 

**Farmer to Farmer East Africa**

**Volunteer Assignment Scope of Work**

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| **Assignment Summary** |
| Country | Tanzania |
| **Assignment Code**  | **TZ106 SOW** |
| Country Project | Tanzania F2F Horticulture project |
| Host Organization | Natural Extracts Industries Ltd (NEI) |
| Assignment Title | NEI Training on extraction and distillation techniques, food flavor development, analytical methodologies and quality control processes  |
| Assignment objective | Support NEI in product development in order to expand its range of food flavor products from tropical crops found in Tanzania. |
| Desired skills | A qualified and experienced expert in food technology, food science or other related field; focus on flavors is necessary  |
| Assignment preferred dates | Any time between September 2017 to May 2018 |

1. **BACKGROUND**

The Farmer-to-Farmer (F2F) East Africa program is a program that uses short-term US volunteer expertise to assist small holder farmers and small scale processors in East Africa to improve their business practices through volunteer assignments conducted with host organizations. The goal of the Farmer-to-Farmer (F2F) horticulture project is to increase incomes and improve nutritional status of Tanzanian smallholder farmers through; smallholder farmers increased productivity of horticultural crops, improved access to and utilization of markets and credit and preservation and enhanced natural resources upon which target communities depend.

In Tanzania, horticulture makes a significant contribution to food security, nutrition improvements and economic growth. Horticulture is mainly practiced by female smallholder farmers as well as a limited number of large scale operators. Commercial horticulture is endowed with local and foreign investors, particularly in floriculture and export vegetables, and has production and market growth potential. Tanzania’s favorable socio-political environment provides an opportunity for horticulture sector to thrive.

Since the horticulture sector makes a significant contribution to food security, nutrition and economic growth, development of the sector offers the opportunity to increase incomes through meeting demand in domestic, regional and international markets, while simultaneously improving household nutrition through dietary diversity.

The key challenges that the horticulture industry faces in Tanzania include; low productivity of horticultural crops, limited processing of horticultural products and poor access to markets. Some key opportunities that favor the growth of the industry and thereby success of the F2F project in Tanzania include the multiple players in horticultural value chains working at various levels to include the USAID Feed the Future Tanzania Agricultural Productivity Program (TAPP) and Tanzania Horticultural Association (TAHA) programs. Through these structures, specific interventions will allow volunteers to reach out to smallholder farmer groups, small and medium companies.

Natural Extracts Industries Ltd (NEI), a social enterprise company pioneering the sustainable extraction industry in Tanzania, starting with vanilla and other flavors. The company works in all areas from cultivation, to post-harvest processing, to value-add manufacturing and to international sales and marketing. The supply chain currently integrates over 1200 farmers from Kilimanjaro, Morogoro and Arusha regions, and through this sourcing model NEI aims to deliver a longer term socioeconomic impact of ~$180 in incremental annual income per smallholder household, on average. Currently, products include natural flavors, such as: (i) liquid extracts from vanilla, orange and cacao; and (ii) solid flavors like gourmet-grade bourbon vanilla pods, cacao powder and cacao nibs. The company is embarking on a product development effort to expand its range of food flavors, particularly from tropical crops found in Tanzania.

The CRS Farmer-to-Farmer program has greatly assisted NEI in overcoming product development challenges that NEI has previously faced with vanilla and citrus products manufacturing. Support has included upskilling our internal flavor scientist on staff, making use of existing and new machinery/equipment for improved quality; and co-developing standard operation procedures (SOPs) and quality control methods for these products.

For example, as part of the CRS F2F program, Ian Ronningen, a flavor scientist from America, consulted with NEI for several weeks in 2016. He supported NEI on improving new products (deterpenated orange, improved cacao extract, improved vanilla extract), with very positive results. He also provided guidance on potential new equipment for these improvements. As NEI only had the right equipment for the improved vanilla extraction process, the standard operating procedures (SOPs) for the other products were not developed during his time with us. However, following the knowledge gained during his visit, NEI’s internal food scientist was able to develop a low-cost, highly effective deterpenation process for orange extract, which has had excellent results and has now been commercialized.

1. **ISSUE DESCRIPTION**

NEI is a pioneer in the manufacture of all-natural flavors in Tanzania and to its credit its quality has been recognized both in the regional and international markets and it continues to explore ways to improve the products and develop new flavors. Currently the gourmet beans processed are grown exclusively by smallholder farmers, giving a unique taste due to the climatic and soil conditions in each area. The curing takes place at processing centers led by skilled farmers who have been trained in the traditional bourbon method by NEI.

A new product range of cocoa solids is now in development, for which NEI seeks expert support. NEI has little experience in chocolate flavor production, particularly as the end-to-end process from cacao bean to cocoa powder/butter can generate multiple end products, such as cacao nibs (highly in demand from the regional market) and baking chocolate (from cocoa liquor). NEI has been doing laboratory-scale testing for roasting, winnowing/peeling, and crushing/grinding to generate high quality cacao nibs, with sufficient success to pilot this product in the market. NEI now seeks to scale this to a commercial level and is ordering the following equipment from China: winnower, roaster, peeler/de-husker, mill (colloid type) and concher. Following successful installation, it would plan to order a pressing machine (to separate solids and butter), a pulveriser (for the powder) and a filtration machine (for the butter).

In this new scope of work, NEI is seeking expert technical assistance for developing SOPs related to internal production of cocoa solid products, such as cacao nibs, cocoa liquor (baking chocolate) and cacao powder; reviewing NEI’s already-selected equipment for processing cocoa beans; and developing the quality management and testing procedures with our in-house Quality Assurance Lead and Production Officer.

1. **OBJECTIVE OF THE ASSIGNMENT**

The main objective of this assignment is to build capacity of NEI in product development in order to expand its range of food flavor products from tropical crops found in Tanzania. Specifically, it is expected that the volunteer will do the following:

* Advise the management team on new equipment and technology necessary for the new products such as cacao nibs, cocoa liquor (baking chocolate) and cocoa powder;
* Develop the quality control methods for the products (and their raw materials), namely for cacao nibs, cocoa liquor (baking chocolate) and cocoa powder;
* Train NEI’s in-house food scientist and production officer in the production techniques for these products.

**Host contribution:** NEI will mobilize the food technology staff and management to the trainings to be conducted by the CRS F2F volunteer. The team will be available for the training in addition to working closely with the volunteer, during the demonstration periods. The host will also provide translation services during the training and other related training costs as appropriate.

In addition, the host will print documents required on site during the training and provide any other required training materials like flip charts, markers and masking tapes.

**D: ANTICIPATED RESULTS FROM THE ASSIGNMENT**

* It is expected that the volunteer will assist NEI to develop standard operating procedures (SOPs) and quality control methods for these products, resulting in:
	+ Commercialisation of Tanzania’s first locally made, high quality baking chocolate; and
	+ Regional market expansion into Kenya where cocoa solids are in high demand;
* NEI’s production officer will be upskilled on a range of cocoa flavor products.

**E: SCHEDULE OF VOLUNTEER ACTIVITIES IN TANZANIA**

*NB: This schedule is only indicative. A firm schedule will be prepared by the host in collaboration with the volunteer while the volunteer is in Tanzania*

* Prior to arrival: Review NEI’s equipment selection that is on order from China;
* Week No 1: Review the manufacturing process and in-house SOPs with NEI’s food technologist and production officer;
* Weeks No 2: Test and refine SOPs based on production results
* Week No 3: Delivering training session for NEI’s full production team on quality control measures and testing methodologies

Note that the in-house food scientist may be away for a period of time, but the production officer, who is a trained chemist, will work closely with the volunteer during these weeks.

**F. DESIRABLE VOLUNTEER SKILLS**

The volunteer will have the following qualifications and competencies:

* A qualified and experienced expert in food technology, food science or other related field; with a strong focus on flavors and/or nutrients is necessary;
* Excellent analytical skills as well as data presentation skills;
* Ability to communicate clearly and effectively with non-native English speakers;
* Excellent hands-on training skills to an adult audience is necessary;
* Ability to work in a multi-cultural environment and be sensitive to foreign culture;
* Have an interest in exploring and adding value to local crops with a combined commercial and social impact philosophy.

**G: ACCOMODATION AND OTHER IN-COUNTRY LOGISTICS**

In Moshi, the volunteer will stay at the ELCT Uhuru Hostel and CRS will pay for hotel accommodation and provide volunteer with per diems to cater for meals and other incidentals. For more information, please refer to country information that will be provided.

**H: RECOMMENDED ASSIGNEMENT PREPARATION**

As part of preparation for the work ahead the volunteer should familiarize her/himself with the CRS Tanzania F2F program proposals and scope of work for this particular assignment. At the volunteer’s request, NEI may share electronic copies of operations documents in advance of her/his arrival. It is also advisable that the volunteer read and familiarize with Tanzania, its development challenges and opportunities. For any printed material these will be printed at CRS office in Dar es Salaam before commencement of the assignment.

**I: KEY CONTACTS**

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| **CRS Baltimore** | **CRS EA Regional Office** |
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**J. APPENDIX**

**Appendix 1: List of volunteers who have worked with NEI so far.**

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| SN | Volunteer’s name | Contact | Topic |
| 1. | Henry Karczynski | vanilla@racsa.co.cr  | Improved vanilla production and processing technologies |
| 2. | Bob Bond | robertbond1@frontier.com  | NEI Capacity enhancement on promotion and marketing of its products |
| 3. | David Daines | david.r.daines@hotmail.com  | Out-grower Farmer Network Management  |
| 4. | Ian Ronningen | ronni079@umn.edu  | NEI Capacity enhancement on extraction techniques, food flavor development, analytical methodologies and quality control processes for vanilla and other crops |
| 5. | Jane Leland | jlelandenterprises@gmail.com | Advised on organoleptic testing, product development techniques and market/industry trends for natural food flavors |