

# **DEVELOPMENT OF NETWORKS AND USES OF THE VETIVER SYSTEM IN COSTA RICA**

I Vetiver Latin American Conference - A Green Hope  
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## **SUMMARY**

More than a research paper, this document is a descriptive one that aims to present the history of Vetiver in Costa Rica since the Vetiver Network was first installed in the country in 1996; how “Abonos de Occidente R.L.”—the company I represent—, undertook the Vetiver System (VS) alternative in 1999 and integrated it as a part of its community outreach policy, taking advantage of the perfect match it made with its environmental philosophy of preserving the natural resources without losing sight of the community development; and since 2009, how we have assumed the coordination for Costa Rica of the Vetiver Network International, and what efforts we are doing to inform about the VS.

We are convinced that the small farm owners must become micro entrepreneurs with true self-management awareness, since our government, through its public institutions and limited resources, has not been able to provide the solutions this sector requires, and even more, it seems to be at the service of the large transnational companies, leaving the small producer totally vulnerable in front of the growing disloyal competitors that first world subsidized large producers have become.

This is why, among other things, we generate awareness about the importance of the people’s participation in the promotion of eco-engineering, agro ecology, and sustainable rural development, as means to fight hunger, social injustice, and environmental disasters.

## 1. WHO WE ARE

“Abonos de Occidente R.L.” is a company in the field of biotechnology. We are focused on conservation, and produce and promote the use of environmentally friendly techniques such as the Vetiver System to encourage a sustainable environment, particularly in regards to soil and water, since we work with low cost eco-engineering solutions that have been tested around the world and have stood the test of time, proving they are at the same technical level as the more expensive traditional solutions.

We also function as a school, providing training in bioengineering, organic and biodynamic agriculture, permaculture, development of integrated farms where organic compost is created from the recovery and use of waste that otherwise would go to pollute the soil and water, urban agriculture, and productive/educational gardens, among others.

In the last 10 years, we have been operating in many ways as a cooperative; with the vision of providing technical support and free plant material to the small farm owners that are a part of our local Vetiver network.

In general terms, and with lots of pride, we present our micro entrepreneurial effort, which is supported on the ethical commitment to promote eco-compatible systems with an excellent cost-benefit balance that allows us to access communities and interact to promote sustainable economic and social development.

## 2. NETWORK DEVELOPMENT

Our company, aware of the global environmental issues and of the loss of rural values and identity, has undertaken the challenge of developing community initiatives by offering training at schools, to housewives, and groups of small farmers; contributing, in this way, to the communities’ bio alphabetization in hopes of teaching them an environmentally responsible way of living and producing.



We promote monthly gatherings—the last Sunday of every month—where interesting knowledge and experience exchanges take place. These are the areas of sharing:

- Soil and water conservation with the Vetiver System.
- Productive gardens with educational designs.
- Permaculture, and organic and biodynamic agriculture.
- Native seed banks and the creation of networks for their trade-off.
- Urban agriculture- Produce a lot in a small space.
- Production and recycling.
- Manufacturing of organic compost.
- Integrated farms.
- Cottage industry: crafts, as well as creative and very useful machines and tools manufactured by rural artisans, among others.
- Food security and sovereignty.

To date, and over the last 10 years, we have trained for free over 1.500 people between small farmers, housewives, and school, high school and university students.

### **3. THE VETIVER SYSTEM IN COSTA RICA**

The Vetiver's Latin American Network was officially established in Costa Rica in the beginning of 1996. Its main goal was to take advantage of the weather and geographical conditions, as well as of the country's environmental conscience, to establish an operations center that would help spread all the information on this wonderful plant and the Vetiver technology's different uses for the conservation of the soil and water, for bio engineering, and for bio remediation, to the other countries in the region.

The pioneers who introduced Vetiver and its technical uses in Costa Rica in 1996 were Joan Miller and Jim Smyle, who previously had been the coordinator of the Vetiver Network International in the World Bank.

Today, the coordinator of The Vetiver Network International for Costa Rica is Yorlenny Cruz. She was absolutely convinced of the Vetiver System's efficacy in 1998, when Hurricane Mitch hit Costa Rica and the slopes at her property that had been stabilized with Vetiver in 1996 behaved exceptionally, in contrast to the serious landslides that affected the rest of the country and Central America.

To date, Costa Rica's Vetiver Network is strongly linked to its international network, and we keep on gathering forces to continue the intense task of communication that we have set as our goal.

## 4. COMMUNICATION

**4.1 Small farmers' meetings and trade-offs.** The main means of communication we employ to grow our local VS network are the small farmers monthly meetings and trade-offs. We have created a very efficient chain where the small farmer first adopts the VS to improve the quality of his land, water, and general infrastructure; and once he is convinced of its effectiveness and convenience, and has understood and applied the plant's alternative uses, he himself requests to be a part of our local distribution network. They understand they have complete and absolute autonomy to produce and commercialize the Vetiver individually, however, "Abonos de Occidente R.L.", the company that promotes and provides the training, has the policy of always buying an important percentage of the product from the small farmers in its local network to fulfill every Vetiver order it receives; thus, the farmers benefit from the great sales effort the company has been doing. In the same way, when a client, besides the plant material, needs installation services, these farmers are hired as contractors to perform the service under our supervision—since they have been previously trained by our company to install the Vetiver System correctly and in agreement with its various uses. In other words, the members of our local network are in many ways our commercial partners in the areas of production and sales, and are our suppliers and contractors for the installation and maintenance services.

### 4.2 Lectures in professional conferences.

We have participated as speakers and exhibitors with a stand in these conferences:

- **IV Central American Conference of Road Funds. "Roads for Integration and Development"**, which took place on April 20th to 23rd, 2009, in San José, Costa Rica. The program included topics related to road safety, the environment, project management, quality control, road funds, and Central American integration, among others. "Abonos de Occidente R.L." participated in the program with the lecture: "*Vetiver System: Environmental Solutions in Biotechnology*", which was presented by its General Manager, Yorlenny Cruz.
- **X National Conference of Geotechnics and V Geotechnicians Central American Gathering**, which took place on August 19th to 21st, 2009, in San José, Costa Rica. At this time, Yorlenny Cruz, as the coordinator for Costa Rica of The Vetiver Network International, presented the lecture: "*Vetiver System: Uses in the Stabilization of Slopes and Disaster Mitigation.*"
- **X Conference of Water Resources and Environmental Sanitation. "Environment and Advanced Technology. Challenges of the XXI Century"**, which took place on September 1st to 3rd, 2010, in San José, Costa Rica. With the support of Dr. Paul Truong, we presented the following technical lectures: "*Vetiver System: A Natural and Low Cost Solution for the Prevention and Treatment of Sewage*" and "*Vetiver System: Phytoremediation of Polluted Soils*"

under the themes of Management, Treatment, and Disposal of Sewage; and Management, Treatment, and Disposal of Solid Waste, respectively.

- **Civil Engineering Conference. “Infrastructure: The Challenge of the Decade”**, which took place on October 6th to 8th, 2010, in Costa Rica. We took advantage of this event, which gathers engineers and architects both from the public and private sectors; professionals with true decision-making power inside their companies, to present the lecture: “*Vetiver System: Uses in Erosion Control, Stabilization of Slopes, and Infrastructure Protection.*” Among the topics addressed in this technical event were: Infrastructure planning, design and construction; Infrastructure and environment: sustainability and sanitation; infrastructure safety, risk, and vulnerability; and Intelligent infrastructure: efficiency and competitiveness, among others.
- **V Latin American Conference of Erosion and Sediment Control. “Its Impact on the Environment and the Economy”**, which took place on October 13th to 15th, 2010, in Panama City. The IECA—International Erosion Control Association—organized the event, and we were invited as speakers. We presented the technical lecture: “*Vetiver System: Uses in Erosion and Sediment Control, Stabilization of Slopes, and Disaster Mitigation.*” Even though the lecture was approved and included in the conference’s memoirs, it was not presented in person because of logistic reasons; the first lecture was programmed for October 14th, the same date of the opening and presentation of our lecture in the I Latin American Vetiver Conference, to take place in Chile.

**4.3 Universities.** We have been invited by professors of the main universities of the country, “Universidad de Costa Rica”—University of Costa Rica— and “Instituto Tecnológico de Costa Rica”—Technological Institute of Costa Rica—, to give periodical technical talks about the Vetiver technology, to the civil engineering students who want to specialize in Geotechnics. In the same way, we have collaborated with civil engineering students of both private and public universities who have decided to do their thesis about the Vetiver System, since we are certain that this kind of academic works are an excellent way to showcase the Vetiver technology. To date, there are two university thesis concluded: (Murillo, 2000), and (Quirós, 2010); and there is a third thesis in progress, called “*Improvement of Soils with Vegetation*”, from the University of Costa Rica.

**4.5 Public and private sectors.** We have given technical talks and presentations in public and private institutions such as “Instituto Costarricense de Electricidad” (ICE)—Costa Rican Institute of Electricity—, “Ministerio de Obras Publicas y Transportes” (MOPT)—Ministry of Public Works and Transportation—, Consejo Nacional de Vialidad” (CONAVI)—National Road Council—, Refinadora Costarricense de Petróleo” (RECOPE)—Costa Rican Oil Refinery—, Ministerio de Agricultura y Ganadería” (MAG)—Ministry of Agriculture and Cattle Raising—, the “Cooperación Técnica Alemana” (GTZ)—German Technical Cooperation—, and the most prestigious consulting firms in the area of geotechnical engineering.

In this way, we have gained valuable recommendations in projects that we are certain will pose a great opportunity to open future doors for the Vetiver System, not only in Costa Rica, but throughout the region.

**4.6 Media.** The Tico Times newspaper (McDonald, 2010), published in January of this year a whole page with an interview made about the Vetiver System. This has generated a lot of interest among nationals and foreigners living in Central America, and many have started using the Vetiver technology.

**4.7 Marketing.** We have invested in advertising through the yellow pages, green pages, etc. We have also launched a blog: [www.vetivercostarica.com](http://www.vetivercostarica.com), which has a virtual store offering the Vetiver (slips and containerized plants), as well as the organic compost we produce.

## 5. USES IN COSTA RICA

An important part of our strategy has been to lead by example; this is why, since 15 years ago, we started using and trying the Vetiver System in our own projects. In this way, we have achieved greater success both in the “recruiting” of new members for our local network and in the enlargement of our client and user database.

**5.1 Landscaping.** Due to its beauty and low maintenance profile, Vetiver is being used, more and more, in landscaping proposals for hotels, malls, and residential areas. The following photos show a new Applebee’s restaurant in Costa Rica:





Applebee's fachada posterior



**5.2 Erosion control and slope stabilization.** There are very good examples of these uses in hydroelectric projects throughout Costa Rica. These are the oldest type of project that reports the use of the VS as a specific eco engineering tool. A good example is the Central Platanar Hydroelectric Project in San Carlos, where since 1996, the slopes around a circle of hydrothermal fault were stabilized with the VS (Cruz, 2009).



**5.3 Improvement of agriculture.** We practice and promote organic and biodynamic agriculture; and without a doubt, the Vetiver is a partner in agro ecology. Its unique characteristics allow the farmer a better use of the soil and water. Thanks to the VS applied in contour lines, it is possible to exploit and plant in slopes and to control plagues associated with certain crops while soils that were very fertile before but slowly have become micro deserts due to intensive use, bad planning, overuse of agrochemicals, and bad waste disposal, recover and rehabilitate.



**5.4 Community development.** In order to generate jobs in our community, we have decided NOT to use plastic bags in our nurseries but to use instead environmentally friendly resources, for example, bamboo reeds. These bamboo reeds were initially prepared at our farm by hired workers, but now they are directly provided by members of our community who have become our suppliers. This activity represents an additional income to their family finances.



**5.5 Prevention and treatment of the soil and polluted waters.** We have already tested the Vetiver in some of our farms that were in need of soil recovery and rehabilitation. For example, the photo below shows our farm “La Esperanza”, where 4 hectares that were previously completely underutilized because when the land was bought they were practically micro deserts (Coffee plantations > Cattle raising > abandoned and eroded soils), where planted with Vetiver. Now, and thanks to the Vetiver, these are soils that are in a recovery phase.



In addition, we are certain that our participation in the recent Conference of Water Resources and Environmental Sanitation (Truong and Cruz, 2010), encouraged the appearance of the first public and private companies interested in the solutions that the VS offers for the treatment of sewage and phytoremediation of polluted soils. We expect for the next conference to have good examples of the first projects in these areas.

## 6. CONCLUSIONS AND OBSERVATIONS

We have learned that the best strategy is to have a multidisciplinary team working on the initial recommendation and subsequent implementation of the Vetiver System. This team must have at least one geotechnical civil engineer, a geologist, and the specialists in the production and installation of the Vetiver; even more when we are talking about protecting very expensive infrastructure.

In spite of all the efforts we have made in the conferences mentioned above to promote the VS and its correct installation, we have seen cases where the VS has been incorrectly installed in terms of distance between plants, vertical intervals, and contour lines. We can recall the recent case of the San José-Caldera highway, which due to its great visibility could bring negative consequences to the product's image, reason why we have taken the necessary measures to prevent this by presenting accurate reports both to the company responsible and to the government supervisors at the "Departamento de Concesión de Obras Públicas"—Department of Public Works Concession—(Cruz, 2010).

Equally, we have identified another road project between Route 32 and Santo Tomás of Santo Domingo of Heredia where the Vetiver has not received the minimum maintenance recommended for the first year after its installation—weeding and application of the right fertilizer for the specific soil's type and conditions—. In view of this, we are increasing our efforts to make the professionals in charge of the VS's recommendation include, from the beginning, a section that corresponds to the minimum maintenance.

One of the biggest challenges has been to change the perception that *"if the Vetiver System is cheap, then it must NOT be as good solution as the traditional rigid*

*engineering ones, which are very expensive.*” Part of the change in mentality has come along recommendations of renowned private consulting companies, which are increasingly recommending the Vetiver technology in their projects. The difference strives in the fact that due to the great communication effort done, these professionals now have all the necessary technical information to calculate the risk and safety factors in which to base their recommendation. It is important to inform that all this information is available in the network’s official website; however, we have discovered that the majority does not know how to get it; thus, a key part of our work has been to act as a bridge between the suppliers and users of the information about the Vetiver technology.

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