



University of Abomey-Calavi

Faculty of Agricultural Sciences

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“Capacity building and biodiversity data mobilization to address health and food security priorities in Benin (West Africa)”

Agroforestry and medicinal plants

Report of a working group enriched in plenary session

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Introduction

Develop strategies for the conservation of our natural resources is of great importance for the effective implementation of natural resource conservation policies. Thus, discussions were held in multi-stakeholder working group on the conservation of agroforestry species and

medicinal plants in the context of climate change. This work is carried out within the framework of the project "Biodiversity Information for Development (BID)" funded by the European Union via GBIF.

This report summarizes the achievement of the working group and was enriched in plenary session

1-List of agroforestry and medicinal species of Benin

The list is in annex 1

2-Conservation strategies for agroforestry species and medicinal plants

Conservation strategies were proposed for the targeted species at the technical and operational levels.

2.1-Conservation strategies considered at technical level

The following actions have been recommended:

- Train focal points of each research center for capacity building in the field of biodiversity informatics (BI) in Benin;
- Achieve inventory of agroforestry species in Benin's agro-climatic zones;
- Conduct ethnobotanical studies to promote the use of these species in home gardens (domestication);
- Model species distribution and ecological niches of species under climate changes and integrate results into reforestation programs;
- Identify medicinal species that are not in agro-forestry systems;
- Integrate sacred forests in protected areas while empowering traditional dignitaries or guarantors in the management.

2.2-Strategies of conservation considered at operational level

The following actions have been recommended:

- To promote ex situ conservation: in school and communal botanical gardens in the different phyto-districts of Benin;
- To rationalize harvest and trade of the medicinal plants;

- To promote agroforestry species in reforestation programs;
- To promote the use of agroforestry species in home gardens (domestication);
- To sensitize the populations about the collect and the trade of medicinal species' organs;
- To punish the abusive and/or not authorized collect and trade;
- Promote seed banks in conservation centers and promote traditional ways of conserving species.

3-Analysis of the effectiveness of protected areas to conserve agroforestry species and medicinal plants

In addition to the important results achieved in data use and separately reported the following point were considered.

The network of protected areas (PA) in Benin concentrates most of the biodiversity. As a result, gap analysis is needed to see how effective are these protected areas in conserving species in the present and the future.

Indeed, four cases can occur for agroforestry and medicinal species:

- ❖ Favorable area in the present and future, covered by protected areas

In this case, it is necessary to raise awareness about the sustainable use of the species; strengthen surveillance around PAs; enhance conservation by ensuring good species regeneration; Conduct the genetic study to assess genetic variability to identify the genes most likely to increase climate change resilience (CC); Accentuate research on populations of agroforestry species and medicinal species (genetic diversity, population structure, ecological niche modeling, etc.); create PAs (private or public) to further conserve agroforestry and medicinal species.

- ❖ Favorable area currently covered by protected areas, but not in the future

Ex situ conservation of species (Botanical garden, Herbarium, gene bank, etc.); perform the genetic study to assess genetic variability to identify genes most likely who have the potential to increase CC resiliency; Train the population, on propagation methods (domestication action, home garden, etc.); create PAs around agroforestry species and medicinal species.

- ❖ Favorable area not covered by protected areas currently, but covered in the future

The introduction of agroforestry and medicinal species into these favorable habitats should be promoted through massive reforestation of these species.

- ❖ Favorable area not covered by protected areas currently and in the future

Agroforestry and medicinal species must be conserved ex-situ; Establish gene banks, undertake domestication through the home gardens; Train populations on propagation methods; create new PAs around the species where they will be found.

4-Role of public and private institutions in the conservation of agroforestry species and medicinal plants

Several private, public, national and international institutions can contribute to the conservation of agroforestry and medicinal plants. For better conservation of agroforestry and medicinal plants, a synergy of actions is needed. The initiative taken by locals communities (cooperatives, NGOs, etc.) will have to be encouraged and supported by these institutions. This will make the conservation actions more sustainable. Research actions should continue and more encouraged; effective conservation and protection of forest reserves by institutions in charge of them; funds leverage actions must be undertaken and government should be sensitized so as to allocate more sustainable funds.

Conclusion

The contribution of the working group made it possible to make suggestions on the adequate strategies to conserve more sustainably agroforestry and medicinal plants of Benin. The roles of different institutions were underlined. It is therefore very important to take actions on these different institutions so that collegial actions are taken to protect the biodiversity of agroforestry and medicinal plants in Benin.

Annex 1: List of agroforestry and medicinal plants of Benin

Medicinal plants	Agroforestry species
<i>Acalypha fruticosa</i>	<i>Adansonia digitata</i> L.
<i>Acalypha villicaulis</i> Hochst. ex A.Rich.	<i>Albizia chevalieri</i> Harms
<i>Afraegle paniculata</i> (Schumach. & Thonn.) Engl.	<i>Blighia sapida</i> Konig
<i>Aganope stuhlmannii</i> (Taub.) Adema	<i>Bombax costatum</i> Pellegr. & Vuillet
<i>Albizia adianthifolia</i> (Schumach.) W.F. Wright	<i>Borassus aethopium</i> Mart.
<i>Alchornea cordifolia</i> (Schumach. & Thonn.) Müll.Arg.	<i>Ceiba pentandra</i> (L.) Gaertn.
<i>Anthocleista amplexicaulis</i>	<i>Chrysophyllum albidum</i> G.Don
<i>Anthocleista djalensis</i> A.Chev.	<i>Cola acuminata</i> (P.Beauv.) Sehot & Endl.
<i>Anthocleista liebrechtsiana</i> De Wild. & Th.Dur.	<i>Cola gigantea</i> A.Chev.
<i>Anthocleista madagascariensis</i>	<i>Cola millenii</i> K.Sebum.
<i>Anthocleista nobilis</i>	<i>Cola nitida</i> (Vent.) Sehot & Endl.
<i>Anthocleista procera</i>	<i>Colocasia esculenta</i> (L.) Schott
<i>Anthocleista schweinfurthii</i> Gilg	<i>Detarium microcarpum</i> Guill. & Perr.
<i>Anthocleista vogelii</i> Planch.	<i>Dialium guineense</i> Willd.
<i>Antidesma venosum</i> E.Mey. ex Tul.	<i>Faidherbia albida</i> (Delile) A.Chev.
<i>Argemone mexicana</i> L.	<i>Garcinia kola</i> Heckel
<i>Bridelia ferruginea</i> Benth	<i>Haematostaphis barteri</i> Hook.f.
<i>Caesalpinia bonduc</i> (L.) Roxb.	<i>Lanea microcarpa</i> Engl. & K. Krause
<i>Caesalpinia pulcherrima</i> (L.) Sw.	<i>Parkia bicolor</i> A.Chev.
<i>Cajanus cajan</i> (L.) Millsp.	<i>Parkia biglobosa</i> (Jacq.) R.Br. ex Benth
<i>Cassia sieberiana</i> DC.	<i>Pentadesma butyracea</i> Sabine
<i>Chamaecrista mimosoides</i> (L.) Greene	<i>Sclerocarya birrea</i> (A.Rich.) Hochst.
<i>Chamaecrista rotundifolia</i> (Pers.) Greene	<i>Sterculia setigera</i> Delile
<i>Chassalia kolly</i> (Schumach.) Hepper	<i>Tamarindus indica</i> L.
<i>Citrus aurantifolia</i> (Christm.) Swingle	<i>Vitellaria paradoxa</i> C.F.Gaertn
<i>Citrus aurantium</i> L.	<i>Xanthosoma sagittifolium</i> (L.) Schott
<i>Citrus limon</i> (L.) Burm.f.	<i>Acacia</i> Mill.

Medicinal plants	Agroforestry species
Citrus maxima (Burm.) Merrill	
Clausena anisata (Willd.) Hook.f. ex Benth.	

Medicinal plants	Medicinal plants
Combretum glutinosum Perr. ex DC.	Indigofera capitata Kotschy
Combretum micranthum G.Don	Indigofera dendroides Jacq
Combretum molle R.Br. ex G.Don	Indigofera hirsuta L. var. hirsuta
Crossopteryx febrifuga (G.Don) Benth.	Indigofera macrocalyx GuUl. & Perr.,
Croton gratissimus Brush.	Indigofera macrophylla Schumach.
Croton zambesicus Muell.-Arg.	Indigofera paniculata Vahl ex Pers
Cymbopogon citratus Stapf	Indigofera polysphaera Baker
Cymbopogon giganteus (Hochst.) Chiov.	Indigofera fulvopilosa Brenan
Cynometra megalophylla Harms	Jatropha curcas L.
Dalbergia ecastaphyllum (L.) Taub	Jatropha gossypifolia L.
Daniellia oliveri (Rolfe) Hutch. & Dalziel	Indigofera stenophylla Guill. & Perr
Desmodium adscendens (Sw.) DC.	Lonchocarpus sericeus (Poir.) Kunth
Desmodium ramosissimum G.Don	Mallotus oppositifolius (Geisel.) Müll. Arg.
Detarium microcarpum Guill. & Perr.	Manihot esculenta Crantz
Dialium guineense Willd.	Millettia thonningii (Schumach. & Thonn.) Baker
Dichrostachys cinerea (L.) Wight & Am	Mitracarpus hirtus (L.) DC.
Diodia sarmentosa Sw.	Morinda lucida Benth.
Entada abyssinicia Steud. ex A. Rich.	Nauclea diderrichii (De Wild. & T.Durand) Merr.
Eriosema griseum Baker var	Parkia biglobosa (Jacq.) R.Br. ex Benth.
Eriosema pulcherrimum Taub	Passiflora foetida L.
Erythrina senegalensis DC.	Pavetta corymbosa F.N.Williams
Euphorbia hirta L.	Pavetta crassipes K. Schum.
Fadogia agrestis Schweinf. ex Hiern	Pennisetum purpureum Schumach.

Medicinal plants	Medicinal plants
Fadogia erythrophloea (K.Schum. & K.Krause) Hutch. & Dalziel	Pericopsis laxiflora (Benth. ex Baker) Meeuwen
Feretia apodanthera Delile	Phyllanthus amarus Schumach. & Thonn.
Flueggea virosa (Roxb. ex Willd.) Voigt	Phyllanthus fraternus Webster
Gardenia aqualla Stapf & Hutch.	Piliostigma thonningii (Schumach.) Milne-Redh.
Gardenia erubescens Stapf & Hutch	Prosopis africana (Guill. & Perr.) Taub.
Gardenia ternifolia Schumach. & Thonn.	Psychotria vogeliana Benth.
Hymenocardia acida Tul.	Pteleopsis suberosa Engl. & Diels
Imperata cylindrica (L.) P. Beauv	Pterocarpus erinaceus Poir.
Securinega virosa synonyme Flueggea virosa (Roxb. ex Willd.) Baill. Roxb. ex Willd.	Ricinus communis L.
Senna alata (L.) Roxb.	Rytigynia umbellulata (Hiern) Robyns
Senna italica Mill.	Saccharum officinarum L.
Senna occidentalis (L.) Link	Sarcocephalus latifolius (Sm.) E.A.Bruce Sm.
Senna siamea (Lam.) H.S.Irwin & Barneby,	Cochlospermum tinctorium A.Rich
Sorghum bicolor (L.) Moench	Pupalia lappacea (L.) Juss.
Spermacoce ruellia DC.	Alstonia boonei De Wild.
Spermacoce stachydea DC.	Carissa spinarum L.
Stipularia africana P.Beauv.	Picalima nitida (Stapf.) T. & H.Durand
Stylosanthes fruticosa (Retz.) Alston	Ozoroa insignis Delile
Tephrosia purpurea (L.) Pers	Anacardium occidentale L.
Tephrosia vogelii Hook.f.	Lanea acida A.Rich. s.l.
Terminalia glaucescens Planch. Ex Benth.	Pleiocarpa Benth Benth.
Tetrapleura tetraptera (Schumach. & Thonn.) Taub.	Pleiocarpa pycnantha (K.Schum.) Stapf
Tricalysia okelensis Hiern	Lanea barteri (Oliv.) Engl.
Vangueriella spihosa (Schumach. & Thonn.) Verdc.	Catharanthus roseus (L.) G. Don
Vigna gracilis (Guill. & Perr.) Hook.f.	Strophantus sp Sw.
Zanthoxylum zanthoxyloides Lam	Lanea microcarpa
Zapoteca portoricensis (Jacq.) H.M.Hern.,	

Medicinal plants	Medicinal plants
Zornia glochidiata Rchb. ex DC.	
Holarrhena floribunda (G.Don) Durand & Schinz,	
Rauvolfia vomitoria Afzel	
Oncinotis nitida Benth.	
Saba comorensis (Boj.) Pichon	
Mangifera indica L.	
Spondias mombin L.	
Strophanthus hispidus DC	
Anogeissus leiocarpa (DC.) Guill. & Perr.	
Thevetia peruviana (Pers.) K.Schum.	
Voacanga africana Stapf	