



**USAID | GHANA**  
FROM THE AMERICAN PEOPLE

**RAPID APPRAISAL ON CLIMATE SMART AGRICULTURE VEGETABLE PRODUCTION:  
FARMERS' PERSPECTIVES ON THE BENEFITS, CHALLENGES AND LESSONS LEARNED**

**Coastal Sustainable Landscapes Project**  
May 2018



This document was produced for review by the United States Agency for International Development Mission for Ghana (USAID/Ghana). It was prepared by the US Forest Service International Programs.

For more information contact:

**Coastal Sustainable Landscapes Project**

Plot 18, Quashigah Avenue, Anaji-Takoradi.

Postal Box MC 3407, Takoradi, Ghana

Email: [info@cslp-gh.org](mailto:info@cslp-gh.org)

Tel: +233 (0) 31 229 7824

**Steven Dennison (PhD)**

Project Director

[director@cslp-gh.org](mailto:director@cslp-gh.org)

+233 (0) 263982961

**Adam Welti**

Africa and Middle East Program

Forest Service

International Programs

Office of the Chief

p: 202-644-4568

c: 202-617-8560

[adamjwelts@fs.fed.us](mailto:adamjwelts@fs.fed.us)

1 Thomas Circle NW, Suite 400

Washington, DC 20005

[www.fs.fed.us](http://www.fs.fed.us)

**Citation:** USFS-IP (2018), Rapid Appraisal on Climate Smart Agriculture Vegetable Production; Farmers' Perspectives on the Benefits, Challenges and Lessons Learned. USAID/Ghana Coastal Sustainable Landscapes Project. 31 pages.

**Compiled by:** Richard Adupong, Loretta Odame Awuah, Michael Amekudzi, Michael Feyi and Kwame Obeng Hinneh.

Cover photo: Marketing of organic vegetables in a local market. Photo credit: Michael Feyi

**Disclaimer:** This publication is made possible by the generous support of the American people through the United States Agency for International Development (USAID)/Ghana. The contents of this report are the responsibility of the Coastal Sustainable Landscapes Project (CSLP) and do not necessarily reflect the views of USAID or the United States Government. Agreement Number: AEG-T-00-07-00003, "Coastal Sustainable Landscapes Project (CSLP).

## Contents

<b>List of Figures</b> .....	iii
<b>List of Tables</b> .....	iii
<b>Acronyms and Abbreviations</b> .....	iv
<b>Executive Summary</b> .....	v
<b>1. Background</b> .....	1
<b>2. Introduction</b> .....	2
<b>3. Objectives of the assessment</b> .....	3
<b>4. Methodology</b> .....	3
<b>5. Findings and Discussions</b> .....	5
<b>5.1. Benefits of CSA from Farmers Perspective</b> .....	5
5.1.1. Meaning of CSA to farmers .....	5
5.1.2. Perceived benefits of CSA to farmers.....	6
5.1.3. CSA Enterprise Groups.....	8
5.1.4. Marketing of CSA vegetables .....	9
<b>5.2. CSA and Climate Change</b> .....	10
5.2.1. Agriculture and Climate Change.....	10
5.2.2. CSA technologies adopted by farmers.....	11
5.2.3. CSA technologies and climate change.....	12
<b>5.3. CSA Lessons Learned, Challenges and Way Forward</b> .....	13
5.3.1. Challenges in CSA practices.....	13
5.3.2. Experience and lessons learned.....	15
5.3.3. Continuation of CSA practices post-CSLP .....	18
<b>6. Observations, Conclusions and Recommendations</b> .....	20
<b>7. Annexes</b> .....	24
<b>Annex 1: Focus Group Discussion Guide</b> .....	24
<b>Annex 2: Details of CSA Enterprise Groups</b> .....	25
<b>Annex 3: Rapid Appraisal Itinerary</b> .....	25

## List of Figures

<i>Figure 1: Organic vegetables produced by CSLP farmers</i>	vi
<i>Figure 2: Improved seeds training by CSLP &amp; East-West Seeds for farmers and DoFA agents</i>	3
<i>Figure 3: Map of CSLP intervention communities</i>	4
<i>Figure 4: Awarding deserving CSA farmers at Farmers Day celebrations</i>	8
<i>Figure 5: CSA garden established at Asonti Junior High School</i>	13
<i>Figure 6: Komfueku Junior High School CSA site</i>	15
<i>Figure 7: Maize harvested at a school's CSA site</i>	18

## List of Tables

<i>Table 1: List of communities for focus group discussions (FGD)</i>	4
<i>Table 2: Farmers perception of differences between organic and inorganic produce</i>	5
<i>Table 3: Details of experimental fields by farmers</i>	16

## **Acronyms and Abbreviations**

BAC	Business Advisory Centre
CC	Climate Change
CCC	Climate Change Club
CSA	Climate Smart Agriculture
CSLP	Coastal Sustainable Landscapes Project
DoFA	Department of Food and Agriculture
FGD	Focus Group Discussion
GAW	Greater Amanzule Wetlands
IPM	Integrated Pest Management
MMDAs	Metropolitan, Municipal and District Assemblies
NBSSI	National Board for Small Scale Industries
STMA	Sekondi-Takoradi Metropolitan Assembly
ToT	Trainer of Trainers
USAID	United States Agency for International Development
USFS	United States Forest Service
VSLA	Village Savings and Loan Association

## Executive Summary

Farming practices such as slash and burn, poor handling and application of agrochemicals, indiscriminate cutting of trees and removal of vegetation cover are among the negative farming practices employed by farmers in the six coastal districts of Ghana's Western Region. These agronomic practices threaten the environment, food production, and by extension, make farmers more vulnerable to climate change. To reverse such environmentally unhealthy agricultural practices, the United States Agency for International Development (USAID)-funded and US Forest Service-managed Coastal Sustainable Landscapes Project (CSLP) introduced concepts of Climate Smart Agriculture (CSA) to communities and farmers.

In addition to helping to halt the impact of the bad agricultural practices on the environment, the CSLP, through CSA practices, seeks to enhance food production, contribute to livelihood diversification (reducing agricultural risks), and help reduce greenhouse gas emissions. The project's approach has included a series of targeted trainings (including hands-on, mentoring and coaching), establishment of demonstration fields, supplying basic inputs, the formation of enterprise groups and facilitation of market linkages. As time passes, there is growing evidence that the project is succeeding in helping interested smallholder vegetable farmers shift their attention from inorganic vegetable production to the production of organic produce. To better understand the impacts of these interventions, a 5-day rapid appraisal was conducted in 15 core CSA participating communities. This document reports on this assessment and provides the perspective of beneficiary farmers on the lessons being learned and the challenges and successes of the CSA intervention. The purely qualitative study ensured that the methodology used generated in-depth information about the CSA practices. Data was collected using Focus Group Discussions (FGD) and aided by a FGD guide.

The assessment revealed that farmers and schools, primarily through school clubs, appreciate the CSA concept, that they are practicing it and are realizing some benefits. The study noted the move from negative farming practices to the adoption of better farming methods and CSA technologies. Among the adopted technologies were effective soil management (e.g. use of organic fertilizers and composting), use of improved seeds, avoidance of bush burning and integration of trees in food crop farms. Others included the use of organic recipes to control pest and planting of nitrogen fixing trees, all of which are more sustainable practices as compared to the conventional approaches currently practiced in the region.

Key challenges faced by the farmers in the CSA approach included access to and cost of inputs (e.g. improved seeds), pest invasion and ineffectiveness of some control methods (e.g. use of the organic recipes), marketing of produce (same price for both organic and inorganic produce in most markets), and reduction in the number of enterprise group members. Nonetheless, it was evident that though some farmers have left the CSA groups (e.g. because they find the CSA practices difficult and not yielding their expected greater benefits in terms of sales), there are champions who are poised to continue the CSA practices after the end of the CSLP support. The study recommends, among others, that farmers value their organic produce and engage in strategic marketing, re-organize their enterprise groups and register their groups with the appropriate government agencies. There is also the need for effective networking among players in the value chain. Lastly, farmers must be supported by various concerned governmental and non-governmental agencies to develop their entrepreneurial skills. This will enable farmers to fully benefit from the organic vegetable supply networks that service Ghana's mining, oil and gas sector in the six coastal districts of the Western Region.



*Figure 1: Organic vegetables produced by CSLP farmers*

---

## *BACKGROUND & INTRODUCTION*

---

### **1. Background**

The Ghana Coastal Sustainable Landscapes Project (CSLP) is a United States Agency for International Development (USAID) Feed the Future initiative and a U.S. Forest Service-managed intervention being implemented in the six coastal districts<sup>1</sup> of Ghana's Western Region. The project, originally a three-year project (2013-2016) and non-Feed the Future funded, was extended another through September 2018 with Feed the Future funding, based on successes achieved within the initial phase. It works to promote low emissions development in Ghana's Western Region by strengthening community-based natural resource management and monitoring, and improving livelihoods in farming and fishing communities.

The project's second phase, under the U.S. government's Feed the Future Initiative, had a specific objective to reduce poverty and increase resiliency in the target communities through improved natural resource management, livelihood diversification, value chain development, and ecosystem conservation and restoration. Currently, the project interventions cover 43 core coastal communities with smallholder farmers and fisher folks as the main beneficiaries. In total, project actions of one sort or another have reached more than 82 communities as of the end of May 2018.

The interventions of the CSLP are guided by two main expected outcomes: (i) increased incomes from livelihood diversification and, (ii) improved environment and natural resource management. Specific activities include agroforestry and forestry best practices, short- and medium- term livelihood improvement activities (e.g. beekeeping, climate smart agricultural – CSA vegetable production), on-farm tree planting of commercial and agroforestry species and management of greening areas/urban greeneries. Others include wetland/mangrove conservation, spatial planning, Village Savings and Loan Associations (VSLAs) and youth engagement (via formation of environmental clubs in public schools).

CSLP uses in-field consultations, targeted trainings, strategic capacity building, detailed technical assistance, and participation in institutional/policy level discussions and workshops based on field-level experience to achieve project objectives.

---

<sup>1</sup> Shama, STMA, Ahanta West, Nzema East, Ellebelle and Jomoro Districts/Municipals Assemblies



## **2. Introduction**

Prior to the interventions introduced with the CSLP, farmers in the six coastal districts of Ghana's Western Region were using agronomic practices that threatened the environment, contrary to ensuring food security at the household level, and often at greater risk from climate change and climate related events. Among such negative practices were slash and burn methods of farming, poor handling and application of agrochemicals, indiscriminate cutting of trees, removal of vegetation cover and the use of agricultural practices that increased soil erosion and/or decreased soil fertility.

In view of such environmentally unhealthy agricultural practices, the CSLP introduced the concept of Climate Smart Agriculture (CSA), also often called conservation agriculture, to the communities and farmers. The main objective was to help halt and reverse the impact of the bad agricultural practices on the environment and food security. Specific best practices, if implemented would help to help bring about an improvement in (or diversity) of local livelihoods, reduce risks to agriculture production (for household consumption), help reduce/avoid greenhouse gas emissions and mitigate impacts of climate change for local farmers and communities.

CSA awareness trainings were conducted initially for more than 800 interested farmers. Over time, 260+ farmers, mostly small holder vegetable farmers, adopted the CSA practices. The CSLP also assisted with a series of targeted trainings (including hands-on, mentoring and coaching) for this core group of farmers helping them to shift their attention from inorganic vegetable production to the production of organic produce.

The trainings and follow-on events led to the establishment of 12 demonstration sites and the formation of 15 enterprise groups of 260+ members. Because the Department of Food and Agriculture (DoFA), is the statutory government institution promoting sustainable agriculture, the CSLP conducted a Trainer of Trainers (ToT) approach for its extension staff/agents in the coastal districts and jointly embarked on field monitoring, mentoring and coaching. Market linkages were also facilitated to help boost production. The CSLP also organized an enterprise market network workshop; the first of its kind in the Western Region, to enhance the connection among vegetable enterprise groups, buyers and service providers.

Based on the various activities of promoting CSA practices in the communities, it was essential to understand and document the perspective of beneficiary farmers on the lessons learned, challenges and successes of the CSA intervention. It was from this thinking that a rapid appraisal was conceived and conducted in the intervention communities.



Figure 2: Improved seeds training by CSLP & East-West Seeds for farmers and DoFA agents

### 3. Objectives of the assessment

Specifically, the appraisal sought to

- Identify the benefits of CSA from the farmers' perspectives;
- Assess how CSA practices are bolstering resilience to climate change; and
- Determine lessons learned and adoption (and adaptation) challenges by CSA farmers.

### 4. Methodology

This was a qualitative study and therefore designed to strive for in-depth information about climate smart agriculture practices on the CSLP landscape. All 15 CSA enterprise groups were targeted. Data collection was completed in four days by two field teams of five project staff and followed swiftly with an analysis of the collected information.

Primary data was gathered using Focus Group Discussions (FGD). The applicability, relevance and validity of the main research instrument, FGD guide (attached as Annex 1) was determined through a pre-test in two geographically and ecologically diverse groups. This led to a slight modification of the FGD guide.

In total, 150 farmers (68 men and 82 women) from the 15 enterprise groups in 15 communities (Table 1) participated in the FGD. At the time of the appraisal, the CSLP CSA data (attached as Annex 2) had a group membership of 266 farmers (120 men, 146 women). In addition to the CSA groups, discussions were also held with teachers and students of five public schools (in 5 communities) where the CSLP and the Ghana Education Service (GES) has facilitated the

establishment and promotion of CSA gardens<sup>2</sup> for more than one year. Only one community had a school with CSA garden but without a CSA enterprise group established. The use of the FGD was to get at the “why” and “how” of the CSA intervention from the viewpoint of beneficiary farmers, students and teachers.

Table 1: List of communities for focus group discussions (FGD)

District/Municipal	Communities visited
Jomoro	Tweakor 2, Navrongo, Adusuazo, Mangyea, Fawoman
Ellembelle	Sawoma, Sendu, Kamgbunli, Adubrim, Ayawora
Nzema East	Bokro, Bomokrom, Asonti
Ahanta West	Cape Three Points, Akwidaa
Shama	Komfueku

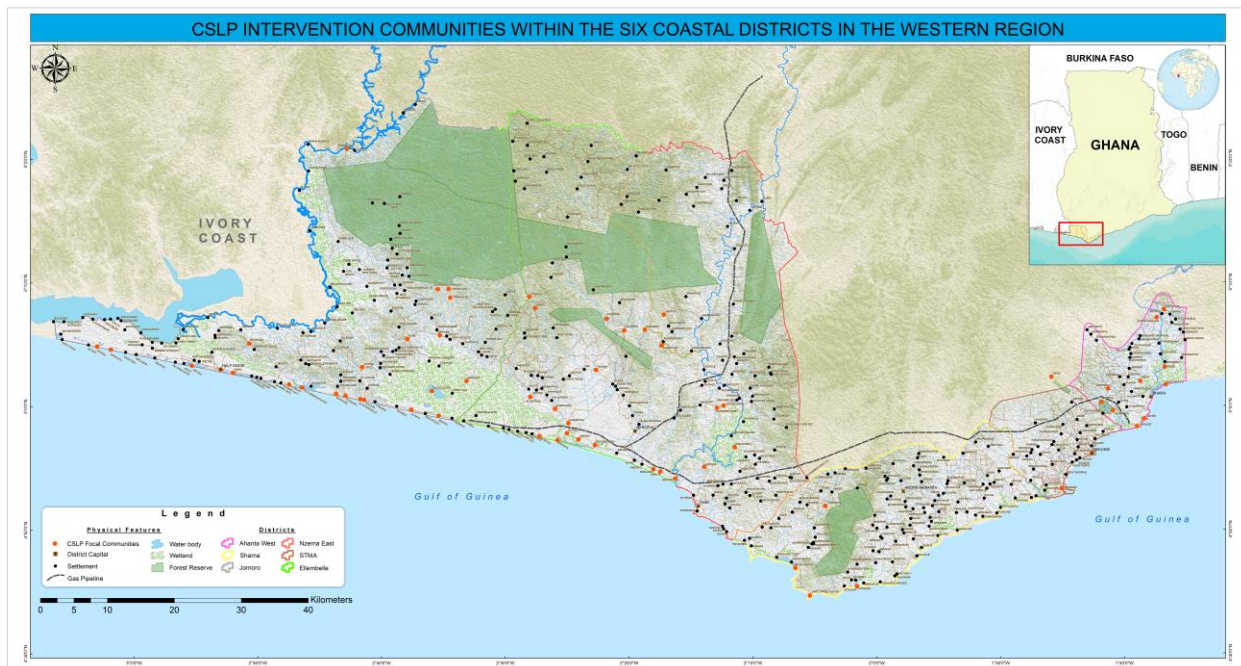


Figure 3: Map of CSLP intervention communities

<sup>2</sup> The CSLP and GES have formed 20 environmental clubs in 20 schools; 13 have CSA gardens at various phases of establishment.

## 5. Findings and Discussions

### 5.1. Benefits of CSA from Farmers Perspective

#### 5.1.1. Meaning of CSA to farmers

To all the respondents, farmers, students and teachers, CSA basically means *organic farming*. As noted by Paul Ansah of Cape Three Points, Gladys Atsu of Navrongo, Janet Bekoe of Tweakor 2, Teacher Christian Apprey and Daniel Obeng (a student) of Komfueku Junior High School as well as several other respondents, CSA denotes the practice of not using synthetic products such as pesticides and harmful chemicals in the entire process of farming. Put differently by Yaaya Abdullah of Kamgbunli, *“CSA involves going back to the olden days when farmers did not know and did not use inorganic agrochemicals/fertilizers in their farming”*.

As summed up by Sarkodie of Bokro, *“CSA practices are farming practices that include not applying inorganic fertilizers to our crops, not burning weeds on our farms, not applying chemicals such as weedicides and pesticides, leaving trees on our farms, using chilli pepper recipe and other natural means to get rid of pests on our farms”*.

In great support were farmers at Asonti, who put the meaning of CSA as, *“planting all food crops without the application of inorganic fertilizer from weeding to harvesting”*. This type of farming, as noted by all the groups is helpful and environmental friendly. Farmers in Bokro tagged their organic produce as **“healthy food”**. Similarly, students at Asonti Municipal Assembly (M/A) Junior High School (JHS) described their CSA farm produce as, **“the best produce for the body”**

Relatedly, the respondents distinguished between their organic system of farming and the inorganic system. Joseph K. Blay of Sawoma emphasized that, *“although CSA does not yield as much produce as the inorganic farming, the produce lasts longer”*. Others noted that practicing CSA does not require much capital to start but it is labour intensive. The quality of organic produce were also noted by the respondents as better than the inorganic version. Yaa Sekyiwaa of Sendu indicated that, *“organic pepper is much spicier than inorganic ones and organic tomatoes and garden eggs taste much better”*. The key differences between organic vegetables and the inorganic, as mentioned by the respondents, are illustrated in Table 2.

Table 2: Farmers perception of differences between organic and inorganic produce

#	CSA farming practices (organic)	Non-CSA farming practices (inorganic or conventional)
i.	Produce lasts longer (2 to 3 weeks of shelf life)	Produce rots in few days (2-3 days)
ii.	Produce tastes great and natural	Produce tastes somehow good but not natural

iii.	Produce attracts house flies	Produce does not attract house flies
iv.	Requires less money to operate but is labor intensive	Requires more money to purchase inorganic fertilizers
v.	Takes time	Require less time
vi.	Lower crop yield	Higher crop yield
vii.	Pest control is difficult	Pest control not difficult but requires money to but pesticide on regular basis
viii.	Crops are not attractive	Very attractive crops

Source: Collected field data, 2018

### 5.1.2. Perceived benefits of CSA to farmers

In general, respondents noted that CSA practices are of great benefit to the environment. It was mentioned in several communities that *“CSA helps protect the environment”* and also *“helps preserve soil fertility”*. Respondents, without doubt, indicated that organic produce were “healthy for consumption” and can lead to “long life” and that the produce “last longer” and were of “better quality” than inorganic ones. In some communities, farmers had observed the increasing demand for organic produce.

Nonetheless, the specific benefits of CSA, as highlighted in all the communities, can be grouped into personal and commercial.

A. **Personal benefits:** Farmers reiterated their agreement that organic farm produce were the “best and healthier” and as such, admired the CSA practice. Indeed, there were many respondents who were practicing the CSA for subsistence purposes. They appreciated the nutritional value of organic produce and considered the practice as beneficial. Comfort Quaiocoe of Sawoma shared the view of almost all the respondent as she noted, *“it is for our own good, health-wise. Our forefathers lived longer and healthier because they did not use chemicals on their farm produce”*. Likewise, Sophia Sarpong of Cape Three Points noted, *“when we consume vegetables that have been sprayed with various chemicals, it has negative health implications because those same chemicals find their way into our bodies and cause harm so we cannot stop now that we know”*. Farmers in Bomokrom observed that “in our case, we consume more of our produce than we sell, *“we need to eat what is safe”*. In other words, *“through CSA we consume farm produce that aren’t harmful to our health”*, said G.H. Mensah of Bomokrom. Mr. Mensah continued, *“... our vegetables taste better than the ones treated with chemicals and we feel more healthy and stronger when we eat the organic produce”*. A teacher at Asonti M/A JHS observed that, *“the students are happy to consume organic produce from our CSA farm, knowing that it has positive impact on their lives and by extension, their ability to perform well academically”*.

B. **Commercial benefits:** Though a significant number of farmers are yet to get their desired profit from the CSA vegetable production, there were some farmers who reported

of making good profit from the sale of their organic vegetables. Among the number of success stories shared included that of:

- Theresa Ephraim of Adubrim: *I have gotten many benefits by going the organic way; I bought some okra seeds at GH₵ 8 (US \$ 1.86) from the CSLP-Tikola Training held at Elubo and planted them. Within a year, I have harvested and sold more than GH₵ 300 (US \$ 70) worth of okra in my community and the demand is amazingly great. I am a member of one of the Village Savings and Loan Associations (VSLA) and the proceeds from okra help me to save very well.*
  
- Joseph Blay of Sawoma indicated: *I used to produce tomatoes without the use of chemicals and my buyers were very happy with my produce because they could keep it for a long time before they are used and my tomatoes taste nicer. Buyers sometimes gave me money even before I harvested, until a friend introduced me to some chemicals that helped me produce more tomatoes than the organic but in no time my buyers begun to complain of the tomatoes going bad before they could use or resell and further started rejecting my tomatoes so I quickly went back to my organic produce and they are happy now.*
  
- Lydia Yeboah of Bokro: *I have a lot of customers because of my organic pepper. My organic pepper is hotter than the others (inorganic) on the market. Now that my pepper is finished they (buyers) are always after me to start planting again.*
  
- Mr. G.H Mensah Bomokrom: *I harvested and made GHC400 (US \$105) from the sale of my organic produce. Other farmers outside the enterprise group have come to learn from my farm. It is very viable and I will not use fertilizer (inorganic) on my farm again.*



Figure 4: Awarding deserving CSA farmers at Farmers Day celebrations

### 5.1.3. CSA Enterprise Groups

As noted earlier, the CSLP has facilitated the formation of 15 enterprise groups in 15 communities to promote CSA principles, provide farmers a mechanism through which to learn from one another, and help farmers achieve greater benefits from their farming activities. The data collection team observed that about 10 out of 15 of the CSA groups were active (e.g. meet on a regular basis to share experience and work together on their demonstration field). The FGD with the various groups revealed the following benefits and challenges.

Benefits of the enterprise groups:

- A valuable platform for sharing ideas, lessons and experience with respect to CSA farming and marketing of produce. For instance, at their meetings, members share specific practices that are helpful or not helpful and seek advice and guidance from colleagues.
- In communities where groups are very active, (e.g. Kamgbunli and Tweakor 2), members help each other in their respective farms (e.g. helping to weed a member's field to permit the member to save money for hiring farmhand/labor for other purposes—such as buying inputs).
- In communities (such as Sendu) where members pay dues, a member can borrow money from the group but only for the purpose of CSA production (e.g. buying improved seeds).
- Groups that have established a common field (as demonstration site) use these fields for trainings, to share practical experiences and lessons as well as to test new farm practices.

## Challenges of the enterprise groups

The following issues were noted by the farmers as being detractors from having a fully functioning and productive enterprise association:

- Poor attendance at regular/scheduled meetings
- Non-commitment to working on group farms because of other personal responsibilities such as working on their individual farms
- Non-payment of dues by members (by groups that have agreed on payment of dues)
- Reduction in the membership of groups and recruiting members for enterprise groups. Some groups have experienced a significant reduction in membership; e.g. Ayawora Vegetable Growers Association started with 20 members but currently has only six. The Adubrim group commenced with 25 members but now has just 10 members. The main reason for the decline in membership was because those who left felt the organic farming found it to be labor intensive and felt they were not getting the desired profit from the sale of their produce.

### 5.1.4. Marketing of CSA vegetables

Currently, the main market centers for all the CSA vegetable farmers are their local community markets and/or the big/nearest market center in the respective districts. For instance, farmers in Ellembelle, Jomoro and Nzema East municipal/districts frequently use the Aiyinase, Asasetre and Elubo markets while those in Ahanta West use the Agona Nkwanta market. Though farmers have received promises of ready purchase from hoteliers and other private sector operators<sup>3</sup> in the food value chain in the area, most farmers were yet to test such avenues. Nonetheless, some farmers at Kamgbunli do sell their produce to the authorities at the Kamgbunli Senior High School; for feeding the students. In all communities, selling for now is done on an individual basis and not as a group. The groups do not determine price but it is rather set by the prevailing demand and supply factors at the market. A female farmer at Fawoman noted that, “... ***often there will be too much supply hence buyers don't consider whether your produce is inorganic or organic when making purchases***”. Out of the 15 communities, only farmers in one community, Kamgbunli, sell their organic produce at prices higher than the prevailing market price for inorganic produce. In the remaining 14 communities, farmers sell at the same prices as the inorganic produce or at lesser prices (because buyers claim their produce is unattractive and smaller compared to the inorganic). One of the members of the Sawoma vegetable farmers association, Comfort Quaicoe, adds “***I sell at the same market price as those (inorganic) in Agona Nkwanta. It is profitable and I am able to feed my family***”. However, farmers in Kamgbunli noted they equally had to accept same prices as inorganic but took a quick and sharp decision to charge higher because of the benefits of the organic produce and the labor work involved. This, they were able to do by conducting intensive sensitization and awareness creation on the value of the organically produced vegetables. Currently, farmers in Kamgbunli noted of

---

<sup>3</sup> It must be noted that private sector buyers are still wary of organic producers and their intermittent supply



selling “a bash rubber” (a local measuring container) of organic tomatoes for GHS 10-12 as compared to the same quantity of inorganic produce sold between GHC 8-10 at the market.

In general, marketing of organic produce is not a challenge. The chairperson of the Sawoma groups emphasized that, ***“individual buyers prefer to buy from us knowing that our vegetables are organic and also market queens buy our produce because they last longer before going bad. We have no issues with marketing because CSLP has linked us to buyers and there are a lot of people who are interested in buying organic vegetables as well”***. Indeed, farmers believed that with time, most buyers will better appreciate the value of organic produce and pay higher prices for it. Mary Amos of Asonti observed that, ***“I used to sell my organic okra next to my sister who had inorganic okra, initially people were attracted to her produce because of its sizes. After a little wooing and struggling, I was able to sell all of my produce. The next market day, people run to my stall even before I set up”***. Sarkodie of Bokro supports this trend and indicates that ***“we have no problem selling our produce”***. Lydia Yeboah, also at Bokro, further declared that, ***“most market women prefer my produce to inorganic ones. They always ask me for more produce”***.

## **5.2. CSA and Climate Change**

### **5.2.1. Agriculture and Climate Change**

Farmers, teachers and students emphasized the fact that climate change is impacting negatively on agriculture and specifically in their vegetable production. As rain-fed agriculture is predominately the practice in the communities, farmers complained bitterly of recent changes in rainfall pattern and linked it to the impact of climate change. The changes noted by farmers ranged from difficulty to predict best planting season to a reduction in yield.

As echoed by Mr. Morkeh of Sawoma, ***“... rainfall patterns have changed greatly, for instance, the month of April used to be a major raining season but now it doesn't even rain in that month so we lose our crops during that season”***.

Relatedly, Rose of Ayawora indicated that, ***“climate change has made the planting seasons unpredictable”***.

A student of Komfueku D/A JHS emphasized, ***“through the CSLP-facilitated climate change club, we got better understanding of climate change issues and shared with our parents and through our CSA garden, we have seen some of the negative impact of climate change. E.g. we rely on rains but it's not raining as expected and that is affecting our crops and even when it rains, it's very heavy and that destroys our crops within a short period”***

Comfort Quaiocoe and Mercy Dogbe, who are both tomato producers lamented of bad harvest for the past five to ten years and blamed it totally on the impact of climate change. Mercy claims, ***“The sun is extremely hot these days, it makes the land very dry and kills the crops. Hence, I***

*have to carry water from my house to the farm to water the crops but even that, I only manage to get little harvest compared to what I used to get about 10 years ago”.*

Yaa Sekyiwaa of Sendu noted that, *“it does not rain as it used to about 10-15 years ago and so we do not plant as much as we used to in years past. For instance, for three years now, we have not been able to plant maize in the month of March, which has been our major maize planting season over the years; it does not rain any more in March”.*

G.H Mensah of Bomokrom indicated that, *“There is too much sunshine in recent times and it kills the plants and dries water sources. Thankfully, we have a water pump and it helps in the dry season. However, we used to have two planting seasons for maize, now we can only plant in the first season and plant other crops such as garden eggs, tomatoes and pepper in the 2<sup>nd</sup> season”*

A farmer in Mangyea observed that, the *“Excessive heat from the sun cooks our cassava tubers in the ground and burns plants such as maize. The impact of the sun heats and hardens the soil and makes planting in the soil difficult and also the excess heat burns up the planted vegetables.”*

Mercy Dogbe of Sawoma adds that *“I used to get a pan full of tomatoes some years ago, now, from the same field, I only make about one-third of that same pan”.* Mercy’s friend, Comfort, shared a similar experience of reduction in yield from her vegetable field.

### 5.2.2. CSA technologies adopted by farmers

Technologies being adopted (as gathered from the farmers) can be categorized into two: those taught by the CSLP and others conceived by farmers.

#### A. Technologies taught by the CSLP

All the CSA groups and by extension, the farmers, continue to employ practices acquired from the CSLP. These include:

- Cultural practices: involves best practices such as manual weeding without using weedicides (serve as mulch / preserve soil nutrients), planting at recommended distance, watering, integrating trees on food crop farms;
- Use of improved seeds: those that are climate resilient, resistant to pests/diseases and provide higher yields;
- Pest management: adopting Integrated Pest Management (IPM) and use of organic recipes to control pests; e.g. chilli pepper recipe, neem extracts,
- Soil related: the application of organic fertilizer (e.g. poultry waste, cow dung), composting and planting of nitrogen fixing plants; e.g. *gliricidia spp.*, and,

- Other: e.g. improved mechanical and physical land preparation.

## **B. Technologies conceived & developed by farmers**

Necessity is believed to be the mother of invention. Due to some challenges encountered by farmers in the CSA approach, e.g., pest invasions, some farmers, on their own experience, conceived and tested some applications that have proven effective. The technologies include:

**Use of Kitchen smoke soot** as discovered by Mr. Eshun of Kamgbunli and Benjamin Boah Konin of Tweakor 2.

Mr. Eshun noted: *“I gathered smoke soot from my kitchen, mixed it with water and used it to spray my farm which worked perfectly in controlling the pest. I tried this because I had fore knowledge that smoke soot is a medicine for stomach ache so I tried it on my CSA farm and it worked.”*

**Use of a popular local plant to control pest invasion** (known in local languages—*Nyeny* in Twi/Fante and *Sonwani* in Nzema): discovered and used by several farmers in Navrongo, Kamgbunli and Tweakor 2.

### 5.2.3. CSA technologies and climate change

Farmers noted, that, to a greater degree, the CSA technologies they have employed were helpful in bolstering resilience to climate change. According to them, the noticed changes in the climate have necessitated some adaptation mechanisms such as making changes to planting seasons. They indicated their resolve to manual weeding against using weedicides helps preserve soil nutrients while also serving as a mulch. Similarly, planting at recommended distances, use of improved seeds that are resistant to pest and are climate resilient have been helpful; though there were challenges with some of the practices. A significant number of farmers also observed that they benefited from native trees supplied by the CSLP and integrated in their food crop farms and have proven very helpful in providing tree cover that will ultimately also provide economic and environmental benefits.

Yaaya of Kamgbunli mentioned that, *“I don’t burn the cleared weeds anymore and it is helping to improve the soil fertility”*. G.H Mensah of Bomokrom indicated that he, *“... planted shade trees to reduce the effect of the sun on planted crops.”*

Teacher Apprey of Komfueku D/A JHS recalled, *“We planted nitrogen fixing trees on our CSA garden and it very helpful and in addition to other CSA practices, such as the compost we have established, we are assured of improved soil fertility. An essential part of it is the lessons being learned by the students and how they are sharing with their parents, who are active farmers”*



Figure 5: CSA garden established at Asonti Junior High School

### 5.3. CSA Lessons Learned, Challenges and Way Forward

#### 5.3.1. Challenges in CSA practices

Though farmers and the schools applauded the CSA practices, they were worried with several challenges that seem to have hindered their ability to effectively implement the CSA principles and achieve maximum benefits. Among the key challenges noted were:

- A. **Diseases and pest invasion:** this was evidently one of the greatest issues faced by farmers and the schools. Some farmers were of the strong conviction that the organic recipes they have adopted were not effective in controlling pests. Though most farmers confirmed application of the organic recipes as instructed, it was still not effective. There were some farmers, currently doing the CSA on a subsistence basis, who expressed desire to engage in commercial production but were scared of the pest invasion. Steve of Bokro was one of such farmers and his fear was expressed in that, “...*we want to expand our farms but the methods we use in controlling pests are not effective enough so it is difficult to control pests on bigger farms*”

- B. Cost of and access to inputs:** this was a huge worry to most farmers. Key among the basic inputs were organic fertilizers, integrated pest management products and agricultural spraying machines (especially the popular knapsack sprayer<sup>4</sup> used by most farmers in the communities). In most instances, those without such spraying machines, *sprinkle their organic pest control liquid mixture with their hands*; this is a very ineffective method. Similarly, some farmers and students *use their bare hands to pick insects*. Others complained about the high cost of organic pesticides and their low purchasing power. Most farmers use bamboo vinegar as a pesticide but noted the price is escalating and most times the solution was unavailable. Other farmers also expressed great difficulty in access to manure.
- C. Access to quality improved seeds:** It was evident that many seeds bought by farmers and the schools from approved vendors were not helpful. In some cases, the seeds did not germinate. This was a bitter experience for the farmers and schools. Farmers in the community of Adubrim had the highest number of such cases of bad seeds.
- D. Labor intensive and time consuming:** Farmers across the communities were unanimous to their assertion that organic farming is “... *more tedious and difficult than inorganic farming*”. They expressed difficulty in areas such as the construction of farm beds and preparation of the organic recipe for pest control. In addition, they regarded the practice as time consuming. For example, they noted that organic recipes for pest control need to be applied every two weeks. Other common statement was that where you *need 5-7 days for manual weeding for CSA practice, you would require less than 30 minutes by inorganic farming through the use of weedicides*.
- E. Less yield:** In comparison to inorganic vegetable production, farmers have observed and were of the greater conviction that organic farming yields are less in quantity. Farmers in all the communities indicated a lower yield with the CSA practice. As noted earlier, some farmers intentionally divided their fields for organic and inorganic practices and attested to their point that organic produce were of less quantity given the same field size and other factors. Among the farmers who tested the yields of organic and inorganic produce were Agnes Sikawa of Adubrim and two other female farmers in Cape Three Points: Sophia Sarpong and Lydia Kwofie.
- F. Impact of the changing climate:** The unpredictable rainfall pattern in a rain-fed farming environment is another major challenge noted by the farmers in their CSA practice. Some farmers mentioned that they had to consistently carry water from their homes to their fields (could be 1+ km) to help in watering of their crops at the dry season. Others had to engage in seasonal vegetable production. Most farmers marked dry season as the best period for planting tomatoes and other vegetables. However, it requires constant irrigation and if not properly done, then the activity is bound to fail.

---

<sup>4</sup> The cost of a knapsack sprayer is around GHC55 (US \$ 13)

**G. Marketing by some farmers:** With the exception of one community, farmers in the other 14 communities sell their organic produce either at the prevailing market price of the inorganic version or at a lesser price. This has been a demotivating factor for the farmers and accounts for the massive reduction in the membership of some enterprise groups. Others have resulted to purely subsistence purposes and are not trying to produce on a commercial basis. Farmers reported of situations where they had to accept a lesser price compared to the inorganic produce in the market due to the smaller sizes of the organically produced vegetables as buyers found their produce unattractive.

**H. Destruction of crops by animals:** Fields far from homes and those closer to communities where animals are on free range (and without proper fencing of the field) often had their crops destroyed by animals (domestic and wild as applicable). At Adusuazo, farmers expressed their frustration with domestic animals destroying their gardens and farms. Listwell Adus, noted one locally adapted solution, *“We repel them by hanging film from cassettes. When the wind blows against the films, it makes a whistling sound and this repels them”*.



Figure 6: Komfueku Junior High School CSA site

### 5.3.2. Experience and lessons learned

In the prevailing couple of years of CSA efforts, CSLP farmers have encountered several challenges and learned significant lessons. Among the lessons gathered were:

**A. Setting up experimental fields:** A number of farmers, mostly females, decided to have two separate fields to experiment and compare the CSA (organic farming) and inorganic practice. These farmers made their own judgement based on their findings.

Table 3: Details of experimental fields by farmers

Farmer name	Community	Crop(s) planted	Findings/Observation
Lydia Kwofie	Cape Three Points	Okro	The CSA site showed great progress but less yield
Sophia Sarpong		Tomato, cabbage	Poor yield with the CSA; poor soil and requires more watering.
Alice Kwofie		Tomato	CSA: great yield but later destroyed by massive rainfall
Agnes Sikawa	Adubrim	Garden eggs, pepper, tomato	CSA: less yield, lasted longer and required effective pest control. Non-CSA: better yield, bigger in size, produce rots quickly, needs constant fertilizer application; including spraying.

**B. Use of local materials to control pests:** Farmers have learned to try locally available materials, e.g. plants, in the control of pests. At least two new methods were discovered by the farmers in the CSA practices. These were the *use of kitchen smoke soot* and a popular *local plant* known in local languages as *yenya* in Twi/Fante and *Sonwani* in Nzema.

**C. Farmers planting pest control trees:** A significant number of farmers use a neem recipe to control pests. However, the neem tree is unavailable in some communities but due to the passion for the organic practice, some farmers now pick the seeds/seedlings from other communities to plant in their communities. By planting this tree, they are assured of easy access in the near future. At least three of such farmers were seen doing this at Tweakor 2 and another farmer at Ayawora during the assessment.

*Madam Agnes Larye got some neem tree seeds from Accra (Greater Accra Region) and planted in her community for the purpose of organic farming. Her friend, Janet Berko, also picked neem seeds from Accra and Ada and planted in Tweakor 2. Benjamin Boah also secured neem seeds from Half Assini and planted in his farm.* A farmer at Ayawora, Emmanuel Aberro has planted five neem seedlings but one did not survive.

**D. Potency of good seeds:** A significant number of farmers noted that pepper seeds, planted with the CSA format and principles, could survive several seasons and years with same or even increasing yield. This was emphasized by Gladys Atsu of Navrongo, Agnes Cudjoe of Cape Three Points, Mr. Eshun of Kamgbunli, Mary Padi of Ayawora as well as Christina Jackson and Theresa Ephraim of Adubrim. Agnes Larye of Tweakor 2 noted that, “...for a year now my organic pepper plant is still yielding great produce unlike the inorganic version”

Theresa emphasized, “My pepper plants have been there for 3+ years and the yield is always great and amazing, thanks to CSA practice”.

Christiana observed, *“It has been 3 years and the yield is still good, I’m not sure of the same results with inorganic practices”*. In general, the farmers were of the principle that, *“... good things last long and are the best”*

- E. Strategic marketing of CSA vegetables:** Farmers ought to be strategic in marketing of their organic produce. Currently, only farmers in Kamgbunli have managed to sell (and continue to sell) their organic produce slightly above the price of the inorganic produce. Farmers in the 14 remaining communities conform to the prevailing market price for inorganic produce and at times receive a lesser price because buyers claim their produce is unattractive and smaller compared to the inorganic. Kamgbunli farmers did intensive sensitization to get the attention of the buyers and this practice would be useful to be replicated by other communities.
- F. Students teaching parents best farming practices:** it was encouraging to know that in communities such as Asonti, adult farmers are visiting the school’s CSA demonstration garden to learn from the teachers and students (their children). Some parents, who mostly practice inorganic farming, are amazed at the organic farming practices by the school. It must be noted that in all the communities, students (in high school) accompany and help their parents on their farms mostly after school hours and on weekends. It is reported that some students have “tried” organic farming practices in portions of the parents farms. Daniel Obeng, a student at Komfueku Junior High School in Shama district believes he has gained greater knowledge in CSA and emphasized that, *“...I learned how to plant pepper and cabbage. I have taught my parents how to plant cabbage and now they are benefitting from it”*. Daniel’s teacher, Mr. Christian Apprey, said, *“We didn’t know we could do this (organic farming), but through CSLP’s help we have realized our potential in farming, ...we have developed greater interest in farming; particularly in organic food crop production as the produce from the farm tastes better.”*





Figure 7: Maize harvested at a school's CSA site

### 5.3.3. Continuation of CSA practices post-CSLP

All the farmers and schools are more than prepared to continue the best practices acquired after the close-out of CSLP. The motivation to continue is primarily due to the benefits seen, emerging and perceived, of organic vegetable production. It is, however, likely that most farmers will consider the practice more for subsistence purposes than on a commercial basis. The commercial purpose will be heightened if they are able to properly create a niche in the market, sell at a higher price than conventional or inorganically production methods, and make a desirable profit. The following comments highlight the position of farmers on why they will continue the CSA practices and ensure its sustainability in the communities.

- *We have seen the importance and differences between organic and inorganic produce and we've decided to go ahead even when the CSLP ends – Clement Edemah of Mangyea*
- *We were using inorganic pesticides and fertilizers for cocoa on all vegetables as well. Now we know better and won't go back to the use of inorganic fertilizers and people now understand the quality of organic produce – Listwell Adus of Adusuazo*
- *When CSLP first trained us in organic vegetable production, we all went to practice it individually and we have seen what it entails and the huge benefits. Those of us who were interested went ahead to form the group so it is a decision we made out of experience and we are determined to continue with it – Mr. Blay of Sawoma*
- *It is for our own good, health-wise. Our forefathers lived longer and healthier because they did not use chemicals on their farm produce – Comfort Quaicoe of Sawoma*

- *When we consume vegetables that have been sprayed with various harmful chemicals, it has negative health implications because those same harmful chemicals find their way into our bodies and cause harm so we cannot stop now that we know – Sophia Sarpong of Cape Three Points*
  
- *The students are the future leaders and as we have taught and continue to teach them better farming methods through the CSA, they will end up practicing in one way or the other in the future. Some are already teaching their parents and such parents have reported of positive outcomes. Others may become farmers and go with the CSA approaches. We, the teachers, are practicing on our individual farms –Teacher Charles, Asonti M/A JHS*
  
- *The CSA practice will never die in our school and community. We have seen the benefits, seen the difference between the organic and inorganic farming practices and concluded that the CSA is the best for now and the future and the best ought to stay for generations to come-Teacher Christian Apprey, Komfueku D/A JHS*

## **6. Observations, Conclusions and Recommendations**

### *Observations and Conclusions*

Agriculture is regarded as the backbone of Ghana's economy and indeed the mainstay of the residents of the six coastal districts of the country's Western Region where the CSLP operates. In the Jomoro Municipal area alone, agriculture employs 65-70% of the labor force<sup>5</sup>.

It can be concluded that the CSLP has worked to contribute its quota to the promotion of agriculture in the six coastal districts and hopefully the project's legacy will transcend generations. The CSLP is having a significant impact in the lives of the beneficiary farmers and their dependents. Teachers and students have appreciated the importance of CSA farming and are promoting the practice in their communities.

It is good that the CSLP has targeted the youth to promote environmental education and sustainable farming practices. This is vital, given the younger age structure of the country (approximately 57% of the population is under the age of 25). In addition, it will help in contributing to the Government of Ghana's objective of encouraging more youth to consider agriculture as their future vocation. It is expected that as students gain a greater awareness of the role of agriculture in the economy and society, they will grow to become responsible citizens who support wise agricultural practices and policies.

In the various communities, the awareness on the impact of CSA practices on the environment and the farming livelihood is becoming well established and the interest created is growing/expanding. Active farmers have recorded benefits and look forward to greater benefits. The CSA groups formed to help champion the course are doing their best and can do better. Leadership of the various groups is critical. Strengthening the enterprise platform and ensuring that the groups are well organized and informed (as to market prices and variables) will help to achieve greater benefits, both for individuals and groups.

The challenges facing the wider adoption of CSA practices in the Western Region need to be better addressed. These include access to, and cost of, inputs, pest control and marketing of produce. It was evident that though some farmers have left a couple of the CSA groups (e.g. because they find it challenging/difficult and not yielding greater benefits in terms of sales), there are champions who are poised to continue to help expand the CSA practices post-CSLP.

---

<sup>5</sup> Source: Jomoro MTDP 2014-2017

It must also be noted some of the practices developed and findings by the farmers (such as differences between the organic and inorganic produce, lessons from their own experimental fields and use of some local plants for pest control) may not be scientifically acceptable or proven. However, local knowledge is key and ought to be highly respected and appreciated.

Indeed, it is also imperative for farmers to make good use of the various CSA demonstration fields. Staying as a group with such a site will help them stay connected as they use the demonstration sites for practical learning, testing of new technologies and sharing of ideas, lessons and experience.

In view of the field discussions, findings and observations, the following recommendations, grouped into two, should be noted.

### **Recommendations for consideration by farmers**

- A. **Re-organization of CSA groups:** Some of the groups need to be properly organized. In situations where there has been massive reduction in the group membership, appropriate steps must be taken to ensure that the remaining members continue to benefit from the association and serve as examples to bring back other members. In addition, education on the values and benefits of CSA can best be intensified with proven successful experiences of other local farmers. Farmers recording benefits should share experiences with non-group members as farmer-to-farmer learning is usually quite effective. This can bring in new members and also members who left the group. The focus should not be on increasing the membership alone but on improving the quality of experiences within and among the groups.
- B. **Intensive education in communities:** The best experiences are where CSA farmers are sharing with residents the difference between their produce and the inorganic version; noting the various benefits of the organic produce and the need for the price difference during sales and that “value for money” is helpful. And, despite the initial labor inputs, the overall cost of inputs and soil degradation accompanying inorganic practices.
- C. **Farmers should value their organic produce and engage in strategic marketing:** There is the need for farmers to appreciate the input made at getting the final produce and stress on the need to get accompanying monetary benefits. Farmers in Kamgbunli shared how they started; accepting the same market price as inorganic produce but quickly changed the status-quo by engaging the buyers (including market queens) in meaningful discussions about the nutritional values of the organic produce. (The market queens can use the same arguments to tout the organic produce to their buyers and increase their own margins as well).
- D. **Improving yields:** Due to the fact that most soils are degraded, more time is needed with more organic fertilizer to have the soil fertility improved/restored and usually this will be accompanied over time with improvements in the yield. Farmers must understand that

with time and application/continuous practice of the CSA principles, they will get their desired yield, and with less labor and monetary inputs. In most instances, extensive mulching of a field (for one to two years) is needed to replace used nutrients consumed by the cover crop as well as those lost over time from conventional, poor agricultural practices.

- E. **Use of appropriate tools/inputs:** Most farmers do agree that organic pesticides must be regularly applied to have the maximum impact. However, in situations where some farmers apply organic pest control liquid mixture (e.g. chilli pepper recipe) with their hands because of their inability to acquire basic agricultural spraying machines (e.g. knapsack sprayer), it is highly ineffective and needs to be discouraged post haste. CSA enterprise group members who are beneficiaries of the CSLP-facilitated Village Savings and Loan Groups can access small loans to acquire basic inputs. CSA groups can also buy such products for use by members at an agreed minimal fee. For instance, the current cost of a basic knapsack sprayer is around GHC55 (US \$13) and can easily be purchased at the group level.

#### **Recommendation for the consideration by CSLP, other partners and farmers**

- F. **Registration of CSA groups:** This will offer the groups another form of recognition and validation. Steps should be expedited to register the various groups at the respective Metropolitan, Municipal and District Assemblies (MMDAs). For instance, registration with the Business Advisory Centre (BAC) of the National Board for Small Scale Industries (NBSSI) would provide important validation for the groups.
- G. **Enhancing entrepreneurial skills:** If farmers can see the benefits of the business/enterprise component of the organic vegetable production, they will put in the necessary effort. Well-crafted entrepreneurial trainings should be organized for the farmers by concerned institutions; e.g. DoFA and NBSSI.
- H. **Intensive education:** The environmental impact justifies the CSA practice and more education needs to be done in the communities. Where possible, farmers who are now champions, must be encouraged and supported to lead such educational campaigns.
- I. **Effective marketing of produce:** Marketing needs to be viewed from two angles—within, and outside, a given community.

**Marketing in community:** The local community market should be considered for the sale of organic vegetable of lesser quantity. Cost of transportation to other marketing centers already adds another percentage to the selling price. If education is intensified in the communities, local residents will purchase the organic produce as it is gathered from the experience of Theresa Ephraim in Adubrim; her organic produce is sold in the community and demand outstrips her current supply.

**Marketing outside community:** The bottom line is about making a profit and also not selling at the same price as the inorganic (most preferred scenario by all CSA farmers) to create the differentiation. The farmer needs to realize that s/he is operating as a business. Market queens must be sensitized on the values of the organic produce and the need for the price differential. Also, farmers need to consider creating their own unique stands at the various markets coupled with proper signage and not mix with the inorganic produce sellers. Again, most farmers were yet to explore the opportunity offered by hoteliers and other corporate entities, who, through the CSLP's effort, met the farmers and have shown interest in the produce. CSA farmers believe they can get their desired price to be accepted by these institutions and ought to act fast. In the medium to long term, labels can easily be created for the organic produce and there are institutions to assist with this that are known by local CSA private sector advocates.

- J. **Control of pests:** Concerned institutions and the farmers should continue to explore several innovative options of effectively controlling pest invasion as the current methods have proven less effective. Farmers should continue to try and experiment with local plants and herbs for the control of pests and share their findings. For instance, the use of kitchen smoke soot for pest control was known by only the farmers who discovered it and was yet to be shared with members in their same CSA group and their community. The bamboo vinegar produced and sold by Ankobra Farms is an excellent pest repellent. With greater demand for this product there will be more produced and the cost to farmer will come down.
- K. **Effective networking:** There should be frequent engagements and platforms created for farmers, vegetable enterprise groups, buyers and service providers to stay connected and ensure discussions highlight both production and value chain. MoFA, NBSSI, and private sector interests need to work more strategically to help build these networks.
- L. **Scientific study:** It will be useful for research institutions to conduct studies on the methods and practices developed by some farmers and the findings shared. For instance, the use of the kitchen soot to control pest and some of the differences between the organic and inorganic produce are immediate examples. Graduate students at local universities and faculty can capitalize on these opportunities to promote more sustainable agriculture at the small farmer level.

## 7. Annexes

### Annex 1: Focus Group Discussion Guide

#### Section 1: CSA Benefits

1. The CSLP has supported you in implementing climate smart agriculture (CSA) practices for some time.
  - a. What does CSA mean to you?
  - b. Have you benefitted from it? If yes, how have you benefitted (as individuals and a group) from practicing climate smart agricultural technologies on your fields?
2. Has the formation of CSA enterprise groups been useful/helpful/unhelpful? Why and How?

#### Section 2: CSA & Climate Change

3. It is generally agreed that climate change is impacting agriculture in the world, with our country not an exception. Can you explain some of the ways in which agriculture has been impacted?
4. We (farmers and others) report on the impacts of climate change and the need to change our actions for the better; hence CSA.
  - a. What are some CSA technologies you have adopted?
  - b. Do you think the CSA technologies are helping to bolster resilience to climate change? If yes, how?

#### Section 3: Lessons Learned and Challenges

5. As a farmer, it is likely you will continue with farming for the next couple of years. Will you continue with CSA practices post CSLP? Yes/no? and why?
6. Do you have a story/experience to share from the adoption of the CSA practices?
7. What are the key challenges in adopting and continuing to practice CSA on your farm?
  - a. What are you doing to address these challenges?
8. What are the challenges and successes of the enterprise group?
9. Are there issues with marketing / selling of your vegetables?
  - a. If yes, how can such issues be addressed?

General comments, observations.....other suggestions/ recommendations

## Annex 2: Details of CSA Enterprise Groups

Group Name	Location	District	Membership		
			M	F	Total
Elole Kuo	Aduzuazo	Jomoro	10	3	13
Nyame Beye	Fawoman		4	11	15
Dzibodi Veg Farmers Association	Navrongo		20	7	27
TK2 Veg Growers Association	Tweakor 2		5	8	13
			39	29	68
Odo Ye Kuo	Adubrim	Ellembelle	11	9	20
Nyame Beye	Sendu		11	9	20
Marsha- Allah	Kamgbunli		19	42	61
Ayawora Vegetable Growers Assoc.	Ayawora		12	8	20
			53	68	121
God is Love	Bokro	Nzema East	15	17	32
Bomokrom Vegetable Growers Assoc.	Bomokrom		6		6
Asonti Nhyira Vegetable Growers Assoc.	Asonti		5	2	7
			26	19	45
Mmoa Kuo	Cape Three Points	Ahanta West		16	16
Akuafo Mmoma Yenye Na Ebeyeyie	Akatakyi		2	14	16
			2	30	32
<b>Total</b>			<b>120</b>	<b>146</b>	<b>266</b>

## Annex 3: Rapid Appraisal Itinerary

Date	Communities visited
May 8	Sawoma and Sendu
May 15	Cape Three Points, Akwidaa, Bokro
May 16	Kamgbunli, Tweakor 2, Navrongo, Adusuazo, Mangyea & Fawoman
May 17	Adubrim, Ayawora, Bomokrom, Asonti
May 22	Komfueku