

The Cocoa Abrabopa Environmental and Conservation
Management Plan

**The Cocoa Abrabopa Association Environmental
Management and Conservation System**



9th October 2012

Introduction

Cocoa Abrabopa Association's (CAA) goal is to better the life of farmers through sustainable cocoa production. A vision of bettering life is not merely based on economics, but encompasses the protection of environs where cocoa is produced. CAA realizes the dangers of unchecked cocoa production, for its flora, fauna, and local populations are affected negatively both in the short and long term. Farmers who are a part of the CAA conform to strict internal standards of continual improvement given to conserve their environment to maintain biodiversity, safeguard social and environmental well-being, and ensure sustainable practices. CAA's conservation plan looks to the short, medium and long term, focusing on three main goals to address social and environmental management. Firstly yield increase through best management practices, so as to prevent the need for agricultural expansion into virgin forests. Secondly CAA focuses on the conservation of natural environs, as well as the mitigation of the effects of cocoa farming. Finally, CAA focuses on education to connect the farmer to his land and to aid in the long-term role of farmers and their families to helping protect their environment. These three goals cannot easily be separated in their implementation, as they are inherently linked. CAA utilizes a network of managers, trainers, inspectors, regional promoters and specially trained farmers to attain their goal of sustainable cocoa, approaching the issue with both a top-down approach, as well as grassroots considerations. This network seeks to respond to changing needs, to ensure continued action for conservation. CAA through commitment to conservation, promotes efficient farming and positive action by farmers to maintain the biodiversity of their land, ensuring a better place for flora, fauna and the local population

Goals

Ghana's cocoa producing region lies in what is part of the West African block of forests, a block containing some of the most diverse and threatened ecosystems in the world. Cocoa farmers therefore can pose a significant threat to the environment with their actions. Cocoa farming is known for its deforestation capabilities, as farmers turn to slashing and burning tracts of forest to expand their farms. Waste from cocoa farming, notably inorganic waste, from plastics to leftovers from Crop Protection Products, pollutes farms, harming flora, fauna and local populations. Farmers on an individual level also do their damage to ecosystems, hunting indigenous species who are already suffering from shrinking habitats. Not taking conservation into account will lead to long term catastrophe, as farmers depend on rainforests for their livelihood, and globally this will only contribute to the pace of global warming and species extinction. CAA hence have set clear goals and implementations to tackle the local and global issues, as the short and long term consequences for all involved are too great to not consider.

Sustainable yield increase

At the heart of CAA's plan for conservation is the increase in yield per acre for the farmers involved, allowing maintenance of natural ecosystems through maximum efficiency with minimal land use, dissuading continued expansion into virgin forests. Through best management practices taught to those joining CAA, farmers increase their yield per acre by three to eight times on average in their first four years. Best management practices take on a variety of forms, concentrating on Integrated Pest Management. CAA has collaboration with both the Cocoa Research Institute of Ghana (CRIG) and the Ghanaian Cocoa Board (COCOBOD) to assure the most up to date information on crop

protection products, pests and diseases, to create a dynamic management system. Our farmers are related this information regularly, through regional promoters, training sessions, newsletters and internal inspection, all in the aim of increasing yield to prevent unnecessary expansion.

Environmental conservation and mitigation of damage

Yield increase in of itself is not enough to guarantee the conservation of the environment surrounding CAA farms, and therefore CAA internal standards also focus on conserving bio-diversity, as well as mitigating any negative effect associated with cocoa farming. CAA tackles such issues at both central and farmer level, providing a dynamic and adapting approach to environmental considerations, utilizing its network of staff on all levels to react to local and national changes. CAA seeks to actively conserve and limit damage sustained during the cocoa farming process, to ensure the place of biodiversity in its producing regions.

Education

Conservation in Ghana has to start at the root of the problem, and that is education. A system of education working from the most basic notions of the environment and conservation is in place, as farmer perception of the environment that they live in must change. Building on these basic ideas, on the importance of conservation for not only farmers crops but also for their communities and families, is designed to ensure long-term, real commitment from farmers, to assure a truly sustainable system. Education is vital in CAA's other two goals, as rather than impose standards on farmers we seek to educate them why these standards exist. CAA hopes to create a socially conscious and aware association, where farmers are linked to their land in a dynamic fashion. The CAA's goal in education is to have a long-lasting effect on the entire cocoa system.

Implementation

The implementation of CAA's conservation plan takes place on all levels of the association, but concentrates on the individual farmer through a rigorous internal standard. Certified farmers must conform to these internal standards, upheld through internal and external inspectors, as well as being supported by constant training and information. The standard and inspections evolve with changes in the association and the national and global context, constantly striving for improvement. The actions and standards that CAA has undertaken to conform to its goals of conservation, and future developments to further improve its model of conservation, are listed below.

Integrated Pest Management

- Application of Crop Protection Products: farmers are taught the proper use of fertilizers, pesticides and fungicides through training and demonstration, using only CAA provided inputs, with CAA approved quantities and times of application. Chemicals are designed for by the acre usage, ensuring a minimal use for maximum yield and effective management of pests.
- Natural disease and pest management: natural methods of pest management are emphasized, so as to use fewer Crop Protection Products but assure a higher yield at a lower cost to the environment. Techniques such as the use of cutlasses to remove mistletoe, the plugging of stemborer holes, use of shade trees to encourage ant populations who eat capsids, and the removal and burial of infected pods all contribute to less pest and disease problems, less Crop Protection Products and a higher yield.

- Calendar approach: CAA has a standardized calendar for Farmers, which ensures the optimum yield through best management practices, should weather patterns change or be uncharacteristic regional promoters advise farmers on optimum times for spraying and pruning.
- Collaboration with CRIG and COCOBOD: unknown pests and diseases are communicated from farmers to promoters to CRIG and COCOBOD, insuring quick and efficient response to any outbreaks.
- Seed Production Unit (SPU) seedlings grown: seedlings from the SPU are less prone to disease and ensure a higher yield.

Crop Protection Products

- Consideration of Crop Protection Products: approved by CRIG and COCOBOD whose rigorous testing assures conformity to global standards, as CAA seek the least toxicity for flora, fauna and human populations.
- Linked with CRIG and COCOBOD: ensuring the most up to date information on crop protection products
- Proper storage of crop protection products: careful regulations are put in place to store crop protection products, keeping them out of reach of children and animals, in a designated separate and lockable room. The hazardous nature of the contents of the storage room must be clearly indicated. CAA provides agro-storage boxes for such a purpose to their farmers so as to prevent contamination. The CAA has also created a group-storage solution that it promotes to all groups for safe storage.
- Disposal of crop protection products: used containers are brought to warehouses, which are then brought to a central disposal unit provided by Wienceo to assure the safe destruction of chemical containers, and prevent their re-use
- Water contamination: strict limits are in place for spraying, with varying distances given for different bodies of water (streams, rivers, lakes and springs or natural wells). Harvested pods are not stored near to water bodies to prevent any seepage of crop protection products. These measures prevent excess run off into water bodies, so as to promote better conditions for human health and the environment.
- Cultural Maintenance: farmers are taught the value of regular weeding and pruning according to the CAA calendar, promoting natural yield increase over agro-chemical use, and dissuading the use of herbicides on farms.
- Buffer zones: at least 5 meters must be maintained between water bodies and cocoa farms, with vegetative cover maintained to limit any contamination from chemicals
- Use of organic waste: farmers are encouraged to use biodegradable waste, from both cocoa farms and their home, as a natural fertilizer to lessen dependency on chemicals
- Non-regulation crop protection products: farmers in Ghana are offered a wide array of crop protection products from independent retailers, some less savoury than others. CAA is committed to stopping the use of crop protection products that do not conform to Ghanaian as well as global regulations, and are therefore planning a campaign for 2012 to root out non-approved crop protection products, through training, the spreading of information and petitioning to COCOBOD and the Environmental Protection Agency (EPA) to standardize regulations in Ghana to meet world criteria. The problem is endemic in Ghana, but CAA realizes the harmful effects of such products, affecting the environment and farmers, and hence is

working diligently to halt the proliferation of such chemicals, hoping to see them universally banned in the coming years.

Flora and Fauna

- Baseline assessment of animal diversity: 2013 initiative to get list of animals from farmers present on cocoa farms. This will be cross referenced with the Ghanaian endangered species list (see appendix A) to create an effective inventory of species at risk at CAA farms, which will become part of the internal standard. The process is taking place during the 2013 internal inspection.
- Shade trees: 6 to 9 shade trees per acre are enforced, with at least two different species to promote biodiversity. Suitable trees are communicated through promoters, lists available in the internal standard and at warehouses, encouraging the growing of endangered species. By 2012 CAA had provided over 125,000 shade trees, whose species were chosen due to their ability to grow fast, have deep roots (so as to collect any unused fertilizer), and to provide adequate shade for the cocoa trees.
- Buffer zones: regulation distances between protected areas, bodies of water and other crops
- Hunting prohibited: prohibited to hunt sign provided by CAA to make compliance clear.
- Forest reserves maintained: careful attention to the white pillars of the forestry department, preventing encroachment on forest reserves, as any actions with a negative impact on the reserve are banned. Promoters are used to maintain contact between the park authorities and farmers should issues arise.
- Soil erosion: farmers are taught skills on preventing soil erosion, and prevented to farm on highly inclined farms.
- Paper preservation: the 2012 internal inspection was done using 75% less paper than in 2011 thanks to the introduction of a more efficient form.

Energy Efficiency

- Community level: In trainings farmers are taught to use as little fuel as possible for their personal consumption. Taking wood off fires when not in use will reduce the emission of carbon dioxide in the atmosphere. Members are further encouraged to group their cocoa together so as to use less transport fuel to bring cocoa to their warehouse
- Warehouse: the warehouse in Samreboi has a pilot of solar power installed, which powers all aspects of the warehouse. The plan is to install solar power at all warehouses, and eventually at the management level as well.
- Office Staff: all office staff is told the importance of switching off lights and air conditionings when no one is present.

Mapping of Farms

- Use of Global Positioning System (GPS) and Geographic Information System (GIS) surveying: CAA uses a new mapping method, utilizing GPS technology to gain specific coordinates for farms, and this coupled with GIS provides a large amount of information that CAA uses to assure conformity to its conservation plan. Surveyors and mappers have been working since the middle of 2009, having thus far mapped over 8,000 farms and hoping to have surveyed 20,000 by the end of 2012.

- Base map as a conformity check: CAA uses the Arkview program to map farms, a program that can use information from the Ghana Surveying Department (GSD) to check on farm conformity to standards. GSD has provided CAA with base maps that indicate elevation, water bodies, forest reserves, landforms and transport. This information will allow the CAA central office to check the steepness of farms and their conformity to buffer zones around water and protected areas (see Appendix B). Any expansion would be measured, ensuring that it will not go into virgin forests or protected areas. Regional promoters can be easily notified of any infringement of standards, so that farms can be informed.
- Mapping in case of disaster: having farms mapped allows for central action should any disaster strike, from disease outbreak to floods or fires. This will help to warn farmers of potential dangers, and help to conserve land and cocoa through early action.
- GMO products: though GMO crops are not prevalent in Ghana, should they begin to appear the Arkview system will be able to map any developments, ensuring division between GMO and non-GMO crops.

Expansion

- Farm planning: any expansion should first be cleared by a promoter, if deemed necessary it must conform strictly to standards, using a lining and pegging system and the optimum per acre amount of trees (between 435 and 450), with immediate shade tree planting. Only SPU seedlings are to be used, burning forest is strictly prohibited, and any expansion must not be into forest reserves.

Registration process requirements

- Change in 2010: no farms on steep hills (over a 25% incline), nor bordering large rivers.

Waste Management

- Separation of biodegradable and non-biodegradable waste: farmers are taught to utilize different waste pits, a suitable distance away from people and animals which is well sign posted. Burning of waste is strictly prohibited.
- Clean farms and communities: the importance of cleanliness, from the removal of organic and inorganic waste, as well as the dangers of empty agro-chemical waste (from bottles to sprayers) are communicated to farmers, to ensure a clean and healthy living environ for local populations and the biodiversity that surrounds them.
- Clean farm materials: anything used in the agro-chemical process is carefully cleaned so as to prevent human and animal contact with chemicals.
- Waste Water: All waste water from bathrooms, dishwashing and clothes washing has to be properly disposed of, in pits with palm kernels.

CAA Warehouses

- Construction: Use of FSC wood where available, no endangered indigenous tree species.
- Action of the warehouses: staff is trained to be conscious of environmental issues, ensuring the warehouse conforms to standards on waste management. The warehouses will act by early 2012

as training and information centers, to educate staff and farmers on conservation and any developments within CAA.

- No bonded or child labour stipulated in the contract
- Solar energy: being piloted at Samreboi warehouse, with the goal to include at all warehouses
- Shade Trees: Shade tree seedlings planted at all sites
- Progress: 3 already constructed, 4 more under construction to be finished by December 2012, a process which will be continued until they are present across CAA areas.

Education

- Education takes place largely within training: training takes place both on the farmer level as well as the staff level, to increase awareness throughout the association. These trainings occur yearly, always changing to address new issues, such as the 2012 initiative to tackle non-regulation crop protection products, and the 2013 training program focusing on endangered species.
- Staff training: promoters, warehouse staff, office staff, internal inspectors, surveyors and management all take part in training programs which include environmental and conservation considerations. CAA also uses external trainers, Technoserve.
- Certification training: careful consideration for those involved with certification, these being promoters, internal inspectors and cluster inspectors, who receive specialized training including more focus on the importance of conservation.
- Farmer training: farmers wishing to join the CAA certification scheme must first go through sensitization training, explaining the notions of certification, and when ready are given certification training. Subsequent training each year is constantly updated, with different training for groups who have been certified for a longer period.
- Newsletter: a popular newsletter is published every three months, informing CAA farmers of issues and changes.

Conclusion

The conservation plan here outlined essentially conforms to CAA's inherent goal; that is the bettering of the life of the cocoa farmer. The association looks to effective measures so as to ensure a long-term commitment to conservation with short-term effects. Our hope is that our efforts at integrating an evolving notion of conservation into the CAA model will affect all sectors of the cocoa industry, and beyond.

Appendixes

Appendix A: list of endangered flora and fauna

Endangered Animals of Ghana

Mammals

Species Name	Common Name	Conservation Status
<i>Balaenoptera musculus</i>	Blue Whale	Endangered
<i>Hylomyscus baeri</i>	Baer's Hylomyscus	Endangered
<i>Lycaon pictus</i>	African Wild Dog	Endangered
<i>Pan troglodytes</i>	Common Chimpanzee	Endangered
<i>Procolobus badius</i>	West African Red Colobus	Endangered
<i>Cercocebus atys</i>	white-naped Mangabey	Vulnerable
<i>Cercopithecus diana</i>	Diana/roloway Monkey	Vulnerable
<i>Panthera leo</i>	lion	Vulnerable
<i>Physeter macrocephalus</i>	Sperm Whale	Vulnerable
<i>Trichechus senegalensis</i>	West African Manatee	Vulnerable
<i>Acinonyx jubatus</i>	Cheetah	Vulnerable
<i>Colobus vellerosus</i>	White-thighed Colobus	Vulnerable
<i>Eudorcas rufifrons</i>	Red-fronted Gazelle	Vulnerable
<i>Genetta johnstoni</i>	Johnston's Genet	Vulnerable
<i>Hippopotamus amphibius</i>	Common Hippopotamus	Vulnerable
<i>Loxodonta africana</i>	African Elephant	Vulnerable

Reptiles

Species Name	Common Name	Conservation Status
<i>Dermochelys coriacea</i>	Leatherback	Critically Endangered
<i>Crocodylus cataphractus</i>	Long-snouted West-African Crocodile	Data Deficient
<i>Kinixys erosa</i>	Serrated Hinge-backed Tortoise	Data Deficient
Nubian Flapshell Turtle	Nubian Flapshell Turtle	Lower Risk/near threatened
<i>Cyclanorbis senegalensis</i>	Senegal Flapshell Turtle	Lower Risk/near threatened
<i>Kinixys homeana</i>	Home's Hinged-backed Tortoise	Vulnerable
<i>Lepidochelys olivacea</i>	Olive Ridley	Vulnerable
<i>Osteolaemus tetraspis</i>	West African Dwarf Crocodile	Vulnerable

Amphibians

Species Name	Conservation Status
<i>Conraua derooi</i>	Critically Endangered
<i>Phrynobatrachus intermedius</i>	Critically Endangered
<i>Arthroleptis krokosua</i>	Endangered

<i>Hylarana occidentalis</i>	Endangered
<i>Hyperolius bobirensis</i>	Endangered
<i>Hyperolius torrentis</i>	Endangered
<i>Phrynobatrachus annulatus</i>	Endangered
<i>Phrynobatrachus ghanensis</i>	Endangered
<i>Kassina cochrae</i>	Near Threatened
<i>Phrynobatrachus alleni</i>	Near Threatened
<i>Phrynobatrachus liberiensis</i>	Near Threatened
<i>Hyperolius laurenti</i>	Vulnerable
<i>Hyperolius viridigulosus</i>	Vulnerable
<i>Kassina arboricola</i>	Vulnerable
<i>Phrynobatrachus villiersi</i>	Vulnerable

Birds

Species Name	Common Name	Conservation Status
<i>Neophron percnopterus</i>	Egyptian Vulture	Endangered
<i>Scotopelia ussheri</i>	Rufous Fishing-owl	Endangered
<i>Agelastes meleagrides</i>	White-breasted Guineafowl	Vulnerable
<i>Bleda eximius</i>	Green-tailed Bristlebill	Vulnerable
<i>Campephaga lobata</i>	Western Wattled Cuckooshrike	Vulnerable
<i>Criniger olivaceus</i>	Yellow-bearded Greenbul	Vulnerable
<i>Picathartes gymnocephalus</i>	White-necked Picathartes	Vulnerable
<i>Trigonoceps occipitalis</i>	White-headed Vulture	Vulnerable

Source: Forestry Research Institute of Ghana

Restricted Trees of Ghana

Ghanaian trees are rated along a species conservation star rating of six levels, included in this list are the two rarest categories, Black and Gold:

Black Star: globally rare and high priorities for careful management

Gold Star: species are globally restricted

Scientific Name	Local Name
<i>Afrostryax lepidophyllus</i>	
<i>Anonotha macrophylla</i>	Totoro-nua
<i>Anonotha vignei</i>	Totoro nini
<i>Aubregrinia taiensis</i>	Duatadwe-kese
<i>Berlinia occidentalis</i>	Kwatafombaboa-kokoo
<i>Chryophyllum africanum</i>	Sutabene

<i>Coelocaryon sphaerocarpum</i>	Abruma
<i>Croton penduliflorus</i>	
<i>Croton aubrevillei</i>	
<i>Cryptosepalum pellegrinianum</i>	
<i>Didelotia afzelii</i>	Shedua-kokoo
<i>Didelotia idea</i>	
<i>Drypetes afzelii</i>	
<i>Gilbertiodendron bilineatum</i>	Tetekon-nua
<i>Gluema ivorensis</i>	Nsudua
<i>Guibourtia dinklagei</i>	Anonkye shedua
<i>Hymenostegia aubrevillei</i>	Ababima-kokoo
<i>Hymenostegia gracilipes</i>	Ababima-kokoo
<i>Lecaniodiscus punctatus</i>	Kumanini
<i>Maranthes aubrevillei</i>	Kajabirise
<i>Neolemonniera clitandrifolia</i>	
<i>Pellegriniodendron diphyllum</i>	Felefele
<i>Petelopsis habeensis</i>	Kane-akoa
<i>Synsepalum aubrevillei</i>	Aframusa
<i>Talbotiella gentii</i>	Takrowanua
<i>Shirakiopsis aubrevillei</i>	Ketebontore-nua
<i>Synsepalum ntimii</i>	Bakubere
<i>Tetrapleura chevalieri</i>	NtimPrekese
<i>Trichilia ornithothesa</i>	Tanuro, Tandro
<i>Uapaca paludosa</i>	Kontan nini
<i>Xylopiet letestui</i>	Obaa-fufuo
<i>Xylopiet sp.aff. pynaertii</i>	Obaa-fufuo
<i>Zanthoxylum chevalieri</i>	Okuo-nini
<i>Zanthoxylum parvifoliolum</i>	Okuo-nini

Source: Hawthorne, William and Gyakari, Ntim, Photoguide for the Forest Trees of Ghana: a tree-spotter's field guide, Oxford Forestry Institute, (Oxford, 2006)

