitoring and Evaluation of Semilla Nueva's Food Security Program

Overall Context

Founded in 2010, Semilla Nueva (SN) has spent the last four years working with farming families in ten communities to develop locally-led education programs that increase the income, rebuild the soils, and improve the food security of Guatemala's rural poor. Our food security strategy involves training female community leaders, called *promotoras*, to plant new crops, such as chaya, quality-protein maize (QPM), and pigeon pea, and organize monthly food security workshops in their homes. Food security workshops provide a safe, women's-only place where they can creatively explore new recipes, exchange nutritional ideas, and practice leadership. This year, Semilla Nueva has made it a priority to gain feedback on the impact these food security workshops have made in communities, both through qualitative and quantitative analysis.

A crucial piece of this analysis will be a qualitative survey of a few families that are heavily involved in SN food security program. This survey will aim to collect and evaluate knowledge, access, and use of crops we promote. Questions will focus on the frequency of participation, opinions on the feasibility of incorporating new crops into daily diet, and barriers to the acceptance of new biofortified crops, among others. This will serve as an avenue for women to provide feedback on the development of food security programs. The Qualitative Survey will be done in conjunction with our agricultural programs' monitoring and evaluation, being carried out by the Monitoring and Evaluations Director through a Community Survey. This current proposal, thus, will focus on the more quantitative monitoring of the Food Security Program, with a focus on QPM.

We also seek to obtain a general picture of the current state of malnutrition of the communities in which we work and measure the quantitative change in malnutrition rates that is attributed to QPM consumption and involvement in SN programs. Our vision is a simple, annual monitoring and evaluation tool in which community children are being measured by *promotoras,* empowering women to tangibly understand malnutrition and watch as their actions lead to changes in growth rates in their community and homes.

Objectives of the Quantitative Monitoring of the Food Security Program

1. Observe change in communities' malnutrition rates that may provide meaningful data about the effectiveness of increased consumption of Quality Protein Maize, pigeon pea, and chaya.

2. Design a simple, structured monitoring and evaluation tool that can eventually be taken over by local communities, empowering women to measure their own community's progress in decreasing malnutrition.

Methodology

Summary

In order to measure the effectiveness of SN Food Security programs, we will measure annual change of malnutrition rates in families that are involved in our food security programs. As the program began only 2 years ago, a significant increase in consumption of SN-promoted crops has not been detected, and thus we will consider measurements taken in June and July of 2014 to be baseline data. We will follow up with members of our study group by measuring them annually to observe the change in malnutrition rates after extended involvement in our programs. We will also compare them with a control group of families living in the same communities but not involved with SN or promoted crops.

Treatment Group Data Collection

Our treatment group will consist of children less than 5 years of age from families that are considered to be involved in SN Food Security programs. Criteria for involvement includes:

- A family who will grow sufficient QPM for family consumption during the 2014-2015 growing year. ("Sufficient" QPM has been determined based on family size and through investigation of how much conventional maize families have consumed on average in the past year.)
- A household that contains at least 1 child less than 60 months of age at the time of measurement.
- In all 10 communities, we have compiled a list of about 150 participating families that meet these criteria.

Families will be informed of the dates in which we will be measuring children in their community, which will all fall within June and July of each year. We will meet at a centrally located house where mothers will be notified to bring their children for a brief survey and measurements. We will measure basic indicators of malnutrition for children in the household under 5, including height, weight and mid-upper arm circumference. These measurements will be collected by staff members or volunteers of Semilla Nueva, who will be accompanied by the aforementioned *promotoras*, or leading female members of the community's food security group. Since it is a main objective that this system can eventually be passed on and run by the communities themselves, it is crucial that these women leaders can take measurements themselves and view the change in their own community. Before measuring each community, *promotoras* will be briefed on the effects of malnutrition and the importance of the study, as well as trained to conduct measurements according to standard protocols. Information recorded will be the following:

- *Name of child*
- *Name of parents*
- *Owner of the household*
- *Main attendee of food security groups Birthdate of child*
- *Gender of child*
- *Brief survey about previous participation in SN Food Security groups*
- *Parents' height and age*
- *Height or length of child will be measured to the nearest cm. This should be measured repeatedly until two readings are measured that agree within 1 cm.*

- *Weight of child will be measured to the nearest 0.1 kg with a pediatric scale. This will be measured repeatedly until two readings are measured that agree within 0.1 kg.*
- *Mid-upper arm circumference will be measured with a standard flexible measuring tape. Measurements will be taken repeatedly to get two readings that agree within 0.1 cm.*

Control Group Data Collection

In addition to being compared with previous years, the aforementioned outcome variables will be compared with that of members of participating communities that have no association with neither SN Food Security groups nor its promoted crops.

Communities will be notified of the dates that we will be in their community through loudspeaker announcements, posted signs, and word of mouth. All families who have not yet been measured (in treatment group data collection) will be asked to participate by bringing their children for measurements and a brief survey. The survey, containing questions regarding exposure to the 3 promoted crops (chaya, pigeon pea, and QPM) and participation in SN Food Security programs, will determine eligibility for the control group. If a family is deemed eligible, measurements of both the child and mother will be recorded. Recorded information will again include:

- *Name of child*
- *Name of parents*
- *Owner of the household*
- *Main attendee of food security groups*
  Birthdate of child
- *Gender of child*
- *Brief survey about previous participation in SN Food Security groups*
  Parents' age
- *Mother's height*
- *Height or length of child*
- *Weight of child*
- *Mid-upper arm circumference*

We aim to measure at least 15 eligible children from each community, totaling about 150 children for the control group, which is roughly the same size as the treatment group. Although the specific families in the treatment group will continue to be measured annually, the control group may or may not consist of the same families each year. This is because, instead of looking for an annual change in the control group, we just seek to gain a representative overview of the malnutrition rates in families living in the communities, but not involved in SN.

Data Analysis

Height, weight, and mid-upper arm circumference will be compared to WHO child growth standards to determine several outcome variables:

1. Prevalence of underweight children, which is a composite indicator to reflect both acute and chronic malnutrition. This is defined as a weight-for-height z-score (WHZ) less than -2 standard deviations below WHO child growth standards.

2. Prevalence of wasting, which is an indicator of acute undernutrition or the result of recent food deprivation or illness. This is defined as a weight-for-age z-score (WAZ) that is less than -2 and will likely be one of the first indicators to demonstrate improved health in the kids measured.

3. Prevalence of stunting, which is an indicator of chronic malnutrition. This is defined as a height-for-age z-score (HAZ) that is less than -2.

4. Prevalence of severely acute malnutrition (SAM), or children whose high risk of mortality is caused by malnutrition, in families involved in our SAN programs. A child with severely acute malnutrition has at least one of the following characteristics:

   Weight-for-height z-score (WHZ) less than -3.
   Mid-upper arm circumference less than 115 mm.

In our treatment group, all 4 of these outcome variables will be analyzed in both the overall group of children under 5 and in a subsample of children between 6 and 24 months of age, as this is a crucial period in which signs of malnutrition typically manifest and recovery from slowed growth rates caused by malnutrition can occur. We will repeat the measurement process each year in the same families involved in SN and observe annual changes in these outcome variables to gain an idea of the change in malnutrition rates. In addition to observing annual change, the 4 outcome variables will also be compared with that of the control group to observe both baseline discrepancies between the two groups and the change in malnutrition rates over time in each group.