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## Observadores climáticos en la ruralia dominicana

### The Weather Experts in the Dominican Countryside

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#### RESUMEN

Las comunidades campesinas han estado observando sus territorios y manejando su biodiversidad desde tiempos inmemoriales; pero con los avances de la ciencia y la tecnología, sus saberes son marginados por un conocer académico sostenido en la modernidad, el cual no le ha dado el justo trato y los minimiza. La destrucción de innumerables tradiciones culturales no beneficia al ambiente, ni compromete los diálogos entre la academia, agencias del desarrollo y los observadores locales del clima.

**Palabra clave:** Biodiversidad, observadores climáticos, marginación, medio ambiente

#### ABSTRACT

Peasant communities have been closely observing their territories and managing their biodiversity since times immemorial; but with the successive advances achieved through science and technology, their knowledge is but marginalized by an academic knowledge held in modern times. The destruction of countless cultural traditions does not benefit the environment, nor does it compromise the dialogues between academia, development agencies and local climate observers.

**Keywords:** Biodiversity, climatic observers, marginalization, environment

Peasant communities have been closely overseeing their territories and their biodiversity since times immemorial. The elder and more knowledgeable peasants learned from their ancestors and conveyed that knowledge and traditions onto their succeeding generations, to hence be able to foresee the rainfall regime, the growing water flow, dry season and changes in temperature.

The experience of these men and women from the countryside has played an essential role in the mission to help protect weather resources. Yet, however, this feedback aids farmers not only in their crops but also their pastoralist production. Their basic resources rely on sunshine, rainfall and weather.

In anthropology, traditional knowledge and its best practices are relevant for environmental management, agricultural production, forest conservation, as well as water resources, climate and landscape. According to *Leff* (2002), knowledge is deeply rooted in ideological formation, cultural practices and traditional techniques. And it is extremely important to be aware of it in order to increase its potential, as well as how to drive forward self-management in the peasant communities<sup>1</sup>.

The world of Rural Wisdom has always been immersed in the recognition of its connection to the soil, forests and wildlife. Farmers depend for their livelihoods on individuals who observe wind patterns, climate change, landscape forms, animal migration patterns for adequate food flow and fertile soils whatever their environment, and on people who have the ability to maintain their livelihoods<sup>2</sup>. For this reason, they are the ones who can effectively account for the processes of deforestation, water loss and climate impacts on territories.

And yet, these native men and women from the countryside are cast aside by an academic background held in modern times, which has not given them fair treatment and undervalues them, by placing them in preindustrial spaces and outside the scope of a science that values experimentation and

a type of understanding about nature that is more objective and based on industrialization.

Within the western context of agriculture and natural resource management, food production is market-driven, hence all agrometeorological and climate control mechanisms are exclusive to highly technological sectors and supported by an academic knowledge *corpus*. With regards to the weather, this remains unchanged, as it is a cluster of academic groups and state-owned or private research entities, that respond to empirical research and high-technology frameworks, based on approved knowledge.

Under this logic, traditional verbal expertise is irrelevant. This drives direct negative impact on the rural identity and its disassociation from the programs that develop projects to battle the global climate change crisis.

The destruction of countless cultural traditions on local climate knowledge does not benefit the environment, nor does it compromise dialogues between academia, development agencies and local climate observers. The emergence of new cultural rights around the environment and climate opens up pathways between stakeholders to foster a portfolio of ideas and interdisciplinary practices in climate management.

In the Dominican Republic, local rural knowledge has disappeared. This is due to the tragedy caused by monocultures and industrial agriculture, and the use of multiple pollutants contained in agrochemicals (fertilizers, insecticides, herbicides, etc.), in addition to the introduction of transgenics (GMOs) and by the processes of depeasantization and climate change.

Del Rosario, et al. (2013), establishes that the scenario of vulnerability caused by climatic phenomena dramatically affects the deprived rural populations. This puts farmers at risk, compared to others living in urban areas or with lesser impact due to climate change.

In rural territories, the spoken memories that have accumulated over time, and which today make up, within the environmental and climatic

panorama, a valuable loss of farmer knowledge are disappearing.

Climate change is one of those topics of great relevance in every national agenda. It encompasses a central issue when defining public policies due to the climate crisis and the losses registered in agriculture, soils, water sources, temperature increase and climate changes, among others.

The climate crisis is considered a global problem that affects all parts the whole world and its inhabitants. According to the United Nations Framework Convention on Climate Change (UNFCCC) of 1994, it was proposed that the increase in concentrations of greenhouse gas emissions (GHGs) caused by human activities, have produced significant changes which are dangerous for ecosystems and life all over the planet. And it is in this context that industrialized countries are historically responsible for climate change.

To reverse climate change, profound changes are needed. And food producers can help in this process. Their insight on knowledge and know-how is significant. They offer first-hand data, which is necessary to interpret, act, and direct processes in which multiple subjects are required to monitor and seek participatory solutions. And even though they have been sidelined by the academic and urban world, their direct experiences open the way to define new agendas and improve the living conditions of those most vulnerable.

### **The rural outlook on weather**

In the rural parts of the Dominican Republic, farmers have a calendar of seeding and harvests that they design according to the region. To do this, they take into account the various lunar phases, temperature, winds, and the behavioral patterns of plants and animals, in order to predict the rainy and drought seasons. In addition to other environmental observations that play an important role for food production and their management of their communities' natural resources, such as periods of storms and earth movements.

Overall, most of these local traditions have been maintained over time, as strategies for their survival and to create new ways of life as important cultural legacies which are empirically conveyed, and which are the grassroots of their idiosyncrasy and identity.

Orality is the framework through which all these knowledge experiences are conveyed and hardly ever do we find farmers that “take note” of said observations. Except in some particular cases such as the “*cabañuelistas*” or the local healers, whom need a record of the weather or of animal or plant behavior patterns recommended by the entities known as “The Mysteries” and whom conform the grassroots of Indo-African religious practices (a blend between African, indigenous and Christian traditions) or of folkCatholicism.

Said observations encompass a vast array of strategies that go from mere observation, all the way to oracle predictions who foresee or exhort taking the necessary shelter measures and protecting the crops and wildlife. These experiences are recorded in popular memory, through tales told during work shifts or rest periods. They are usually told by elders with experience, who tell the tales to the younger or other workers of the “rural world” that are interested in learning about changes in rain patterns, temperature or output reduction.

However, it is these “rural weather experts”, who specialize in distinguishing the intertidal beds, all the way to mild variances which foretell a good harvest year, or bad omens that point out the possibilities of financial and human loss.

These “weather experts” are dear figures among the community and are considered as very savant and visionaries capable of issuing warning on subtle weather variances. This they accomplish through a generational sensitivity, conveyed through their ancestors, by the “saints” or mysteries, and by means of dreams. Here, sight, hearing and tact play an important role. According to an informant from *Ocoa*, these specialists or witch doctors are able to tell the difference between

scenarios brought upon by nature that no one else in the community can sense.

This power to see, feel and hear is conveyed among all senses, and the shelf used to gather all information is mere observation or by way of dreams. A *cabañuelista* once said that when his grandfather taught him how to count and observe how the grains of salt early into each year would vary in size and width, which in time led him to become more sensitive with the surrounding natural settings like never before. Let's see:

### Cockfighting and Climate Change

The breeding of these fighting beasts is a popular tradition. This tradition dates back to the pre-Spanish era, and has been adopted by the Dominican population. According to the “*traberos*” or fighting-cock keepers, these birds are special, for they announce when a storm or flood have moved away.

The climate signals are observed by the fighting-cock keepers, given the fowl needs warm temperature to grow. They observe the weather to enable for their plumage to grow at the right time, especially during rain season. As per traditions, roosters don't crow when bad weather is approaching, nor do they come down from the trees. The story tells the tale of bad weather approaching, and when it is upon, roosters cease crowing and are not heard until the storm has gone away. This is read by farmers as a sign of an upcoming hurricane.

If the rooster crows every morning, it is a good sign. Likewise, we are told that skylarks do not chirp at dawn when the drought is heavy. Instead, when they start chirping before dawn, it is a sign that the drought is coming to an end, and rainy season is near.

### Animals and the weather

Per these weather experts, several of them farmyard animals, among them horses and cattle, through their neighs and moos and bellowing jumps that dry season is ending.

According to a farmer from the *Los Toros de Azua*, his cows “bellow and dance when dry season comes to an end”. To him, this is an unmistakable sign that rain season is near, for while dry season is upon, the animals mellow to the point of depression.

Likewise, cows are capable of sensing floods when they are near, for they quickly move away from the river. If they are in a flatland zone, they migrate to the mountains or they near the stables far from the aquifers. A farmer from the *Yuna* upper basin said the following:

“When I see the cows start to quickly make their way up the hills, without witnessing a rainstorm, nor seeing rivers rise, I join them, because shortly after there is always a flood approaching, and no more than fifteen minutes go by, when the waters flood the area”.

The same happens with the crayfish (*Epilobocera haytensis*). Farmers tell the tale that this crustacean is bold as it is intelligent, for it leaves its cave and start climbing uphill the moment it senses a heavy flood is approaching. It does so by distancing itself quickly from the river vicinity. When this happens, farmers remove themselves from the danger zone. So say the weather experts that the river “speaks to them”. This is the message heard by crayfish, cattle and the ferret (*Herpestes javanicus*). The latter leaves its burrow and seeks shelter in high zones.

Observations on water resources are important to livestock farmers and food producers. Usually the water is observed to note any variance in pattern. For example, several species live in clean water, which disappear when variances in climate take place, such as hurricanes, low temperatures and drought. These “experts” tell that when bubbles emerge from clear water, without the presence of fish therein, they are certain a downpour is approaching, and a heavy flood will occur.

It is said that when earthworms emerge, and the soil is dry, rainfall is approaching. Likewise, they also pointed out that when *alates* emerge,

they are announcing rain. If the coating of animals becomes shiny and moist, it is also foretelling that a period of abundant rainfall is approaching, because of the humidity in the environment.

### **The cabañuelas**

Per Emilio Jiménez, in his book “*Al Amor del Bohío*” (1975), in the Dominican countryside, farmers rely on the *cabañuelistas* to determine rain or drought season. This system allows them to anticipate soil erosion seasonality or healthy soil for food production. Per this farmer, a *cabañuelista*, is a person that calculates the weather forecast of the community and region.

This calculation is done in many ways and varies per region. In the Southern region it is common practice to do so using grains of salt or by observing them daily, to note variances in temperature or rain. Both methods rely on observation. Everything that happens during the first twelve days of January is taken into account, effective the first till the twelfth day. Usually notes are taken in a notebook, yet, however, others just observe whatever stands out, if it gets warmer or windy, rains or if the river flow decreases or grows.

This is substantial, as each of the twelve days is associated with one month of the year. And, it is expected that if the *Cabañuela* is well measured, the data it provides will serve as an accurate weather forecast. Also, some *cabañuelistas* say that the weather has varied a lot, because in the past, if the first or seventh day rained heavily, it was considered that in January and July the forecast of rain had been fulfilled, although this month was not traditionally rainy. Now they claim, “the weather is crazy”, as stated by an informant “maybe, maybe not”. And yet, however, calculations continue, because they are considered important to the communities, as they also provide a benchmark to forecast ideal seeding and harvest seasons.

In the Cibao region, our sources told us that these calculations are done forward and backwards; this means that the *cabañuela* is measured from the first until the twelfth day, and then it was measured

again the other way around. For example, the thirteenth day counted as the first and the twenty-fourth as the last day, but equivalent to the 12th day.

When comparing the two *cabañuelas*, they look for similarities or differences in days. If, for example, the first *cabañuela* done in the month of March registered heavy rain precipitations, it was corroborated with the small one or second one, to see if that month would again register heavy rainfall. If the opposite happened, they say that doubt fills the mind of the *cabañuelista*, and he only needs to wait for the facts to take place. They usually pray that prolonged drought does not take place neither intense rainfall that could ruin the crops and give way to dangerous floods.

According to José Labour (1982), the use of salt is done throughout the country. This practice consists of taking 12 grains of salt on the last day of the year and placing each grain after the other. Then they are read from left to right. The first one refers to January and so on. Labour says that if the fifth grain is observed to be moist, this means it will rain in May.

### **The Wind and the Weather**

The variance in wind direction can foretell rain or tempests. The winds that blow North or South foretell dry or rain season in every region. However, when cooking, women claim to observe smoke patterns while cooking. Smoke The smoke rotates upwards or sideways, and this is important to them. When the smoke from the stove rises, or lies to one side, it indicates the possibility of rain or a variance in temperature to hotter or colder. In the Padre Las Casas area, when the smoke from the stove rises without variance, the climate is benign and there is no sign of rain. If the smoke turns south, it will be a slight drizzle. Otherwise, if it moves continuously, then bad weather will come upon. The smoke allows you to see how the winds blow.

### The Halos around the moon

Moon seasons are essential for seeding, pruning or harvesting. It is convenient to seed under the new and crescent moon according to crops, but not to cut them nor to harvest them. On the other hand, bananas - as well as green plantains- cannot be sown nor weaned under a new moon, because the sap is lost, and this applies also to trees and sugarcane. On a full moon you can cut, and trim and prune. All this is influenced by the tidal cycle that is associated with the moon in its proximity or distance from the Earth.

In the Southern region, during the phases from full moon to waning crescent, farmers observe the rings that form around the moon. If they turn ochre or dark yellow, this helps predict rain. In order to do this, it is necessary to determine if the ring is located far away or near the lunar disc during the moon-watch. If it is far away, showers will occur; if it is located very closely to the lunar ring, then a great downpour will occur. These moon-watch sessions take place at night or at dawn.

### Plants and Weather Patterns

Plants are also considered during weather-watching. This result helps predict if there will be abundant rainfall or heavy drought. This is predicted by mangoes (*Mangifera indica*), and avocados (*Persea Americana*). If there is a “bumper harvest” of mangoes, this tells the farmer that a massive drought will harm the crops. The excess mango production signals bad agricultural output due to drought.

Overall, in addition to weather-watching, food producers rely on countless beliefs and practices that serve to appease the rain, prevent lightning from entering or damaging their homes, or even a natural disaster from occurring.

To appease the rain in the northern region or *Cibao*, they pray to Santa Clara aloud to clear the skies or stop the rain. If they do not want it to rain, a stone is placed tied by string. If the weather is very hot, then they pray to Saint Elizabeth for benevolence.

In the communities of the South, especially in the area around *Bahoruco*, long walks or processions are carried out. During these processions, the Virgin Mary and Santa Clara are chanted to. Women pray for water. Usually, the processions reach a river’s watershed or a stream. Once they arrive, they start singing “*Salve*” chants and they pray to the Patron for rain. A source in the *Guanito* community says: “It will rain if God and the Virgin Mary will it so”.

The devotees pray to Jesus and the Virgin Mary to stop the rays and flashes, and prevent them from affecting their homes or harming people. Likewise, they use stones to stop the rain, which they place inside the cruses that are located in the kitchen or living room of the house. Lightning stones (flint axes) are used and deposited in the water to stop potential lightning impacts during storm periods.

In the *Cibao* region, mirrors are covered or hidden, because it is believed they attract lightning. Some devotees resort to blessed palm leaves, which they place all around the house, especially behind the main door, to prevent the same issue during a thunderstorm.

### Final summary and conclusion:

When it comes to weather forecasting weather experts contribute greatly in their local community; they still have much to share about their climate management. Access to this knowledge is relevant to standardize, interpret and identify educational models that can help implement it, hence promoting a new participatory agenda in favor of weather resources.