Sustainable development of Horticultural Crops in Zambia for food security, income generation and in support of the tourism industry, focus on production and postharvest. Collaborators: U.S.: Rutgers University and Purdue University, The World Food Logistical Organization (Cold Chain Alliance) and the PostHarvest Education Foundation; Zambia: ASNAPP; and University of Zambia.

Objectives: Objective 1. **To strengthen the supply chain of high quality fresh produce**, Objective 2. **To ensure sustainability of the farmers' projects by assisting them to run their farming activities with a market-oriented business approach.** Objective 3: **To assist farmers to establish production capacity and link them to local, regional and international markets and to understand the economics of their horticultural enterprises**. Objective 4. **To introduce and strengthen the cold chain and associated technologies for small farmers, cooperatives and distributors that meet buyers requirements or expectations while focusing on profitability by the producer**.

Major Accomplishments:
Objective 1. Collaborative arrangements with seed companies facilitated access to high quality seeds; 360 females and 240 males trained on good agricultural practices to increase quality and quantity of produce as a requisite for sales to hotels and lodges; 542 tons of produce to the value of $986,347 produced. 135 growers (105 women) trained in agricultural record keeping and monitoring of their production (scheduling, input costs/prices). **We use a market-first science driven approach**. All vegetables (>20) grown, harvested, packaged, and delivered as required by the buyers.

Objective 2. 10% of famers (the lead farmers, of which 50% are women) obtained entrepreneurship training for independence from our programs (not easy). Lead farmers adopting improved business managerial skills. Entrepreneurship training of farmers in book keeping, negotiating skills to transact business with buyers, assisting farmers to become seed and input dealers reached 30% of the farmers (of which 50% were women). Lead farmers were used to reach out to more communities to scale-up resulting in additional communities that became engaged in commercial horticultural production providing to the region an increasing level of production replacing imports from South Africa. One community specializing in transplant production for sale to other communities growing vegetables and now spices is reaching 250,000 transplants every 6 weeks during production cycle, at 0.05 ($US)/seedling when ASNAPP provides input costs or 0.10 ($US) if they provide input costs. Successful negotiations with seed companies has now positioned ASNAPP trained communities to be the sole suppliers of vegetable seedlings for MRI/Syngenta Seeds for the entire southern province of Zambia.

Objective 3: 3,000 metric tons of fresh produce generated during our initiative since inception with a total of 542 tons of fruit and vegetable produced and supplied to hotels, supermarkets and lodges within this current HLI initiative. 600 farmers formally involved in program, many more informally involved and copying/adopting the approach by additional communities; value of current trade is approximately now up to 800,000 ($US)/year for region.

Objective 4: We first have focused on developing a 'Shade Chain' and have built two ShadeBots; we have also built two CoolBots, with plans for an additional 2 during the remainder of the project. Trainings in both keeping produce always in shade and the introduction of the ShadeBot concept as well as practical applications of the CoolBot are underway. We have focused on the core communities in both approaches. Temperature differences under ambient conditions in full sun, under the ShadeBot and in the CoolBot (with and without it operating) is being used to demonstrate the importance and advantages in keeping produce longer and reducing postharvest loses. We are building a major research and training innovation center in Lusaka with a 2,000m greenhouse, lagoon/pond, several water collection systems demonstration passive gravity feed trickle irrigation system, solar dryer, ShadeBots and a CoolBot and product development center for dry and low technology processed products. This will serve as a national and regional training site for horticulture. The Mitengo Women's Group (100 members) will using it for commercial production.
Further Activities: All studies described will result in 10 extension factsheet/modules (pictoral based) and 3 scientific publications to be submitted by the end of September 30, 2014. We will hold an end of project workshop in September in Zambia on our project activities and accomplishments.