



USAID
FROM THE AMERICAN PEOPLE



Volunteer Name: Pablo Torres-Aguilar

Country: Kenya

Country project: Horticulture

Host: Sweet and Dry

Venue: Chuka

Audience: Food processor (milling)

Number of people : 5

Date: Dec 02, 2014 to Dec 15, 2014



1. Assignment Objectives as in SOW

- 1. Product formulation and development**
- 2. Cost determination**
- 3. Product branding and packaging**
- 4. Production and storage**

2. Achievement of the assignment objectives

1. Development and testing of composite flours for children and pregnant women regarding nutritional needs (RDAs).

6 formulation children

3 pregnant women

| Ingredient | Weight (g) | Solids (g) | Moisture (g) | Carb (g) | Protein (g) | Fat (g) | Energy (Kcal) | Ca (mg) | Fe (mg) | Zn (mg) | Thiamin (mg) | Riboflavin (mg) | Niacin (mg) | Vit A (ug) |
|---------------|------------|------------|--------------|----------|-------------|---------|---------------|---------|-----------|----------|--------------|-----------------|-------------|------------|
| Pearl Millet | 65 | | | 43.55 | 7.67 | 3.12 | 232.96 | 27.3 | 0 | | 0.247 | 0.1365 | 1.82 | |
| Finger Millet | 10 | | | 7.26 | 0.77 | 0.15 | 33.47 | 35 | 0.39 | | 0 | 0.019 | 0.11 | |
| Squash | 4 | | | 3.64568 | 0.031186 | 0.0032 | 14.7362656 | 12.9978 | 0.1895512 | 0.040618 | 0.02707872 | 0.0054156 | 0.3248 | 144 |
| Moringa | 4 | | | 1.708 | 1.9412 | 0.04 | 14.9568 | 31.904 | 0.6896 | 0 | 0.0443184 | 0.113812 | 0.382828 | 65.184 |
| Amaranth | 8 | | | 5.22 | 1.0848 | 0.576 | 30.4032 | 12.72 | 0.6088 | 0.2296 | 0.00928 | 0.016 | 0.07384 | 0 |
| Mango | 9 | | | 8.2134 | 0.044964 | 0.0072 | 33.098256 | 5.5062 | 0.0801 | 0.045 | 0.014013 | 0.019017 | 0.3348 | 27.0324 |
| Total | 100 | 0 | 0 | 69.59708 | 11.54215 | 3.8964 | 359.6245216 | 125.428 | 1.9580512 | 0.315218 | 0.34169012 | 0.3097446 | 3.046268 | 236.2164 |

2. Achievement of the assignment objectives

2. Cost matrix tool to evaluate the direct and indirect cost of production and distribution.

Inclusion of raw materials, packaging, labor, transportation, inputs, machinery depreciation

Profit determination

| TOTAL AND INDIVIDUAL PRICE CALCULATION | | | | | | | | | |
|---|-------------|--------------|----------------|--|--|--|--|--|--|
| READ THE INSTRUCTIONS AND FOLLOW EACH STEP, ONE AT A TIME. DO NOT CHANGE THE REST OF THE CELLS | | | | | | | | | |
| SECTION 1 - MATERIALS | | | | | | | | | |
| STEP 1: INSERT THE QUANTITY IN KG IN THE RED BOX WITH WHITE LETTERS (Total Kg), DO IT FOR ONE FORMULATION AT A TIME | | | | | | | | | |
| STEP 2: COPY THE VALUES IN THE GREY CELL (Weight Kg) FOR EACH INDIVIDUAL INGREDIENT INTO THE GREEN CELLS | | | | | | | | | |
| STEP 3: WRITE THE PRICE FOR EACH INGREDIENT INTO THE YELLOW CELL (Cost Kg Sh) | | | | | | | | | |
| Formula 6 | | | | | | | | | |
| Ingredient | Weight (Kg) | Cost kg (Sh) | Unit Cost (Sh) | | | | | | |
| Pearl Millet | 21.627 | 65 | 1405.755 | | | | | | |
| Finger Millet | 5.223 | 90 | 470.07 | | | | | | |
| Sorghum | | | 0 | | | | | | |
| Squash | 1.683 | 200 | 336.6 | | | | | | |
| Squash seeds | | | 0 | | | | | | |
| Arrow root | | | 0 | | | | | | |
| Green banana | 1.458 | 52 | 75.816 | | | | | | |
| Moringa | | | 0 | | | | | | |
| Amaranth | | | 0 | | | | | | |
| Mango | | | 0 | | | | | | |
| Sweet potatoe | | | 0 | | | | | | |
| Total ingredient | 29.991 | 407 | 2288.241 | | | | | | |
| Formula 6 | | | | | | | | | |
| Total Kg | | | | | | | | | |
| Ingredient | % | Weight (Kg) | | | | | | | |
| Pearl Millet | 65 | 0 | | | | | | | |
| Finger Millet | 10 | 0 | | | | | | | |
| Squash | 4 | 0 | | | | | | | |
| Moringa | 4 | 0 | | | | | | | |
| Amaranth | 8 | 0 | | | | | | | |
| Mango | 9 | 0 | | | | | | | |
| Total | 100 | 0 | | | | | | | |
| Fomulation 2 | | | | | | | | | |
| Total Kg | | | | | | | | | |
| Ingredient | Weight (g) | Weight (Kg) | | | | | | | |
| Pearl Millet | 70 | 0 | | | | | | | |
| Finger Millet | 15 | 0 | | | | | | | |
| Squash | 3 | 0 | | | | | | | |
| Moringa | 2 | 0 | | | | | | | |
| Amaranth | 7 | 0 | | | | | | | |
| Mango | 3 | 0 | | | | | | | |
| Total | 100 | 0 | | | | | | | |

2. Achievement of the assignment objectives

3. Suggestions regarding potential markets in short and midterm

Bulk sells

Nairobi/Meru supermarkets

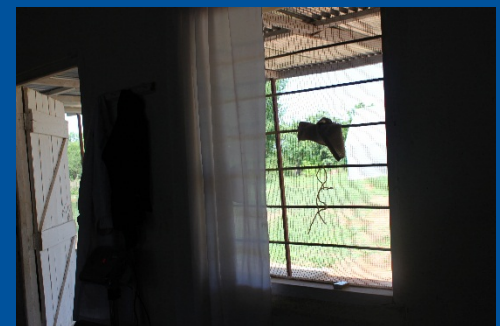
Local retail stores

NGOs working with nutritional issues

Hospitals

2. Achievement of the assignment objectives

4. Technical advice on manufacturing and storage of grain, fruit and vegetable powders and composite flours.



3. Recommendations to the host with regards to the assignment

FABULOUS WORK

however

- Address challenges regarding food safety/sanitation
- Systematic expansion of manufacturing operations (one step at a time)
- Testing suggested composite flours with final costumers
- Careful selection and expansion of product lines

4. Anticipated Impact

- Improved nutritional outcomes of target group (children and pregnant women)
- High potential to grow national and regional (Nutritional solutions at national and regional level)
- A model entrepreneurs related to food sector (more entrepreneurs working on the area)

5. Recommended future volunteer Assistance

- Engineering: volunteer specialized in green/renewable energy for industrial production facilities.
- Business: market regulations

Action plan for host recommendations

| Recommendation | Specific Action | Responsible person | By when |
|--|---|--------------------|---------|
| 1. Implement changes for a food grade facility | Protection from environment (seal windows) Rubber boots from employees | | |
| 2. Adequate storage. | Plastic bins for raw materials and final product (food grade) | | |
| 3. Sanitization | Hand washing station out of shop Sanitizer for shop and plant | | |
| 4. Minimize physical hazards, chemical and biological hazards. | Cleaning chemicals outside food grade facility Rodent traps Insect traps Cover lamps | | |
| 5. | | | |

7. How can CRS improve future volunteer experience

- Great work by building human capital in the region
 - Facilitate information flow between US and Kenya prior arrival
 - Narrow the scope of the technical assignment based on the volunteer actual assignment days
 - Projector
 - Follow up session with SnD
 - Technical training (excel workshops)

Thank You!