

Livestock, Climate Change, and Animal Welfare: Can cattle ranching stop deforestation?





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Livestock and Climate Change: Can Cattle Ranching Stop Deforestation?



The way we produce food in the decades ahead will be one of the biggest influences on the future of the planet, impacting our ability to manage climate change, protect vital natural resources and ensure good nutrition and livelihoods – and thus whether we can achieve the prominent, globally agreed Sustainable Development Goals.

Food demand is projected to rise by 70-100% globally by 2050 (FAO, 2017) and one of the main drivers is a rise in demand for meat and dairy, the majority in developing countries. Yet livestock production currently contributes 14.5% to climate emissions (Gerber et al., 2013) and urgent solutions are needed to achieve global emissions targets.

Climate change is a huge global challenge, with deforestation arguably its most totemic and visible contributor. Amazonian forests are the lungs of the earth, and within them support some of the world's most complex and rich biodiversity. The rainforest holds another essential part of life for those in the region: its watershed, which has dramatic impact regionally – without adequate and resilient water supplies, societies cannot thrive.

The blame for deforestation has been placed squarely at the feet of ranchers who have cleared land of trees for agriculture (see agri benchmark et al. in press). Forest clearance is not a new phenomenon, and is driven by more complicated factors than simply agricultural expansion, including historic land policies, conflict, and the growth of illicit crops. But forest destruction to allow livestock production, and particularly cattle ranching, is widely recognised as a major contributor.

In Colombia, the Caquetá region is its number one hotspot for deforestation. For decades, forest has been cleared, with Caquetá losing almost 700 thousand hectares of its forest between 1990 and 2010 with 30% of its forest lost between 2002-2010 (Caquetá Pact, 2016). But it is not the cattle themselves that are the challenge – rather it is the way ranching has developed. Clearing trees for agriculture was, in decades past, seen as land 'improvement' and linked to land ownership rights. The resulting pasture rapidly became poor quality, with thin soils and limited nutrition for animals' feed, consequently supporting few cattle. These extensive pastures today cover more than 1.6 million hectares and average less than 1 animal per hectare but could be much more productive (Rivera et al., 2015). Without trees, they are not resilient to climactic extremes which are made more intense through el Niño phenomena, with temperatures in 2016 reaching 46 degrees C⁰.

But the solution cannot be to abandon Caquetá's cattle ranches, or the families and communities who depend upon them. Poverty in the region is a huge issue, and the majority of the population relies on lives-tock and agriculture in some way. 72% are poor and 42% cannot fulfil basic needs, well above the national average of 28% (Caquetá Pact, 2016); Yet Caquetá is the 'food basket' of Colombia, with livestock production worth nearly \$330 million USD a year to the regional economy (Torrijos Rivera et al., 2016). There are nearly 1.5 million head of cattle, most on family farms, 70% of these farms with fewer than 100 animals (ibid).

What if the concept of cattle as environmental killers was turned on its head. What if Caqueta's cattle were the answer, rather than the problem? Could Caqueta itself become a global beacon showing how to solve this crisis, rather than a hotspot for the region's challenges? This solution lies in the hands of the region's livestock sector and, on the ground, the cattle ranchers as stewards of their land. So how could cattle be the solution to deforestation?





The Caquetá Pact: Transforming the Future of Food, Farming and Forests

The ground-breaking Caquetá Pact was agreed in Colombia in 2013 and brings together cattle ranchers, led by the Caqueta's Departmental Committee of Cattle Ranchers, with government ministries, food processors both regional and multinational, NGOs, and research and development agencies with both national **Sustainability: The Bigger Picture** and international remits.

The pact has a clear vision of 'zero deforestation and livestock reconciliation' (Caquetá Pact, 2016). In a new perspective, but it will need to prove it works: short, farming and forests need to live together. It will work to protect the remaining forest and to encourage regeneration of what has been lost; to boost agricultural productivity; to ensure a resilient economy which will support peace and stability in the region; to deliver good animal welfare for its livestock as part of sustainable farming; to protect natural resources and the biodiversity of the Amazon.

It is projected that, if achieved, the Caquetá Pact could reduce by almost half the amount of land needed for cattle production and, by adopting new farming techniques, the number of cattle produced on this land could be doubled. Cattle are some of nature's most amazing food producers, turning low quality feed to high guality protein through meat and milk and Caquetá has the potential to produce nearly a quarter of all meat in Colombia. The consequence of this for the forests is staggering: by freeing 1.15 million hectares from livestock production, there is potential to regenerate more forest than has been lost since 1990 (ibid).

success. With the Amazon region holding 20% of the world's freshwater, a tropical climate where forest can regenerate rapidly, incredible biodiversity still in existence, and pasture systems which could, if impro- ming essential.

ved, have good productivity, the chances for are good for a 'triple win': efficient and economic food production, environmental protection and good farm animal welfare.

The Caquetá Pact sees the future of cattle from evidencing the benefits of this change is essential to drive its wider implementation. Working with local and international technical institutions such as CIPAV, Cagueta's Departmental Committee of Cattle Ranchers and agri benchmark, enabled by international organisations such as German Society for International Cooperation (GIZ) GmbH, in the name of the Federal Ministry of Environment, Nature, Conservation, Construction and Nuclear Safety, and by Patrimonio Natural -Fund for Biodiversity and Protected Areas-, real on-farm practice change is beginning through pilot projects which have huge potential to scale and replicate across the region. Such pilot projects have worked on introducing and improving silvopastoral system models suitable for the region, improving farm management, milking practices and cheese production, and protecting and restoring native forest remnants (Suárez 2010, Patrimonio Natural 2014).

These new pilot projects are beginning to evidence the reality of change.

But there is one commitment that has so far received less attention: the welfare of the cattle themsel-The natural environment of Caquetá is ripe for ves. Animal health and welfare has huge potential to improve productivity, and is a growing expectation of the modern consumer worldwide. As such, the inclusion of animal welfare in any picture of sustainability is beco-





The Caquetá Pact

The Caquetá Pact commits to transforming production in ways that:

- Mitigate climate change and protect ecosystems, creating habitat and natural corridors for wildlife to thrive, supporting repopulation of important native birds and animals
- Are sustainable, improving soils, water conservation and introducing agroforestry, bringing trees back onto the land
- Deliver this change through silvopastoral systems to improve their productivity, economics and environmental resilience
- Reflects the unique challenges in the region, notably including a vision for non-violence, economic growth and stability, and environmental protection.





Animal Welfare: Can Caquetá Deliver?

Measuring big picture, multi-dimensional sustainability is still new (GASL, 2016). While many agencies prioritise environment or economics or animal welfare alone, few have brought these elements together.

Agri benchmark and Good Food Futures have created a ground-breaking sustainability framework and assessment which can be applied to diverse regions, species and production systems, working in partnership with local research and development agencies.

Agri benchmark's global analytical powerhouse on agri-economics (agribenchmark, 2017) is partnered with Good Food Futures' leading international expertise in animal welfare science and livestock sustainability. The framework gives a dynamic picture of sustainability from the ground level – the farm or herd - up to whole region or company, providing the evidence needed to shape priorities, assess progress and demonstrate goals are met. By working in partnership with regional environmental assessors and producer organisations, evidence can be tailored to meet local needs.

While the uniting goal of these projects may be pose systems for this pilot.

zero deforestation, at the heart of this solution are Caquetá's cattle. Their welfare is key to providing resilient, productive farming systems for the future. While the new silvopastoral systems being piloted in Caquetá can potentially deliver better feed, water and shelter basic requirements for animal health - can they deliver good animal welfare?

This case study reflects Good Food Futures' implementation of the animal welfare component of this joint sustainability framework on the ground, as a first stage pilot of field assessments in Caquetá, to promote the inclusion of animal welfare in ongoing delivery of the Caquetá Pact in the long term. This work takes place alongside agri benchmark, Comité de Ganaderos and CIPAV's pilot economic analysis (see agri benchmark et al., 2017 in press). An overwhelming 88% of Caguetá's nearly 1.5 million head of cattle are dual purpose (producing both milk for consumption and calves for replacement or meat production) so this case study prioritised dairy production through these dual-pur-

Measuring Animal Welfare in the Field

We assessed core components of welfare

- Feeding,
- Housing
- Health
- Behaviour

Measures were adapted and simplified from globally recognised methods developed by Welfare Quality (Botreau et al., 2009) and Assurewel (2017). The methods are a further development following previous assessments of silvopastoral sys-

health, behaviour

tems by agri benchmark, CIPAV and World Animal Protection (World Animal Protection, 2014). The field methods included environmental inputs (like water or pasture provision) and welfare outcomes (e.g. body condition). This results in concise but comprehensive overview of welfare, providing a picture of current welfare at the time of assessment, but also helping identify longer term welfare challenges and risks, enabling goal setting for improvement.

Measuring Animal Welfare in the Field

The assessment gave a snapshot of the welfare of the herd of animals on a farm, showing general behavioural welfare and signs of longer term health status.

Standardised sample sizes were used, following Welfare Quality protocols. Environmental measurements were taken to check whether the production



Working in the Field

Assessments were made by experienced personnel who were familiar with cattle welfare and behaviour, from three organisations: Good Food Futures Ltd, CIPAV and University of the Amazon. Access and logistics were made possible by the Caqueta's Departmental Committee of Cattle Ranchers. All assessors were familiarised with the protocol in advance of the field studies. The presence of at least one independent expert assessor, not directly tied to any of the farms or organisations engaged in the projects, aimed to ensure consistency of approach and minimise potential for observer bias.

Assessments were taken in the field, with measures of behaviour taken from undisturbed animals and all other measures conducted following this. Ideally, assessments would be repeated more than once per day, to get a picture of animal behaviour through the day, and to maximise opportunities for detecting short duration behaviours such as aggression or mother-calf interactions. In most cases assessments were taken at least 2 hours after milking and 1-2 hours either side of the hottest time of the day.

An additional task of the field assessments was to train new personnel to apply the animal welfare protocol, supported by the experienced assessors, thus increasing the capacity of staff on the ground to continue animal welfare assessments in the region. Therefore, assessments were made on each farm by three people, but in future one or two assessors would be sufficient. An initial joint assessment was undertaken to confirm consistency of use of the protocol; after this each person recorded assessments individually. Assessors consulted each other when questions arose. As herds could move around, one additional person ensured all animals in the group were identified to prevent duplication of results. In this case study, results are averaged across assessors. system had the potential to deliver good welfare. The field protocol was designed to be simple and relatively swift, to assess large numbers of animals on a farm in a short time, using measures that could be easily adopted in the field by farmers and others familiar with cattle health and behaviour.

Our Sample of Caquetá Dairy Farms

This study assessed five family farms within 150 km of Florencia, Caquetá. Each farm is profiled below. All were well established pasture grazing dairy cattle ranches. In four cases, through the projects outlined above, interventions had begun with the goal of improving productivity and efficiency of milk production. These interventions included dividing land into smaller paddocks, introducing rotational grazing and allowing paddocks to rest, increasing herd density per hectare, provision of water and shelter, and introducing silvopastoral systems with Mexican Sunflower (known locally as golden button or Botón de Oro) to add high quality nutrition to the pasture diet, including increased protein, nutrients and energy, either provided as cut crops fed as supplement at milking, or as part of the available nutri- C°, humidity 93%). tion in the field.

Each farm was unique in its stage of transition. One **Esperanza** additional farm was included as an example of a farm without improvements.

Villa Mery

The farm is dual purpose (weaning calves and dairy) using cross-breeds in a total area of 200 hectares with 85% of the area used for production. So far, 26 paddocks in 19 ha have been developed. It hasww cross-breed cows including gyr, brown swiss and criollo caqueteño native breed. This farm has begun transition toward silvopastoral systems, through development of fenced paddocks and rotational grazing, with animals **San Isidro** grazing paddocks intensively, then allowing them to rest. Paddocks are grazed for two days, followed by a rest period of 35-40 days herd density is 2.5-3 animals in the new systems. Silvopastoral system implementation included an agroforestry system for animal production that combines high density planted fodder shrubs (boton de oro, *Tithonia diversifolia*), improved high guality grass (brachiaria) and native trees.

At time of assessment, this transition was still in development. Some tree shade was available at the edges of some paddocks; in others, there was no shade possible. Water was provided through water butts and

moveable piping, so any paddock had free access to water within 150m. Other areas of the farm have been improved for environmental reasons, with development of wildlife corridors and regeneration of native forest. The aim is to improve productivity on some areas of land while freeing others for environmental regeneration. 46 ha has been regenerated with native pants, while 48 ha remains as native forest.

Two groups of animals were assessed: 9 dairy cattle pastured with one reproductive bull - some females were noticeably pregnant - and a group of 19 cattle with calves at foot. Animals were milked daily, and assessments took place 2 hours after milking, between 10.30-12 noon (cloudy/rain, temperature 27 degrees

This small family farm in Morelia has 28 cattle of which ³/₄ are milked twice daily, the rest once a day. Open paddocks were available, with free access to natural water. No production data was available. Improvements included plantations of fodder banks with boton de oro and sugar cane to increase nutrition derived from the farm, fed as cut feed during milking. Cattle were a mix of cross-breeds, including gyr, brahman and bos taurus. Assessment took place in early afternoon, sunny, at 29.4 degrees, with humidity 76%.

This farm in San Jose del Fragua has 160 dairy cattle, producing 5.8 litres per animal per day. Interventions began 1.5 years ago and include intensive silvopastoral systems with boton de oro (Mexican sunflower) and up to 100 trees per hectare. Again, the farm has diverse crossbred cattle, including gyr, brahman and holstein. Cattle graze intensive paddocks on rotation for 2 days, with paddocks rested for 30 days. Grazing is more intensive, with 6 cows per hectare, whereas before it averaged 1 cow per hectare. The farmer reported that, since adopting this rotational

system, production per animal has doubled. A group of 24 cattle was assessed.

El Volga

This farm in El Doncello was one of the originators of a tree-based silvopastoral system in Colombia and is well established, with a complex three-dimensional system of grasses, shrubs and trees designed to give high quality nutrition, with rotational grazing in intensive paddocks. Trees such as the endemic yopo (mimosa trianae), pizamo (erythrina fusca) and fruit trees such as guava as well as Melina and acacia mangium are combined with boton de oro and grasses (brachiaria decumbens, arachis pintoii and guaduilla homolepis aturensis). Cattle were a mix of crossbreeds, including gyr, brahman and holstein. They achieve a daily milk production of 9.3 litres per animal, milked twice a day. It uses native plants from the region. It has 110 cattle including 50 replacement heifers. 94% of births are from artificial insemination. Animals spend around 13 years in production, reducing the need for replacements. It achieves 78% fertility and a calving interval of 425 days. This allows them to achieve a higher productivity for longer, with fewer births and a longer dry period to allow cattle to return to body condition. The assessment was in the middle of the day with temperature 29.5 degrees C^o, 64% humidity, at least 2 hours after milking. A paddock of 18 cattle without calves was assessed.

Comparison Farm

This farm in Vereda San Martin had 160 cattle of a range of cross breeds including creole, zebu, brown swiss and holstein. The farm had a traditional extensive grazing system, with large pastures with no trees. Productivity was approx. 2 litres per day per animal. Calves were maintained on the farm to weaning, with a lactation of 375 days and calving interval of 465 days. Assessment was later in the day (4.30pm), more than 2 hours after milking, but with similar climate (temp 32 degrees C°, humidity 88%). The pilot assessed a group of 12 animals.



A Snapshot of Animal Welfare on Caquetá

Villa Mery

maximum 4), all animals were healthy with no signs grading below) but no symptoms of heat stress were of lameness. Animals showed a range of important noticeable, probably due to time of day and weather cattle behavior including grazing, ruminating and resting, as well as positive cow-calf interactions. Other than seeking shade, animals could express behavioral distance from humans was very short at an average of choice. Animals had access to green fodder and free 2 meters, suggesting little or no fear, possibly due to availability of fresh and clean water. Paddocks at the regular calm handling.

Averagebody condition was 3.0/5 (minimum 2, time of assessment had no shade (hence the amber conditions (cloudy, cold, raining).

No signs of aggression were seen and flight

Feeding	Housing
Body Condition Score (BCS) 3.0 (max 4, min 2)	Shelter available? No
Feed quality sufficient Yes (for most)	In shelter in heat of day? 0%
Water sufficient Yes, 150m max	Access to pasture? 100%
Health	Behaviour
Heat stress 0%	Behavioural choice 100%
Lameness 0%	Behaviours observed: ruminating, grazing, resting
Clinical signs of disease 0%	(also positive cow-calf interactions)
Lesions 0%	Aggressive behaviour 0%
Ticks 0%	Flight distance 1-2m

Esperanza

Animals were generally in very good body condition, average 3.4/5 (maximum 4.5, minimum 2). None were lame and there were no clinical signs of disease. There were no ticks but flies were seen on 27% of animals. Feed and water were freely available, with water within 20m. Shelter was available and 68% of

animals were using it in the hottest part of the day. with 5% of animals showing heat stress. All animals had access to pasture. Animals had a diverse environment to support behavioural choice and a wide range of behaviours were observed including lying, ruminating, standing, grazing, drinking.

Feeding	Housing
BCS 3.4 (max 4.5, min 2)	Shelter available? Yes
Feed quality sufficient Yes	In shelter in heat of day? 68%
Water sufficient Yes, 20m max	Access to pasture? 100%
Health	Behaviour
Heat stress signs 5%	Behavioural choice 100%
Lameness 0%	Behaviours observed: lying, ruminating, standing,
Clinical signs of disease 0%	grazing, drinking
Lesions 0%	Aggressive behaviour 0%
Ticks 0%	Flight distance 1 -3m
Flies 27%	

San Isidro

Animals had excellent body condition, average 3.8 (Max 4.5, minimum 2.5). There were botfly (nuche or torsalo) skin lesions on 4.5% of animals assessed but no other clinical signs. None were lame. All animals had shelter available and 60%

Feeding	Housing
BCS 3.8 (Max 4.5, min 2.5)	Shelter available? Y
Feed quality sufficient Yes	In shelter in heat of day? 60%
Water sufficient Yes, max 20m	Access to pasture? 100%
Health Heat stress signs 0% Lameness 0% Clinical signs of disease 0% Lesions 5.4% (botfly or Nuche) Ticks 0% Flies 40.9%	Behaviour Behavioural choice 100% Behaviours observed: lying, resting, ruminating, standing, grazing, drinking Aggressive behaviour 0% Flight distance 0m

El Volga

Body condition was excellent, average 3.6. Feed and water were sufficient, with water freely available within 25m. All animals had access to pasture and shade, with no signs of heat stress. There were no

Feeding	Housing
BCS 3.6 (Max 4.5, min 2.5)	Shelter available? Y
Feed quality sufficient Y	In shelter in heat of day? 91%
Water sufficient Y Max 25m	Access to pasture? 100%
Health Heat stress signs 0% Lameness 0% Clinical signs of disease 0% Lesions 19% (botfly or Nuche) Ticks 0% Flies 0%	Behaviour Behavioural choice 100% Behaviours observed: lying, resting, ruminating, standing, grazing, drinking Aggressive behaviour 0% Flight distance 0m

Traditional Extensive Cattle Farm

Body condition was 2.7. Feed quality was not known (information on pasture quality and supplementation was not available). There was no shelter or shade and 23% showed signs of heat stress. Maximum distance to water was not known though 8% were observed

eeding
3CS 2.7 (Max 3.5, min 2)
eed quality sufficient Not known
Vater sufficient? Max distance not known
lealth
leat stress signs 23%
ameness 0%
Clinical signs of disease 0%
esions
icks 84% (15% showed anti-insect behaviour)
lies 0%

were using it. Animals had free access to pasture and could choose to perform a wide range of behaviour. Water was available within 20m. Animals were calm and confident around people with no flight distance.

aggressive behaviours and animals had wide behavioural choice. Animals showed almost no flight distance, calm and confident around people.

drinking. 84% had ticks and 15% showed anti-tick behaviour, while 15% had clinical signs. 8% showed some form of aggression. There was no information on flight distance. All animals had access to pasture and (other than sheltering), had behavioural choice.

Housing Shelter available? No In shelter in heat of day? 0% Access to pasture? 100%
Behaviour Behavioural choice 100% Behaviours observed: resting, grazing, drinking Aggressive behaviour 8% Flight distance %



Delivering Triple Wins for Economics, Environment and Animal Welfare

This small initial snapshot of Caquetá family farms shows that, while working to end deforestation, Caguetá's cattle ranchers have the potential to deliver excellent animal welfare too. The farms where interventions have begun showed better animal body condition than the comparison farm and, where these are well established, animals were generally in excellent condition. The interventions used in the pilot projects are transforming farming practice. Better nutrition, delivered in the field or as cut fodder, brings benefits for individual animal health and overall farm performance. But these farming systems are not just about better animal health; the diverse pasture, tree cover and shelter, alongside the creation of stable social groups and regular handling, create an almost optimal environment for cattle to thrive. Farms that were most established saw the best gains.

Other studies from CIPAV, GIZ, Caqueta's Departmental Committee of Cattle Ranchers and agri benchmark are showing improved productivity and environmental gains. Therefore these silvopastoral systems have the potential to deliver the ultimate

'triple win' for economics, environment and animal welfare.

This is just a starting point for integrating animal welfare in the design of environmental projects. Introducing these simple, quick and streamlined animal welfare assessments is viable on the ground and provides valuable proof of one of the Caquetá Pact's commitments being realised – as well as identifying challenges and opportunities for progress. It would be incredibly beneficial to answer three core questions in taking this work forward:

Firstly, across the wider picture of animal welfare on Caquetá's cattle farms, what are the wider benefits of moving to these new systems compared to traditional extensive systems and how quickly can this be achieved? With no baseline for animal welfare performance in the region, it is difficult to quantify benefits, but these case studies show potential for significant differences. Broadening animal welfare assessments to compare a representative group of both traditional and new pilot farms, alongside better farm data, will be necessary to conclusively answer these questions. Secondly, what are the links between improved productivity and animal welfare? Caquetá has the potential to demonstrate globally how genuine sustainable intensification can be achieved. Integration of animal welfare into the wider framework of assessment of its successes will be essential to provide the whole picture.

Finally, how can the potential benefits of better welfare be used to boost the visibility and image of Caquetá's farmers and their products? Animal welfare sells, and, as a core component of the Pact, should be recognised as a point of difference. Caquetá is already building its brand within domestic markets through 'Queso del Caquetá' environmentally friendly zero deforestation cheese, and animal welfare will be a valuable part of the story for its customers. Integrating welfare assessment provides an opportunity to underpin these commitments with tangible evidence and give weight to this public story.

Most striking throughout fieldwork was the support farmers gave to their new systems. They have revolutionised pasture farming by changing the way they think as well as the way they farm – and have begun to deliver one of the most profound changes the world needs to see: protection of the forest for future generations, while securing viable farms and improved food production.

It is clear this transition is based on an initial intensive investment of resources, knowledge and technical support. It also relies on promotion beyond 'first adopters' to deliver mainstream change. Positive consequences may only be visible after several years but their results have global as well as local relevance in shaping future approaches to livestock production and environmental stewardship. But if we can generate longer term data which shows these benefits, there is compelling case for scaling and replicating these improvements widely.

Caquetá is an inspiration: with forest beginning to regenerate, healthy confident animals in lush pasture and committed farmers delivering real change, the region breathes hope into the future of not just these communities in Colombia, but for the future of the whole planet.

About the Author



Dr Lesley Mitchell is Director of Good Food Futures Ltd, a global sustainable livestock consultancy. It works with farming and food industries to maximise the value created from improving sustainability in animal agriculture, from policy and strategy to development of on-farm solutions, sustainability communications and advocacy. Recent consultancies include the United Nations' Food and Agriculture Organisation (FAO), agri benchmark and leading International NGOs.

Lesley has held key food policy roles at International NGOs in Europe and North America.

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She has a long track record of enabling positive engagement between NGOs, business, governments, scientists and policymakers. Lesley works closely with the poultry, meat and dairy industries on policy, advocacy and practical implementation.

She is a member of Linacre College, Oxford University and has authored many scientific and policy papers, including food security, development and animal welfare; climate emissions in dairy; economics and welfare in beef production; viable welfare solutions for industrial pigs and poultry; and co-editor of the book 'Long Distance Transport and Welfare of Farm Animals'.

- Agri benchmark (2017) http://www.agribenchmark.org/ agri%20benchmark/who-we-are.html
- Agri benchmark, CIPAV, FEDEGAN, World Animal Protection and Good Food Futures Ltd (2017 in press) Measuring Sustainability on Cattle Ranches: Silvopastoral Systems. http://www.agribenchmark.org/home.html
- Assurewel Project (2017) About Assurewel. www.assurewel.org 2017.
- Botreau, R, Veissier, I and Perny, P (2009) Overall assessment of animal welfare: strategy adopted in Welfare Quality® Animal Welfare, 18: 363-370.
- Caquetá Pact (2016) Caquetá Pact: Zero Deforestation and Livestock Reconciliation - Will of All. Florencia, Colombia. http://www.labioguia.com/pagina/4749-pacto-Caquetá
- FAO (2017) Meat and Meat Products. Food and Agriculture Organization of the United Nations (FAO), Rome. http:// www.fao.org/ag/againfo/themes/en/meat/home.html
- Gerber, P.J., Steinfeld, H., Henderson, B., Mottet, A., Opio, C., Dijkman, J., Falcucci, A. & Tempio, G. (2013) Tackling Climate Change through Livestock – A Global Assessment of Emissions and Mitigation Opportunities. Food and Agriculture Organization of the United Nations (FAO), Rome.
- Global Agenda for Sustainable Livestock (2016) Action Network 1: Closing the Efficiency Gap: Tools for Decision-Making on Natural Resource Use Efficiency. Food and Agriculture Organization of the United Nations (FAO), Rome. http:// www.livestockdialogue.org/fileadmin/templates/res_livestock/docs/Area_1/efficiency_matrix_GASL_13062016.pdf
 World Animal Protection (2014) A case study of triple wins in milk and beef production in Colombia. http://www. agribenchmark.org/fileadmin/Dateiablage/B-Beef-and-Sheep/Misc/Other-Articles-Papers/CO-milk-beef-production-150203.pdf

Sources

- Patrimonio Natural 2014. Proyecto Implementación de sistemas silvopastoriles que favorezcan la conectividad ecológica, así como la provisión de servicios ecosistémicos y el fortalecimiento de las cadenas de valor de los productores de Belén de los Andaquíes, San José del Fragua y Albania (Caquetá), Programa Conservación & Gobernanza (C&G) Fondo Patrimonio Natural, funded by USAID and co-ordinated by CIPAV.
- Queso del Caquetá (2017) http://quesodelCaquetá.co/
- Rivera J. E, Cuartas C. A., Naranjo J. F., Tafur O., Hurtado E. A., Arenas F. A., Chará J. y Murgueitio E. 2015: Efecto de la oferta y el consumo de Tithonia diversifolia en un sistema silvopastoril intensivo (SSPi), en la calidad y productividad de leche bovina en el piedemonte Amazónico colombiano. Livestock Research for Rural Development. Volume 27, Article #189. Retrieved January 30, 2017, from http:// www.lrrd.org/lrrd27/10/rive27189.html
- Suárez D (2010). Silvopastoral dairy farming in southern Colombia. Nestle Global Compact International Yearbook. 146-147.
- Torrijos Rivera, R., Benjumea, F.E., Barreiro, Y.B. (2016) Nueva Ganaderia del Caquetá en Cifras 2016. Comité Departamental Ganaderos del Caquetá https://issuu. com/rafaeltorrijos/docs/contexto_ganadero_Caquetá_2016

Creating a Good Future for Food through Livestock

Good Food Futures Ltd. are specialists in animal welfare and livestock sustainability and work to develop:

- Science and solutions
- Partnerships for progress
 - Communications and
 advocacy

The way we produce food in the decades ahead will be one of the biggest influences on the future of the planet, impacting our ability to manage climate change, protect vital natural resources and ensure good nutrition and livelihoods – and thus whether we can achieve the prominent, globally agreed Sustainable Development Goals. How can livestock be the solution, rather than the problem?

This case study looks at Colombia's ground-breaking Caquetá Pact. Its clear vision of 'zero deforestation and livestock reconciliation' brings together cattle ranchers, led by the Caqueta's Departmental Committee of Cattle Ranchers (Caquetá Cattle Committee), with government ministries, food processors both regional and multinational, NGOs, and research and development agencies with both national and international remits. But does it work? And what are the benefits and consequences for livestock welfare?

Agri benchmark and Good Food Futures have developed a sustainability framework and assessment tools to determine the economic, environmental and animal welfare outcomes of sustainability projects. The animal welfare component is described here, working in partnership with local research and development agencies, CIPAV and GIZ.

This snapshot of Caquetá family farms shows that, while working to end deforestation, Caquetá's cattle ranchers have the potential to deliver excellent animal welfare too. By adopting silvopastoral systems, they have the potential to deliver the ultimate 'triple win' for economics, environment and animal welfare.

This is just a starting point for integrating animal welfare in the design of environmental projects. Introducing these simple, quick and streamlined animal welfare assessments is viable on the ground and can be applied in diverse production systems. These case studies are a partnership project between Good Food Futures Ltd and agri benchmark. Funding was provided by agri benchmark. Assessments were performed on farms that are part of projects run in Colombia by CIPAV, Caqueta's Departmental Committee of Cattle Ranchers and GIZ Colombia, who provided technical and on farm expertise throughout. Our thanks are extended to all the participating farmers.





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