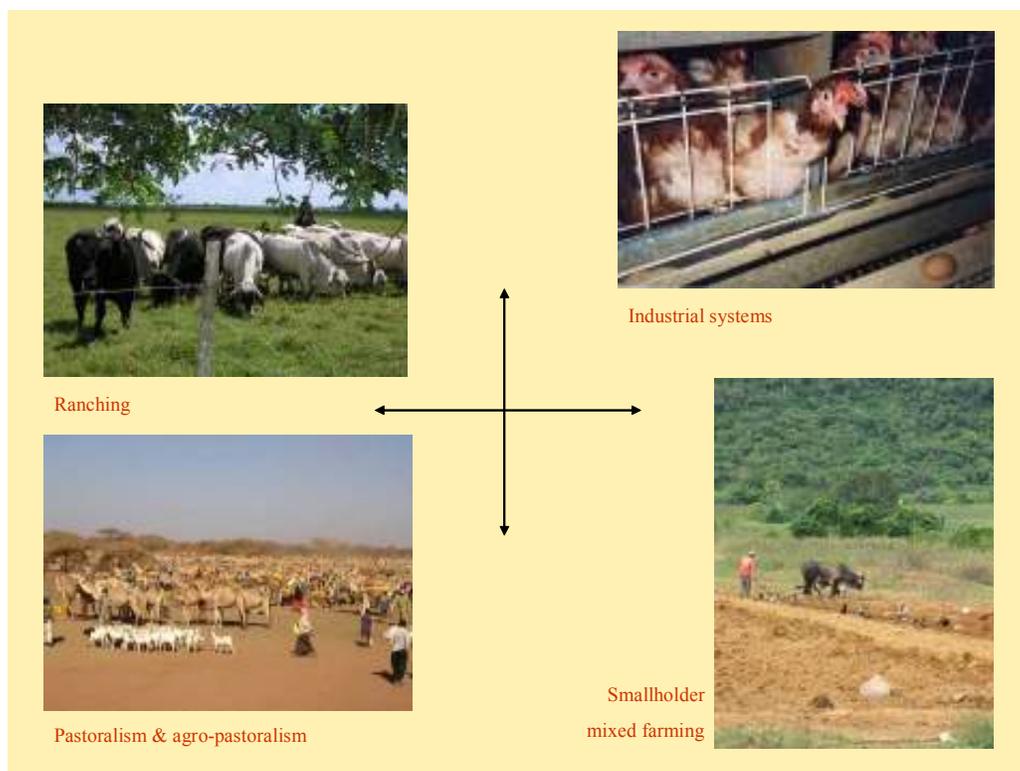




Livestock: friend or foe?

The need to look at production systems
in the debate about livestock & climate change



KATRIEN VAN'T HOOFT
ETC Foundation, Netherlands
Leusden, The Netherlands, November 2009

e-mail: katrien.hoof@etcnl.nl



www.etc-international.org



www:/eldev.net



www/duurzaamboerblijven.nl

Summary

With less than a week to go until Copenhagen, livestock is increasingly being cited as one of the major producers of greenhouse gasses: some reports (e.g. by World Watch) even indicate a contribution of 51% of the total of greenhouse gasses produced. Replacing livestock products with meat- and dairy analogs based on soy, rice or wheat, is suggested as the most desirable way out. Unfortunately, reality is more complex than this. Livestock is not produced in one way, which can simply be replaced. Livestock emissions largely depend on how animals are raised and fed. Grain-fed, factory-farmed cattle emit higher total levels of greenhouse gases (combined with other environmental effects) than the grass-fed, low-input farmed cattle. Fortunately, other international reports (IPCC, FAO) indicate another way out: increased sequestration of soil carbon through sustainable use of soils and other resources in agriculture. These reports estimate that 90% of the total mitigation could come from sink enhancement (soil Carbon sequestration) and about 10% from emission reduction. Although not explicitly mentioned in the reports, this puts livestock in a different perspective. Different livestock species are farmed as an integrated part of mixed farming systems, pastoralism/agro-pastoralism systems or agroforestry systems throughout the world. We need to have the debate on livestock in a more inclusive way. This article aims to indicate the scope and potential of building on the experiences gained with supporting soil fertility and farm efficiency, both within smallholder systems as well as industrialised livestock keeping systems. This can have a surprising win-win effect in terms of both food-security and climate change.

Livestock: contribution to the climate change problem

Until recently, agriculture — particularly in developing countries — has been largely absent from climate change discussions. But farming is a significant contributor to climate change, as well as a victim. Agriculture is an important source of GHG emissions representing 14% of the global total. This is higher if related land-use change, deforestation and emissions beyond the farm-gate are included. (FAO, 2009)

Livestock certainly deserves the attention of climate change experts. In 2006 the widely cited FAO study Livestock's Long Shadow – environmental issues and options (Steinfeld et al, 2006) was issued. This study assessed the full impact of the livestock sector on a wide array of environmental problems (land degradation, climate change and air pollution, water shortage and water pollution, and loss of biodiversity). Over time, however, one element has been singled out especially: *“The livestock sector is a major player, responsible for 18% of greenhouse gas emissions measures in CO₂ equivalent. This is a higher share than transport.”* Since 2006, numerous reports, documentaries and films have pointed at livestock, especially at ruminants due to their methane emission in the process of digesting roughage. (Examples: film Meat the Truth, Partij voor de Dieren, 2008; BBC news 29 October 2009 The Methane Makers)

There is less than a week to go until world leaders gather in Copenhagen in search for a new global climate deal. At a time when objective scientific analysis of livestock farming is urgently needed, there is a worrying tendency to focus exclusively on the negative environmental impact of livestock. In October 2009 World Watch report by Robert Goodland and Jeff Anhang concluded: *The 18% GHG emission due to livestock production and animal products is a gross under-estimation. Livestock and their by-products actually count for 51% of the annual worldwide greenhouse gas emissions.* The proposed solution is: *‘replacing livestock products with better alternatives such as meat and dairy analogs, based on soy, rice, sunflower and wheat, or artificial meat cultivated in laboratories - ‘in-vitro’ meat.* This has been followed by widespread publicity in this direction.

Unfortunately, reality is more complex than this. But those who portray livestock as the main culprit in global warming, typically fail to mention the differences between the high-input (industrial) and low-input animal production systems. As Carlos Seré, director of the International Livestock Research Institute (ILRI) in Kenya rightly indicates in his recent paper (No simple solutions to livestock and climate change, 10 November 2009): *“There are no simple solutions to complex problems. Livestock emissions largely depend on how animals are raised and fed. Grain-fed, factory-farmed cattle emit much higher levels of greenhouse gases than the grass-fed, family-farmed cattle. There is broad consensus that intensive livestock production can be medically and environmentally unhealthy as well as inhumane, and should be scaled back.”*

We should not throw away the baby with the bathwater. Livestock is not produced in one way, which can simply be replaced. Most people who keep cattle in developing countries are either small farmers who feed their animals grass and other common forage, with seasonal supplements of harvested crop wastes, or herders who periodically move their stock in search of new sources of grass and water. Both these groups have very few alternatives for making a living beyond crop and livestock farming, and both leave a relatively small environmental footprint. For example, all of Africa's cattle and other ruminants contribute just three per cent of global livestock methane emissions. (Seré, 2009)

Livestock: also contributes to the solution?

Fortunately, objective scientific research in this field has been compiled in the major report by the Inter-Governmental Panel on Climate Change (IPCC) in 2007. One of the main findings related to agriculture is the potential of climate change mitigation through soil C(carbon) sequestration: *“About 90% of the total mitigation arises from sink enhancement (soil Carbon sequestration) and about 10% from emission reduction. Among the most beneficial non-climate policies are those that promote sustainable use of soils, water and other resources in agriculture, since these help to increase soil carbon stocks and minimize resources (energy, fertilizer) waste. Strategies that simultaneously increase adaptive capacity, reduce vulnerability and mitigate climate change are likely to present fewer adoption barriers than those with conflicting impacts. For example increasing soil organic matter content can both improve fertility and reduce the impact of drought, improving adaptive capacity, making agriculture less vulnerable to climate change, while also sequestering carbon.* (IPCC, 2007 part III, p.64-66)

Surprisingly enough, between 2007 and 2009 this has not been picked up in major debates on climate change, nor the scientific community. Only in 2009 these findings are included in the recent FAO report: Food Security and Agricultural Mitigation in Developing Countries: options for capturing Synergies (November 2009). This report is explicit in the need to support small holders and sustainable agricultural production systems that favor soil-C sequestration: Climate Smart Farming. It explores the potential synergies between food-security, adaptation and climate change mitigation from land-based agricultural practices, with a focus on smallholders. One of the major conclusions is that: *there is a need for a more holistic vision on agriculture, as well as increased agricultural investments.*

FAO does not stand alone. In June of this year, Achim Steiner, the Environmental director of UNEP, presented the role of sustainable agriculture for CC mitigation during the EU Agriculture and CC conference in Brussels: *“We should not only invest in high-technological solutions, but rather invest in smallholders farmers. We have to do this. Without attention to agriculture and food security there can never be an agreement with developing countries in Copenhagen”* (article Volkskrant, 27june2009).

Olivier de Schutter, the UN Special Rapporteur on the Right to Food, also presented this view during a debate in the series The Future of Agriculture and our Food (Rode Hoed, Amsterdam, 10 November 2009). He stressed that: *“The UN now recognizes that it has been a mistake to exclusively support large agricultural enterprises. The Green Revolution model has produced more food and more hunger at the same time. Alternatives are silenced, not taken serious or widely under-estimated. In reality, agro-ecological farming is extremely productive per hectare. It is necessary to re-invest in smallholder agriculture.”*

Livestock in a different perspective

There are nearly one billion people who are undernourished. The World Development Report 2008 stresses the importance of agriculture-led growth to increase incomes and reduce poverty and food-insecurity. This time, however, the importance of local food systems is stressed: *“Food accessibility for many people in the developing countries remains closely tied to local food production.”* (FAO, 2008)

The reports indicate that the potential changes required will have an effect in both food security and climate change. According to the FAO (2009): *“It is striking that, to a very large extent, the land-use changes needed to improve food security and adaptation are the same as those that generate mitigation. Nearly all of the terrestrial-based agriculture mitigation options are the same as those proposed for sustainable land management and adaptation to climate change.* The required changes are those proposed in agro-ecological farming and sustainable land management: improved cropland management, water management, pasture- and grazing management; restoration of degraded lands, and management of organic soils.

This puts livestock in a basically different perspective. Although not explicitly mentioned in the IPCC (2007) and FAO (2009) reports, livestock is presented here as an implicit part of the solution to both climate change and food security. The livelihoods of millions of small-scale families in marginal areas of the developing world depend on livestock; either in either mixed farming systems, pastoralism/agro-pastoralism systems or agroforestry systems that include several livestock species. FAO statistics indicate that 69% of the global agricultural land and 26% of total land is covered by agricultural pastures, rangelands, grasslands. As most of the rangelands/grasslands/pastures are too dry, too wet, too cold or too high to be cropped, these areas can be used agriculturally only through livestock production which supports several hundreds million people.

Experiences available in smallholder farming

Fortunately, numerous organizations have continued supporting smallholder agriculture – including low-input livestock systems - over the past decennia, in spite of limited financial support. Exciting case studies are available of the positive food security, environment and climate change effects of smallholder agriculture which integrates crops, livestock and other natural resources in a complex agricultural system. (E.g. Send a Cow, 2008: Preparing to Climate Proof – the next challenge for Africa’s Rural Poor)

Moreover, numerous improved low-input technologies and participatory methodologies have been developed to actively support low-input smallholder agriculture. A large number of international networks and Community of Practice have developed relevant experience over the past decades related to low-input livestock keeping: LIFE network, Endogenous Livestock Development (ELD) network, Livestock4future, League for Pastoral Peoples, World Initiative of Sustainable Pastoralism (WISP), Smallholder Poultry Networks, the VSF networks (Veterinaires San Frontieres), Heifer Project International (HPI), to name but a few. Similarly there are major international networks related to smallholder farming in general, such as ProInnova

(PROMoting Local Innovation), RUA in supporting Urban Agriculture, the Low-Input and Sustainable Agriculture ILEIA network with the LEISA Magazines in many languages. Besides this there are countless national and local organizations of very high standard and expertise working in this field. Moreover, research institutes, such as ILRI are looking into a 'third way' of livestock production, lying somewhere between factory and family farming.

Reducing impact of industrialised animal farming

Unfortunately, the recent FAO report fails to analyze the need to minimize the climate change effects, as well as environmental and social consequences, of the industrialised animal production systems. Due to the criticism amongst critical consumers in developed countries, the high-input livestock production systems are growing at an unprecedented rate in developing countries as well as central and Eastern Europe, with its influence on smallholder agriculture. This is also called the Livestock Revolution. This has been supported by large international companies with major economic and political power, such as the fertilizer&chemical industry, GM industry such as Monsanto, as well as the soy-lobby and the lobby of animal industries, to name but a few.

In industrialized countries and in the affluent parts in the major cities in the world, eating less meat would indeed imply a healthier diet, and contribute to a lower ecological footprint of the food consumed. Moreover, and similar to the developing countries, there are numerous examples of technical and methodological innovations towards sustainable agro-ecological farming in developed countries. These post-modern tendencies in agriculture are a reaction to the problems raised in industrialized farming, and aim at increased closing nutrient cycles, reduced input of chemical inputs, increased (economical and ecological) farm efficiency, increased soil fertility, and diversification of farmers' activities and income. A wide array of initiatives have been developed in this direction, such as marketing regional products, rural-urban integration, care-farms, and nature conservation linked to agriculture.

One remarkable example of reducing impact of industrialized farming is the Duurzaam Boer Blijven (Stay as a Sustainable Farmer) initiative with conventional high-input dairy farmers in the Netherlands. Farmer-to-farmer exchange on ways to increase nutrient (nitrogen and phosphorus) recycling and improved soil-biodiversity has resulted in increased farm efficiency. Constant monitoring has shown that the emission of minerals as well as greenhouse gasses to the environment has been reduced. With the increased soil fertility the farmers were able to maintain their income while reducing the input of concentrates and chemical fertilizer, thus effectively reducing the footprint of their milk production. (www.duurzaamboerblijven.nl)

Conclusion: build on ways of farming animals sustainably

In order to rapidly engage in action according to the lines set out in the most recent international reports, it is necessary to build on the wide array of technical and methodological experiences that have been accumulated over decades in both developing and developed countries. It is simply not good enough to continue the routine of top-down mechanistic models and polluting technologies. As Herman Wijffels, chairman of World Connectors and Professor Sustainability of University of Utrecht (Netherlands) indicated in a recent lecture at the VU university (19 October): *Our civilization is on the road of destruction. We have developed an ego-centric rationality at corporate and personal level, resulting in destabilization of eco-systems, financial systems, social systems and economy. In agriculture, we need to move beyond the use progress based on fossil fuels, linear processes and top-down mechanistic models'*

As shown above, examples of ways to do this abound in developing as well as developed countries. The post-modern examples in developed countries, such as the Netherlands, can

also play another role. According to Wijffels: *“It is necessary to prevent that developing countries will follow the same path with industrialized agriculture based on fossil-fuel technologies, specialization and silo-rationality. We have to move into integral thinking and integral design. The developing countries can move straight into the next generation of technologies.”*

This new rationality requires new approaches in education, policies and financing mechanisms. This need is also recognized in the FAO (2009) report: *“Climate Change financing is not about aid with donors and recipients; but rather about cooperative public and private action, considering common but differentiated responsibilities.”*

In conclusion, and together with Carlos Seré of ILRI, we can summarise that: *“There are no easy answers to reducing global warming while ensuring global food security. We must not lose our nerve and take the easy way out by resorting to simplistic that recognize only 'good' and 'bad' guys. And we certainly must not do this to the detriment of people and nations already disadvantaged by poverty. For many people, including more than one billion people living in absolute poverty and chronic hunger, the solution is not to rid the world of livestock but rather to find ways of farming animals sustainably. We must, and can, tackle these interwoven problems together in ways that are both equitable and efficient.”*

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