

PROCESSING WATER HYACINTH IN BENIN

TO PRODUCE ORGANIC COMPOST AND PROTECT THE ENVIRONMENT

Since 2013 the NGO *Centre d'Actions pour l'Environnement et le Développement Durable ACED* has introduced an innovative agro-ecologic practice in Benin by [collecting and transforming the water hyacinth that infest the Lake Nokoué into organic compost](#).

[Water hyacinth](#) is a well-known free-floating aquatic plant considered to be one of the most invasive species worldwide. Native to South America it has gradually spread to North America, Asia, Africa and Europe generating negative effects on the biodiversity and on climate. In particular, water hyacinths obstruct waterways, destroy wildlife resources, lower dissolved oxygen levels and emit vast amounts of greenhouse gases.

In Benin, [the proliferation of water hyacinths on Lake Nokoué](#) causes very strong eutrophication of the environment and fatal anoxia to the fishery resources on which a large part of the economy of the region and more than 150 species of birds depend. Their presence complicates lake transport and the flow of agricultural products to cities. The collection of hyacinths from the water is expensive and although it is necessary for fishing activities, the income from fishing is not a sufficient incentive to motivate its effective control.

The solution envisaged in 2013 by ACED in dialogue with the local communities was to use hyacinth for aerobic composting, by setting up an economic chain which generates income for agricultural producers who thus turn the problem into an economic opportunity for improving their livelihoods.

The different phases of the project were planned and carried out through a participatory process involving out with 200 small farmers and local communities in the Sô-Ava Municipality, located on the shores of Lake Nokoué. During the process, the action-research created and implemented innovative solutions covering different environmental, productive and economic aspects related to the sustainability of this project:

- a new technique using nets was tested and adopted to collect more hyacinths, while mobilizing fewer people on the lake and using non-motorized canoes, to make the activity less expensive;
- in collaboration with the local university the research identified the three main vegetable crops which represent the principal agricultural chains for the local economy: tomato, chili and amaranth. It also identified the characteristics and optimal dosages of the compost;
- [a guide was produced](#) to illustrate the whole process of compost production (collecting, drying, composition of the compost, aerating, compost maturity); the guide also indicates the criteria for its use for the different agricultural products;



- Training for groups of farmers on the process of aerobic composting of hyacinth was carried out, and the groups received the equipment necessary for collecting and composting water hyacinth (boats, motor pumps, wheelbarrows, watering cans, forks, boots, etc.);
- Field studies for the marketing of compost were carried out in order to increase farmers' income by selling the product. Indeed, this quality organic compost, which allows to obtain better yields and to abandon the use of chemical fertilizers, turned out to be also interesting for the peri-urban producers in Cotonou. A plan was therefore drawn up for improving the quality and availability of the compost as well as for the establishment of an efficient distribution system (storage, outlets, wholesalers and retailers, etc.);
- water hyacinth emits vast amounts of greenhouse gases and ACED developed a methodology to assess greenhouse gas emissions avoided by aerobic composting of hyacinths.
- ACED conducted a [review of organic certification mechanisms](#) available and affordable to smallholders for certification of the water hyacinth compost production system.



In 2019 the Project [has been recognized by the World Future Council's contest as one of the Outstanding Practices in Agroecology](#). The contest recognized that the project is successfully building a complex agroecological system able to improve living conditions of local population by reducing water pollution, soil fertility degradation and gas emissions, while at the same time enhancing protection of fish stock, increasing crop productivity and ensuring the consumption of quality organic food.

The data presented in the document submitted by ACED to the contest illustrate the impact results achieved:

- 214 farmers living in the municipality of Sô-Ava have been trained and are now managing the production of the water hyacinth organic compost. ACED is developing a scaling-up strategy to reach more than 10,000 smallholders by 2025. The indirect beneficiaries are the whole population of the municipalities of Sô-Ava and Abomey-Calavi (700,000 inhabitants), who are taking advantage of healthy vegetables obtained from the new compost, while improving the use of the great resource of the lake, both for transport and for fishing.
- a 20% reduction of water hyacinth presence in the lake was achieved by 2016. The new technique for collecting water hyacinth resulted in a 39% increase in the productivity of the collection activities. By 2017, more than 5,400 tons of water hyacinths were collected and more than 3,200 tons of compost were produced.
- the water hyacinth compost improved the productivity by 120% for amaranth, 42% for tomato and 162 % for pepper in comparison with traditional methods. The average selling price of vegetables grew by 19%, increasing the farmer's income. In 2016, ACED also organized a selling point at a local market in Akassato so that the farmers could to sell directly to the consumers, promoting their healthy products through commercial spots.



The 2020 ACED Report presents data highlighting even more significant economic results: 10,000 tons of water hyacinth have been transformed into 8,500 tons of organic compost. An aspect of particular methodological value is that all the new technologies created and adopted have been adapted to local management skills, working with producers and communities to ensure the continuity and future sustainability of the project.

ACED estimates that the methodologies adopted by the project have high potential for replication in countries where water hyacinth is widespread and causes similar problems as in Benin. ACED is already in contact with several organizations which wish to replicate the initiative in Congo, Kenya, Cameroon, Chad, Togo, and Burkina Faso.

To know more

[ACED website](#)

[ACED in Facebook](#)

[Article in ACED website](#)

[Projet ACED in Youtube.com](#)

[Video in Eco Africa](#)

[ACED Video](#)

[Certification of water hyacinth products - ACED](#)

[Rapport 2020 ACED](#)

[Video France 24 in ACED website](#)

[Article in burkinadoc.milecole.org](#)

[Recette compost in burkinadoc.milecole.org](#)

[Project presentation in World Future Council website](#)

[Fact Sheet in World Future Council website](#)

[Article in iedafrique.org](#)

[Project in slideshare.net](#)

[Article in alimenterre.org website](#)

[Article in alimenterre.org website](#)

[Article in nextgen.iupac2019.be website](#)

[Water hyacinth in wikipedia](#)

[Photos de jacinthes d'eau in FranceTvInfo.fr](#)

[Lac-nokoue.org website](#)

