Food and Agriculture Organization of the United Nations

SUPPORT TO THE INCORPORATION OF CLIMATE SMART AGRICULTURE IN SWAZILAND SCHOOLS AND AGRICULTURE TRAINING CENTRES PROGRAMMES

September 2019

SDGs:

Country:	Eswatini
Project Codes:	TCP/SWA/3603
FAO Contribution	USD 263 000
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Implementing Partners

The Ministry of Agriculture (MoA) and the Ministry of Education and Training (MoET).

Beneficiaries

School children and out of school youths, as well as public and private entities in the agriculture sector.

Country Programming Framework (CPF) Outputs

Priority Area 4: Sustainable use of natural resources and climate change; Outcome 4.1: Communities' and national institutions' resilience and management of natural resources improved by 2020.

BACKGROUND

In recent years, Eswatini has suffered from El Niño, a devastating AIDS pandemic, economic slowdown and soaring prices of food and agricultural inputs. Despite being ranked as a lower middle-income country, it has experienced a stalling of economic growth, leading to greater food insecurity and poverty. Women and youths are generally the most vulnerable population group, and there are a growing number of households headed solely by women and children, with more men seeking employment away from home and as a direct result of HIV/AIDS. The agricultural sector has been affected by erratic rainfall and climate change. Changes in weather patterns have had an adverse effect on food production, resulting in insufficient production for domestic consumption. Additionally, reduced access to food markets and a lack of value addition to agricultural processes has compounded concerns relating to food and income security.

The Government has endeavoured to address these concerns by adopting an approach that focuses on climate change adaptation through resilient agricultural practices. This has involved the introduction of Climate Smart Agriculture (CSA) techniques such as Conservation agriculture (CA), Agroforestry (AF), the use of drought tolerant crops and the use of quality seed for specific ecological areas. While these technologies have been promoted among farmers, schoolchildren typically still use curricula that are not based on climate responsive agriculture. A key element of the new approach, however, will be to boost youth participation in agriculture through the promotion of CSA in schools and educational centres. In this manner, children can develop agricultural skills that are relevant to national demands and an interest in agricultural practices can be nurtured from an early age. Importantly, the shift from conventional agriculture to CSA has the potential to intensify and stabilize food production by engaging children and youths in innovation and fostering new enterprises for income generation for smallholder farmers.

Youth participation in agriculture is extremely low in Eswatini and, despite the efforts made to increase engagement, agriculture is largely viewed as a last resort by young people. In contrast, about half of the children in Kenya that are extensively trained in agriculture at school become farmers when they grow up. In Eswatini, schools with agriculture programmes generally do not incorporate new techniques that focus on climate change adaptation, thus failing to provide students with the necessary competencies for meeting modern agricultural demands and, ultimately, discouraging new farmers from entering the industry. Although smallholder farmers have embraced CA and AF as central components of sustainable production, these practices are lacking in school curricula. The project was designed to introduce CSA techniques to school children and out-of-school youths to spark an interest in highly productive and commercial agriculture at a young age, simultaneously promoting sustainable agricultural practices and work opportunities in the agricultural sector.

IMPACT

The project aimed to enhance the food security, nutrition and livelihoods of smallholder farming families. This was addressed by improving school children's and out-of-school youths' understanding of CSA, with an emphasis on its practical application.

ACHIEVEMENT OF RESULTS

Output 1: Self-help youth groups, training centres and school demonstration or production sites established

Following the appraisal of agricultural trends and production practices in Eswatini, 20 high schools, 6 tertiary institutions and 20 out-of-school youth groups were identified for awareness raising and capacity development activities pertaining to CA. Using a Training of Trainers (ToT) approach, two teachers at each academic institution, as well as multiple youth group leaders, received training on CA theory, its practical application and the establishment of demonstration sites. Although many youth groups already had farmland available for their use, the MoA and the Eswatini National Youth Council (ENYC) played an important role in ensuring the availability of land for production and demonstration sites. Additional training sessions were conducted on CSA, market-oriented production and mushroom production for school teachers and youth group leaders.

Data was captured at all available production sites, including GPS coordinates, for the selection of ideal CA demonstration sites. Various items were procured to support the establishment of demonstration sites and were delivered to project sites by the MoET, the MoA and the ENYC. These included vegetable seeds/seedlings, fertilizers, fencing materials, irrigation materials and tools. A total of 46 demonstration sites were established, one for each participating school, tertiary institution and youth group.

Output 2: Agriculture teachers and tertiary instructors trained on climate smart agriculture techniques and agriculture education curriculum updated

Although the base level of knowledge surrounding CSA was not evaluated in the project, an impact assessment that focused on teachers and youth leaders was performed. Sensitization workshops were carried out, exposing 40 head teachers and principals to the project and its goals. Over 2000 participants attended the project launch, including teachers, students and representatives from the MoA and the MoET. A team from the MoET and the Eswatini National Curriculum Centre (ENCC) developed a CSA manual, adapting relevant principles to the Swazi setting from the existing CSA manual for Kenya. A curriculum audit was carried out by the ENCC, which was to be used as the basis for curriculum updates, so as to incorporate CSA at different points in the education system. After having completed the ToT sessions on CSA, teachers and instructors served as lead farmers/experts that guided the establishment of demonstration sites for CA and AF and carried out CSA demonstrations for over 1300 students. In particular, reports from the schools and youth groups highlighted that these demonstrations were important for reducing post harvest losses and increasing returns from the sale of produce.

Output 3: Local market linkages for demonstration and production sites produce enhanced

Prior to establishing connections with local markets, each youth group carried out an assessment of the demand for agricultural produce. Support was provided following the completion of market reports by individual groups to establish connections with the market and make appropriate plans to meet production needs within each locality. A pair of two-day ToT sessions on market-oriented production were carried out for teachers, instructors and group leaders, who in turn supported the development of other peoples' understanding of the key concepts and practices involved. Market linkages were established with several supermarkets, including SPAR, Shoprite and Pick and Pay, as well as with the National Agricultural Marketing Board (NAMBOARD). Informal linkages with market outlets in Siteki, Manzini and Mahlanya were also developed. The Market-oriented Production Manual was developed and shared with demonstration participants, as well as with representatives from schools and out-of-school youth groups.

A home-grown school feeding programme was developed under another TCP, connecting out-of-school youth groups with local schools. Of the 20 groups involved, 15 started supplying schools with an assortment of produce, while for the other 5 groups, the nearest schools were beyond the established 10 km radius.

Implementation of work plan

All project activities were carried out within the allocated budget, which saw a minor reallocation of funds across budget lines. The implementation of project activities were delayed, resulting in the loss of one farming season. Several fiscal challenges were encountered throughout the project such as transport shortages and limited fuel availability for Government vehicles, which affected the availability of Government officers. Additional delays were experienced due to the process involved in engaging the out-of-school youth groups. The delivery of procured items to project sites was also slowed down as a result of transport limitations. The ENYC was recruited to facilitate the delivery of procured items to youth groups. Some of the participating schools had challenges with their water supply, complicating the establishment of demonstration sites. In spite of these challenges, the delays did not prevent the execution of activities planned during project formulation.

Follow-up for government attention

Considering the level of success achieved in introducing schools and out-of-school youth groups to CSA technology through the establishment of demonstration sites, engaging additional participants and ensuring adequate availability of land for production are key areas for follow-up action. Further technical assistance should be delivered to young farmers, who, despite being adequately exposed to CSA methods, only had one season to grow produce under the project. The MoA and NAMBOARD possess the technical expertise to deliver this assistance beyond project closure. A continued effort by the ENCC to promote CSA in school curricula according to the recommendations in the Curriculum Audit Report will also be important going forward.

Sustainability

1. Capacity development

The MoA was a key player in the implementation of the project. The MoA is also involved in the Children and Youth Development Programme (CYDP), which was built upon the success of the Junior Farmer and Field Life Schools (JFFLS), offering participating children and youth groups the opportunity to develop both modern and traditional agricultural skills. The CYDP seeks to improve the livelihoods of children and youths through their engagement in agricultural initiatives, promoting their long-term food security and minimizing their vulnerability. Another important contributor to the project was the ENYC, who operate under the Ministry of Sports, Youth and Culture (MoSYC), which has a fund to support youth business initiatives. The ENYC was notably involved with the engagement of out-of-school youth groups and the establishment of connections between these groups and the market. The commitment of both the MoA and the ENYC to the promotion of food security and the enhancement of livelihoods, as well as the existing Comprehensive Agriculture Sector Policy, which advocates for youth engagement in agriculture, will play a crucial role in the long-term sustainability of the project's goals. However, there is still room for the strengthening of policy to support the engagement of youths in the agriculture sector. In addition, the MoET was also heavily involved in project implementation, particularly the elements concerning the updating of school curricula to incorporate CSA practices. Their involvement in this ongoing process will be crucial beyond the closure of the project.

The formation of a project task team that included members from the MoA, the MoET, the MoSYC and the Ministry of Tourism and Environmental Affairs marks the creation of a strong partnership for achieving the project's long term objectives. The project task team was able to work with other strategic partners, such as the ENYC and the ENCC, who were principally involved with practical aspects of the project. Cooperation among all stakeholders will be important for the continued success in building capacities and developing skills relating to CA and AF. As part of the project's exit strategy, the project task team planned to follow up with partners to ensure the long-term achievement of project goals.

2. Gender equality

Gender considerations were heavily built into the design of the project. During project implementation, a concerted effort was made to involve young females at demonstration sites, support the participation of females in out-of-school youth groups and ensure the equal involvement of female teachers. Accordingly, both men and women benefited from project activities and several leadership roles in youth groups were filled by females, including Winile Simelane (We Win Together), Nozipho Mamba (Ngudzeni Youth), Thobile Simelane (Nkwene Wings of Change) and Nondumiso Mbuyisa (Sivutsa Bhe Sankolweni).

3. Environmental sustainability

The project was designed to support environmental sustainability by promoting the continued implementation of CSA methods. Preventing environmental degradation was an important component of the project, evidenced by the avoidance of uncontrolled pesticide use and the prevention of river pollution, among other activities.

4. Human Rights-based Approach (HRBA) – in particular Right to Food and Decent Work

The project made a substantial contribution to the right to food. Produce grown at school demonstration sites was distributed among participants, with the excess being sold or delivered to school feeding programs. For out-of-school youths, the primary focus was on establishing connections with the market, offering better employment opportunities in the agriculture sector, while also strengthening food security. Some youths became fully involved in farming as a result of the project, while others became involved in the home-grown school feeding program.

5. Technological sustainability

The implementation of good agricultural practices is an essential component of CSA. Jab planters were introduced during the project, which are considered a CA friendly technique, and the use of pot holing was considered a CSA relevant method. These technologies were introduced to ensure that production was not compromised due to poor practices. Minimal tillage is also an important component of CA, yet farmers were used to ploughing and using permanent soil cover. Additionally, crop rotation was being practiced at smallholder family farms and was part of school curricula. Further technical assistance is still required to assist young farmers, who only had one season to grow field crops under the project. Nevertheless, young farmers received adequate practice and exposure to CA, which includes an understanding of how it can be incorporated into AF. Importantly, the technical assistance can be provided by the MoA and NAMBOARD, who possess the required expertise to deliver training.

6. Economic sustainability

The development of market linkages between out-of-school youth groups and local supermarkets was an important aspect of the economic sustainability of the project. Together with the TCP that developed the home-grown school feeding program, out-of-school youth groups had multiple avenues for the sale of produce at project closure. The promotion of CSA methods and market-oriented production equipped stakeholders with a better understanding of the economic aspects of creating sustainable livelihoods.

DOCUMENTS AND OUTREACH PRODUCTS

- Curriculum Audit on Climate Smart Agriculture in Eswatini (Modern Agriculture and Prevocational Agriculture). Phumelele Kunene-Ngubane and Zethu Tsabedze.
- Market Oriented Production Training Guide. Project Task Team. June 2018. 15 pp.
- CSA Training Manual in Eswatini. Project Task Team. March 2019. 18 pp.

ACHIEVEMENT OF RESULTS - LOGICAL FRAMEWORK

Expected Impact	**Smallholder farming families' long-term food and nutrition and livelihoods security enhanced**	
Outcome	School children and youth farmers' practical knowledge and application of climate smart agriculture food production practices improved	
	Indicator	Proportion (%) of trained children and youths applying their skills in family fields
	Baseline	2%
	End Target	50%
	Comments and follow-up action to be taken	The project resulted in improved practical knowledge and application of CSA food production practices by school children and youths. This was achieved through the combination of training sessions and demonstrations covering both CA and AF. In addition, some of the school children further applied the knowledge that they gained from the project. Fifteen out-of-school youth production sites were linked to institutional buyers, thus strengthening connections between the market and production sites. This ultimately enabled the youth groups to supply their produce to schools in their own communities under the Home Grown School Feeding Programme, which was jointly undertaken by FAO and World Food Programme (WFP). A school teacher from Timphisini High School, Mr Michael Dlamini, highlighted in the school report that: "FAO has played a very important role in the changes and improvements in our agriculture technology. [This] is recognized through the [continuous] growth of production in the agriculture sector. The adoption of modern practices for our own use will have a great impact as we deal with challenges brought [on] by [climate] change. The workshops initiated by FAO have effectively equipped agriculture teachers with skills and solutions to face such global changes. We therefore plead FAO to continue with their support to schools by providing them with inputs and farming equipment, together with agroforestry [supply] trees."

Output 1	Self-help youth groups, training centres and school demonstration or production sites established		
	Indicators	Target	Achieved
			Yes
Baseline			
Comments	A total of 46 groups (20 high schools, 6 tertiary institutions and 20 youth groups) participated in the project. Participants had the opportunity to practice AF and CA at the established demonstration sites. Teachers and youth leaders were trained and guided on how to set up demonstration sites for CA and AF for both vegetable crops and field crops. The field crops included maize, cowpeas, sorghum and beans, while the vegetables included tomatoes, cabbage, spinach, lettuce, beetroots, carrots, green pepper, onions, broccoli and cauliflower. Concepts from the Farmer Field School (FFS) approach were used to support activities with the out-of-school youth groups, but not with the schools, because extra resources would have been required to build the capacity of teachers regarding JFFLS. A key area for follow-up action by the MoET and MoA is the continued introduction of CSA technologies to additional schools and youth groups.		

Activity 1.1	Appraise the status of existing production trends and agronomic practices in the country (baseline studies)	
	Achieved	Yes
	Comments	In appraising the production trends and agronomic practices in Eswatini, reference was made to the document on Farming Systems and Development of Agricultural Production Technologies in Swaziland by Professor Edje, Professor Dlamini and Mhazo (30 May, 2012).
Activity 1.2	Mobilize and create awareness about CA in 20 schools	
	Achieved	Yes
	Comments	Using a ToT approach, awareness surrounding CA was raised at 26 institutions (20 high schools and 6 tertiary institutions). The capacity of two teachers at each school was developed on CA theory, its practical applications and the establishment of demonstration sites.
Activity 1.3	Mobilize and create awareness about CA in 100 self-help youth groups	
	Achieved	Partially (50%)
	Comments	A total of 20 out-of-school youth groups took part in the project. Youth group leaders were trained on CA using a ToT approach. The training focused on both theoretical and practical components of CA, including the layout of demonstration sites. Challenges were experienced in trying to engage the originally targeted 100 out-of-school youth groups even though the MoA and the ENYC were involved in the identification process. A continued effort to engage additional groups and develop their capacity on CA is an area for follow up for the MOA and ENYC.
Activity 1.4	Advocate for demonstration and production land for youth groups	
	Achieved	Yes
	Comments	Many of the participating youth groups already had farmland that they had mobilized on their own. The MoA and ENYC were instrumental in facilitating the availability of production land for the groups. The MoA and the ENYC should continue to advocate for agricultural land for out-of-school youths to further support youth engagement in agriculture within each locality.
Activity 1.5	Training for school teachers and group leaders/lead farmers	
	Achieved	Yes
	Comments	Various training sessions were conducted on CSA, market-oriented production and mushroom production for school teachers and youth group leaders.
Activity 1.6	Site selection/field measurements and GPS locating	
	Achieved	Yes
	Comments	Data was captured for each site, including their GPS coordinates. Field sizes for the out-of-school youth groups were also captured. A database is available with all of the statistics.
Activity 1.7	Procurement and delivery of demonstration inputs	
	Achieved	Yes
	Comments	Various items were procured to support the demonstrations, including vegetable seeds/seedlings, fertilizers, fencing materials, irrigation materials and tools. These items were delivered to project sites by the MoET, the MoA and the ENYC.
Activity 1.8	Demonstration Layouts Field establishments in demonstration plots, schools, group sites and training centre	
	Achieved	Yes
	Comments	Forty-six demonstration sites were established (26 for schools/tertiary institutions and 20 for out-of-school youth groups). During the CA training, the field layouts for the CA demonstrations were shared with participants.

Output 2	Agriculture teachers and tertiary instructors trained on climate smart agriculture techniques and agriculture education curriculum updated		
	Indicators	Target	Achieved
			Partially
Baseline			
Comments	A total of 90 teachers/tertiary instructors and 22 youth leaders were trained on CA and AF, including the post-harvest handling of produce for the market. The teachers and youth leaders thereafter served as lead farmers/experts and guided the establishment of the demonstration sites on CA and AF. A curriculum audit for CSA inclusion was conducted through ENCC, which highlighted the shortcomings of the existing agriculture syllabus for secondary schools and high schools. The audit was to be used as a basis for revision of the curriculum, to better include CSA.		
Activity 2.1	Undertake baseline studies on Level of knowledge on Climate Smart Agriculture knowledge among change agents and identify gaps		
	Achieved	Partially (40%)	
	Comments	A baseline level of knowledge on CSA among change agents was not undertaken in the project. However, an impact assessment that focused on school teachers and youth leaders was conducted.	
Activity 2.2	Conduct sensitization workshops to introduce the project to participants		
	Achieved	Yes	
	Comments	Forty head teachers and principals were sensitized to the project. Over 2 000 participants attended a project launch, comprising teachers and students, as well as officials from the MoET and the MoA.	
Activity 2.3	Develop technology-training manual for training of trainers in collaboration with UNISWA and MoET curriculum centre.		
	Achieved	Yes	
	Comments	A CSA manual was adapted to the Swazi context based on the CSA Manual for Kenya by a team from the MoET and ENCC.	
Activity 2.4	Update existing curriculum for schools and conduct training of pilot schools and youth groups in smart agriculture techniques and equipment use.		
	Achieved	Yes	
	Comments	The process to update the curriculum was initiated. The curriculum audit undertaken by ENCC was to be used as a basis for updating the curriculum, with the aim of including CSA in the revised version. The ENCC needs to continue engaging with the appropriate structures for the inclusion of CSA in school curricula at different levels, as indicated in the Curriculum Audit Report.	
Activity 2.5	Teachers and tertiary instructors conduct practical training for school children and youth groups on Conservation Agriculture and Agroforestry including post-harvest handling of produce for market		
	Achieved	Yes	
	Comments	Following the ToT on CSA for teachers and instructors, over 1 300 students took part in the demonstrations and were also trained. Reports from the individual schools and groups indicated that the training was important for the reduction of post-harvest losses and increasing returns from the sale of produce.	

Output 3	Local market linkages for demonstration and production site's produce enhanced		
	Indicators	Target	Achieved
			Yes
Baseline			
Comments	A series of trainings on market-oriented production were conducted by the MoA and FAO staff for a total of 109 participants, including 89 teachers and 20 youth leaders. Markets linkages were strengthened for the out-of-school youth groups, with vegetable produce being supplied to supermarkets such as Shoprite, SPAR and Pick and Pay. These market relationships were organized by the participants following the training on market-oriented production. Through a TCP that supported a home-grown school feeding programme, a market was developed for out-of-school youth groups for supplying schools with an assortment of vegetables and field crops (maize and beans). Of the 20 out-of-school groups, 15 qualified to supply local schools, while the other 5 did not because there were no schools within the 10 km radius (the distance established in 50 pilot schools).		
Activity 3.1	Undertake a market/demand analysis to ascertain existing local market potential for fresh produce from smallholder producers with youth groups		
	Achieved	Yes	
	Comments	Prior to growing produce, each group was tasked with determining the market demand. Support was provided following the completion of market reports by individual groups. A number of market connections were established, including those with supermarkets like SPAR, Shoprite and Pick and Pay, as well as with NAMBoard. Other informal market connections were created with market outlets in Siteki, Manzini and Mahlanya.	
Activity 3.2	Support the planning of production to meet the market demand and establish a marketing system for each produced crop.		
	Achieved	Yes	
	Comments	Within each locality, groups were assisted by extension staff to make the necessary plans for production in order to meet market needs. The other groups (e.g. Mpakeni, Mpenjane), which had connections with NAMBoard, were guided by the NAMBoard Extension Officers.	
Activity 3.3	Conduct training workshops for producers in understanding marketing information and good marketing practices.		
	Achieved	Yes	
	Comments	Two separate two-day ToT sessions on market-oriented production were conducted for teachers, instructors and out-of-school group leaders. Those who were trained, in turn, supported other individuals in understanding relevant information about the market and good marketing practices.	
Activity 3.4	Enhance the knowledge of teachers and instructors on market oriented production		
	Achieved	Yes	
	Comments	As a result of the ToT workshops on market-oriented production (Activity 3.3), teachers, instructors and out-of-school group leaders gained knowledge on the topic.	
Activity 3.5	Develop national market-oriented agriculture training guidelines to school children and youth groups		
	Achieved	Yes	
	Comments	The basis of these guidelines formed the content of the Market-oriented Production Manual, which was shared with participants as reference material to guide representatives from schools and out-of-school groups.	

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