

# Establishment of an Office for Appropriate Technology in Haiti

Reynald Altema

---

**Summary:** *Haiti ranks near the bottom of every metric and index of development. It faces all sorts of problems, many of them self created, but none quite unique for other countries faced similar ones have come up with some ingenious solutions. At the same time, there have been several experimental and successful trials undertaken in rural areas of the land without any follow-up. The hope is that an agency ought to be created to cull information from all available sources of appropriate technological innovations, true and tried, writ cost-effective and durable and capable of creating economic sustainability.*



**Rezime:** *Ayiti chita jouk nan fon tout sistèm oubyen endèks pou mezire devlopman. Ayiti ap goumen ak tout kalite pwoblèm, genyen ladan yo se limenm menm ki responsab yo, men pa genyen okenn nan pwoblèm sa yo ki se pwoblèm Ayiti sèl grenn, paske genyen lòt peyi ki te nan menm sityasyon sa yo, men, ki rive jwenn yon fason jenyal pou soti ladan yo. Nan moman nou ap pale la a, gen anpil eksperyans ak plizyè esèy ki reyisi nan rejyon riral peyi a, men, pa genyen okenn suivi ki fèt sou sa. Nou espere genyen yon ajans ki va pran responsablite pou ranmase enfòmasyon toupatou tout kalite enfòmasyon sou inovasyon teknolojik ki akseptab, ki bon tout bon, yo eseye yo epi yo dekrete ki rantab, dirab, epitou ki kab devlope yon ekonomi ki byen balanse.*

## 1. INTRODUCTION

It has been a truism to describe Haiti at the bottom of all significant metrics for the past few decades in the Americas. It is a singular distinction and a badge that precedes any description of the country. True, but hurtful nonetheless. Certainly in the case of soil erosion, Haiti holds a special position. The widespread use of charcoal for cooking added to the lack of extensive tree planting amounts to degradation of arable soil; this in turn leads to flooding and the subsequent damages with each rainy season and/or hurricane. As a matter of fact, flood damage usually is far more devastating than wind damage during the yearly storm seasons.

## 2. ANALYSIS

**2.1** For times immemorial, Ecology has been given short shrift and has been absent from the issues considered acute and important by the people at the helm. It would not be so bad if other issues were given the needed attention. Unfortunately,

just about any important sector suffers from the same neglect, be it energy generation, access to potable water, adequate supply of food and or creation of a network of roads for distribution of food from its production at remote locations to other sites. Crops are left rotting in one zone whereas others suffer amidst drought and dreadful famine. Basic needs of the society can't be met. Garbage collection, a process that is on cruise control in so many countries is a big deal in Haiti. Is there any hope?

**2.2** At the rate we are going, we will remain in our position of constantly begging and the rest of the world will get tired of this basket case. The maddening observation is that for all of the above problems, there are some solutions that are low cost and effective and only need the mind-set of applying the appropriate technology, true and tried to address a specific issue. There is no need to reinvent the wheel; there is plenty of need for Haiti to add its contribution to helping solve some problems that people all over the world are facing. If we as a people make the commitment to roll up our sleeves and go to work, we can do quite a bit in a very short period of time, using our resources, helping

ourselves rather than wait for the outside to take the initiative. If truth be told, no sustainable program can be established even with outside help until or unless we are actively involved in helping ourselves.

**2.3** We are living in an era where information is easily retrievable and its diffusion ought to be a matter of national policy. Unfortunately in Haiti, information is held and not shared. Policy started by the titular head of an agency doesn't necessarily continue with a change of personnel. Experimental projects that garnered success are not necessarily followed-up. A simple solution would be the creation of an independent office made up of technocrats operating outside of traditional nepotism that would have the mandate of researching, archiving technologies that have worked in different parts of the world, or in Haiti itself. As we shall see later, there have been too many successful projects undertaken in Haiti without the follow through to ensure their sustainability and the country's economic recovery.

**2.4** Considering the dystopic state of the country, creation of such an office may be considered pure utopia but it is something that can be done with minimal expenses. Aside from the cost of establishing such an office, the very idea of its existence needs to be considered an urgent matter and the society as a whole needs to buy into it. In its scope it would be patterned after such venerable institutions like the NIH or the CDC. They are independent agencies manned by professionals involved in data gathering, research and relied upon to help set appropriate policies, free of partisan interference. Realistically such lofty goals can't be achieved overnight in a country where bureaucrats are known for their fierce and internecine turf battles. A modest start would be sufficient but its existence should be codified by Parliament to ensure its permanence.

**2.5** The following scenario can be envisaged: to jump start it and keep costs down, the government can initially request free subscription to a slew of magazines that cover a wide spectrum of disciplines (this program exists for poor countries like Haiti and is there for the asking). This library would be part of this office. High speed internet access and a few computers and the office is up and running. From the onset, It needs to be given the mandate to assist both the public and private sectors in establishing policies-not get involved in partisan politics-and keep a tab of contracts signed with entities, foreign or national as well as experimental projects. Transparency ought to be part of the new paradigm; similar to the idea of "freedom of information" in the US, any information gathered should be available to the public or researchers. This office would keep data on all sorts of stats and become a functional research center. Needless to say, the technocrats working at this office would include a wide range of disciplines, from Medicine, Agronomy, Geology, Hydrology, Economics and so on. Following are examples of some simple, low cost solutions that can simultaneously solve some acute problems under the aegis of such an agency. This type of information ought to be widely disseminated in the country.

## 2.6 Erosion, Malnutrition and Water Purification

The existing epidemic of cholera is a perfect storm. Lack of access to potable water and malnutrition, a lethal mix they make, allowing the dissemination of a disease that is essentially spread because of poor hygiene in a population with an immune system not optimally functioning due to lack of proper nutrients. A low hanging fruit approach would be the extensive cultivation of a tree that already exists in Haiti, called "Benzolive."<sup>1,2</sup> It is widely found in tropical countries and even in Florida where it is known under the common name of "horseradish tree." Its technical name is "Moringa Oleifera." Its properties make it most appropriate for a large scale planting in the country. It is a fast growing tree and can be used for reforestation. It is more valuable as a tree alive than as a source of charcoal because its leaves are edible and its seed can be used both as a source of cooking oil or as a purifying agent for water. Its nutritional value is simply remarkable. It has several times more potassium than banana, more calcium than milk, more vitamin C than orange, plenty of protein, vitamin A and iron. In India, it is used extensively for these properties. In Africa, it is commonly part of the dietary regimen of pregnant women. Last but not least it can be used in agroforestry as a forage for animal husbandry, i.e. for goats and cows rearing. This type of information is readily available to anyone who has access to the internet and can verify the success achieved with it in India and various parts of Africa. This is a win-win solution. It is low cost, and allows several problems to be solved at once. It has been nicknamed the "tree of life" and for good measure. To the nutritional value of the leaf is the added bonus of its good taste. From the medical part of it, a campaign to encourage the population to shift from a high fat and carbohydrate diet to a healthier one containing more green and leafy vegetables would become necessary (since cardiovascular diseases are so prevalent).

## 2.7 Reducing CO<sub>2</sub> Footprint and Alternative Source of Paper

Lately there is a lot of ink written about the accelerated output of carbon dioxide into the atmosphere resulting in the greenhouse effect and global warming. One of the solutions considered is to limit a country's production of such a gas into the environment. Of course the use of trees for the production of paper fits into this concern; trees protect the environment through a process called photosynthesis whereby the reverse takes place: instead of production of carbon dioxide, it removes it and releases oxygen into the atmosphere. There is a tropical plant that has some very interesting properties that Haiti would do well to also exploit extensively. It is called the "Kenaf."<sup>3,4</sup> A member of the hibiscus family, it is called "Hibiscus Cannabinus." It is really a weed except it has some remarkable properties:

- a) It can produce up to 8 times more oxygen than a tree. Stated another way, it is able to absorb carbon dioxide voraciously!
- b) Its leaves when it is young (< 4 feet tall) are a good source of protein and chicken can be fed on it. ►

- c) It grows real fast on most soils and is resistant to most plant diseases.
- d) It is a good source of fiber and its pulp can be used to make paper that doesn't yellow so quickly.

One very interesting development. An American contractor has patented a cinder block that incorporates kenaf for the stated purpose of trapping carbon dioxide. It is reported that he has done experimental work with it in Haiti and South Africa. (<http://www.environmentalhouse.com/>)

This is interesting and yet frustrating. If such an experimental work did take place in Haiti, who is aware of it and who is going to make sure such potential technology is adopted so that Haiti can get credit for its carbon dioxide carbon footprint reduction?

## 2.8 Turning Garbage into Compost and Fertilizer.

Garbage collection in Haiti is a major problem, for whatever reason. It is sickening to see the images of piles of rubbish throughout the capital. There is an environmentally friendly approach that can take care of this problem and at the same time create some fascinating by-products. There is a process called **vermicomposting**. It is a combination of vermiculture (growth of earthworms) and using them to turn organic waste/soil into a fertilizer (composting). This is as low cost as a technology gets but the yield is tremendous. With the organic craze gaining momentum in the world and organic foods fetching a premium price this would be an ideal solution for the chronic problem of garbage accumulation. One of the by-products of creating compost is to trap the methane generated and use it commercially and create jobs. Rutgers University in New Brunswick, NJ, has an agricultural experimental station and has done extensive work on this.<sup>5,6</sup>

## 2.9 Case studies

### A. *Prosopis Juliflora* (Bayahonde)

In my constant perusal for information that can be useful to my motherland, I have come across this paper published in 1993 in the journal "Agroforestry Systems" by Wojtusik, Felker, Russell and Bengé. It was a research conducted in Haiti in 1987 on our small tree called "bayahonde" (*Prosopis Juliflora*) that grows on even arid soils and is used widely as a source of biomass fuel. Our species was grown alongside others from South America; a related one from Peru was found to grow almost 3 times as high as ours and **thornless**. Because of the political instability at the time (1991), the group left with the genetic material and stored it in Texas at the Texas A&M University greenhouse, expressing the hope to return to Haiti to allow its propagation. (Incidentally the Center for Semi-Arid Forest Resources/Caesar Kleber Wildlife Research Institute of this school had also successfully introduced varieties of **spineless and edible cacti** in Gonaives in the early nineties. This information is not readily available in Haiti!)<sup>9</sup>. The same experiment was repeated with similar results in India and Pakistan shortly thereafter. Despite the success of

his experiment and the subsequent return of Felker in May 1994 to verify the existence of the progeny at a research station in Thomazeau and training of a few locals on grafting it into the native *Prosopis*, there has been no widespread use of this variety to date. From all indication, the only *Prosopis* still prevalent in Haiti is our native one; this illustrates one more missed opportunity. Our native and short tree can be successfully replaced with a better variety and also be used for reforestation since it is a nitrogen fixing tree. *Prosopis* is also known as mesquite and this is a hardwood yielding furniture of top quality. In Texas, the mesquite tree is highly valued<sup>7,8,9</sup>. Haitian craftsmen could make nice wood carvings/furniture with this better quality tree and export them.

### B. NEEM

This tree, *Azadirachta indica*, native to India/Myanmar, was introduced in Haiti in the late seventies. Whereas its introduction was considered a breakthrough for its potential, contrary to expectations and the experience of other countries it didn't live up to its billing. Haitians by and large don't care for it much because it shares the same tendency with our mahogany tree: its roots can interfere with homes' foundations. However it is doubtful whether an information campaign was part of its introduction. It is a tree that grows fast, even in arid lands and possess quite a few commercial properties such as an excellent organic insecticide, toothpaste, lubricating oil, livestock feed, fertilizer, soap, medicine. Because of these by-products, its exploitation should have been encouraged. As it stands now, neem has had no commercial success in Haiti. India on the other hand exploits it very successfully. This is a disconnect.<sup>10,11</sup>

*Both projects were USAID sponsored experiments. It maintains extensive information about both in its database and it is readily available.*

## 3. CONCLUSION

This leads to only one conclusion: policy decisions should be left to dedicated, career technocrats, a time honored approach to make sure that continuity is preserved. Is it asking too much to demand that for once we put the welfare of the country ahead of everything else? It really doesn't take much to try to solve our chronic problems. ■

## BIBLIOGRAPHY

- 1 <http://haitireconstruction.ning.com/page/benzolive-moringa-oleifera> (accessed January 2013)
- 2 <http://miracletrees.org/> (accessed January 2013)
- 3 <http://www.ars.usda.gov/is/AR/archive/aug00/kenaf0800.htm> (accessed January 2013)
- 4 <http://www.hort.purdue.edu/newcrop/afcm/kenaf.html>
- 5 [http://ecocomplex.rutgers.edu/incubator\\_businesses\\_terracecycle.php](http://ecocomplex.rutgers.edu/incubator_businesses_terracecycle.php) (accessed January 2013)
- 6 <http://whatcom.wsu.edu/ag/compost/mrcworms.htm> (accessed January 2013)

7 Wojtusik, T., Felker, P., Russell, E., Bengé, M. Cloning of erect, thornless, non-browsing, nitrogen-fixing tree of Haiti's principal fuelwood species (*Prosopis Juliflora*). *Agroforestry Systems* : 21 :293-300, 1993.

8 [www.texmes.com](http://www.texmes.com) (accessed January 2013)

9 Annual Report, 1993-1994. Center for Semi-Arid Forest Resources, Caesar Kleberg Wildlife Research Institute, Texas A&M University-Kingsville.

10 NEEM, THE CORNUCOPIA TREE. Technical Series #5, USAID, Washington, D.C. (1986)

11 National Research Council. 1992. *Neem: A Tree For Solving Global Problems*. National Academy Press, Washington, D.C.

**Reynald Altema, M.D.**, is a physician who graduated from SUNY Downstate Medical School. He is a specialist in Internal Medicine and a Diplomate of the American Board of Internal Medicine. His lifelong dream is to see his native country Haiti get on the path of development and enlightenment. [Reyaltema@yahoo.com](mailto:Reyaltema@yahoo.com)



# MAISON HENRI DESCHAMPS

Les Entreprises Deschamps-Frisch S.A.