

The pressing challenge of generating new knowledge in tropical livestock science for a changing environment

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One of the most interesting and versatile characters in Antioquia was Antonio José Restrepo, whose life stretched long enough to make him a miner, entrepreneur, lawyer, congressman, diplomat, journalist, philosopher, philologist, writer, popular-song compiler, distinguished orator, free thinker, cattle rancher, coffee farmer, composer, poet, troubadour and bohemian.

When Ñito de Concordia, as he was nicknamed by some of his friends, was dedicated a little over a century ago to the livestock operations in the middle Magdalena region, today La Victoria (Caldas), he wisely analyzed the hardship of this risky activity which had no access roads, no finance nor technology, and which was ever exposed to the whims of the scarce cattle traders as well as to snake bites and to the frequent attacks by jaguars and cougars. Nevertheless, nothing concerned him more than cattle infectious-contagious diseases, especially bacillus anthracis, or anthrax, for which the country did not have any prevention methods back then. He intelligently left this claim to history: *“the minister who founds four production facilities to create and cheaply sell the vaccine against anthrax will have done more good to this country than the one (minister) who sanctioned the Concordat...”*

I begin these notes by recalling the cited quotation because I am sure that a great part of our modern problems and challenges must be addressed with the spirit of greatness and the perseverance from the characters of the past; characters who endured harder situations with more difficult scientific tools and precarious technology. It is of special necessity to transmit to the newer generations of agricultural professionals, teachers and researchers, the love for the history of their land. Society does not only expect knowledge from its professionals, but also the competition of their services for the common well-being.

The inhabitants of Latin America and the Caribbean are increasingly well aware of the close relationship between quality of life and the environment, on the one hand, and the opportunities and limitations that the environmental considerations pose for the growth and the competitiveness of the economy, on the other.

In a globalized market with ever increasing social and environmental demands, the disrespectful handling of the land and of the renewable resources can close markets and even threaten economic viability in livestock production.

Rural competitiveness and sustainable development go hand in hand when production costs and collateral effects in mid and long-term production practices are analyzed.

A recent analysis by the World Bank on eight crops that spread over an area of 1. 2 million hectares in Colombia pointed out that the use of pesticides ranges between 9 and 13 kilograms per hectare per year and that the use of fertilizers more than doubles that of countries such as Brazil, Ecuador, and Venezuela, and it is even higher than that in Mexico, Argentina, Panama and Peru. The production costs to farmers have increased several times during the

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previous years as a result of the rising prices in oil and its derivatives. The phosphorous and potassium components in simple and compound fertilizers have followed a similar trend, given the extraction and transportation costs from the mine sources around the world. Why is it then that the production of milk supported in intense models of concentrated use, fertilizers and agrochemicals shakes when international treaties are signed? It is because the specialized dairy that has been promoted in the tropic highlands such as Antioquia, Cundinamarca, Boyacá and Nariño cannot compete, given their high costs, with those products that come through trade agreements from the U.S., the E.U., or Canada.

Given this situation, the producers should not expect any longer public policies on subsidies to fertilizers and concentrate raw materials, but they ought to turn their productions methods into more natural ones in order to keep or to increase the fertility of their soil. And for this change to take place it is necessary that livestock researches and professionals do their job correctly, abandoning mental and scientific dependency to the imported methods from the industrialized countries.

Besides, there is another, more pressing reason: climate change is here to stay and its expressions are ever-more devastating. The experienced and suffered events that took place in the region between 2009 and 2011 prove it so. The decadal oscillation currents of the Pacific Ocean, also known as El Niño, joined La Niña contiguously, something that has seldom happened in the known 56 scientific records. In the first event, millions of people across the continent were left without water and electricity, their hopes for good crops sank and hundreds of thousands of animals died of thirst. In the second event, when the climate pendulum drastically swung toward La Niña, we endured severe floods and terrible landslides that have ended many lives and swept homes and crops, as well as public and private infrastructure.

It is no chance that during this same year (2011) in México, a cold front as unseen in more than half a century, ice-burned more than 700 thousand hectares of corn, sorghum and vegetables in the state of Sinaloa. The same happens every time with the arrival of cold fronts from the South Pole to the subtropical regions of Argentina, Brazil and Uruguay. Also, the highlands in the Andes are being affected by unexpected and prolonged frost that ruin potato and cereal crops and burn the dairy cattle pastures.

Among the emergencies generated by the many and continuous tragedies, there seems to be no time to think about the vulnerability left by this development model, when the agro-landscapes become impoverished by people and natural vegetation. It is worth to rethink about what needs to be done to form the new agro professionals aiming at the culture of prevention, mitigation, and adaptation to the changing global climate. It is of urgent need to check the topics and methodologies being taught at the undergraduate and graduate levels, since society requires people with better skills to integrate knowledge, with higher social and environmental sensibility, and with a greater background in the values that constitute our identity.

The first generation of Zootechnical Veterinarian Doctors formed in Colombia was able to meet the requirements on the vaccine against bacillus anthracis as pointed out by Nito Restrepo in the throes of the 19th century. The professional generation of the 21st century has greater and more pressing challenges, but it cannot be inferior to the predecessors, because they have access to more and better tools and technologies. Only history will say if its attitude was as high, noble and effective as it is needed by the country and world, here and now.