Guide to **Sustainable Practices**

Ensuring greater profitability by stimulating biodiversity and a more **sustainable** environment for all.

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SUMMARY

We understand that in order to keep animals healthy, it is essential to have procedures in place to prevent, detect and adopt early control measures for animal diseases, thus ensuring a safe supply of food. To this end, we suggest some routine animal management practices.

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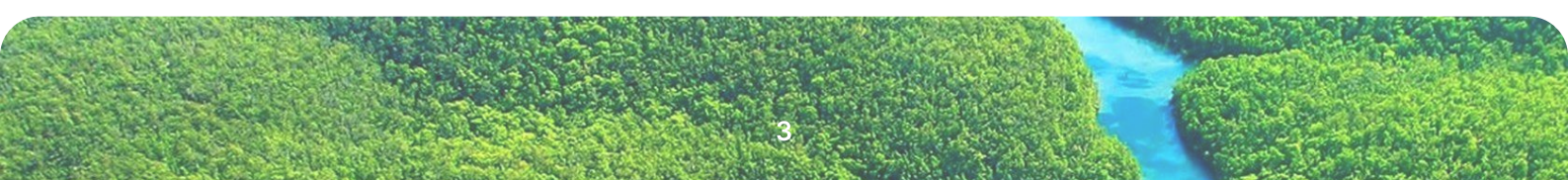
Sustainability is one of Marfrig's strategic pillars. We strive to enhance our commitment to the production of **sustainable meat**, by using technology and innovation to perform activities that help combat illegal practices and promote biodiversity in order to achieve an environment that is more stable for society and boosts productivity, thus ensuring greater profitability. These practices are addressed in the +Marfrig Program under three pillars:

The Animal Pillar: Animal Welfare, traceability to identify the origin, and precautions in health and nutrition.

The Environmental Pillar: Improving the quality and fertility of the soil; combating deforestation; encouraging the rational use of water and the correct disposal of waste and packaging; and maintaining protected areas.

The Social Pillar: Combating slave and child labor practices; and supporting social development and respect for labor legislation.

Come and be part of the +Marfrig Program! We want to strengthen our ties to Livestock Farmers like yourself, by providing you with information and raising your awareness of issues related to the production of legal, safe and sustainable meat.



ANIMAL HEALTH

The Marfrig Verde + Program understands that in order to keep animals healthy, there must be procedures in place to prevent, detect and quickly adopt control measures against animal diseases, thus ensuring the supply of safe foods. To achieve this we suggest some routine animal handling practices.

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The Use of Veterinary Drugs

We recommend that you keep the invoices (NFs) for the veterinary drugs that have been purchased. Another simple, efficient approach is to produce a calendar that shows the periods when veterinary drugs and vaccines should be applied, and also for which categories of animal the drugs are used, in accordance with the circumstances of each farm

CONTROL OF HEALTH HANDLING

Farm:	*Municipality:*
Owner:	*State:*

Activities	Year												Remarks
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	

We also recommend in addition to recording the date of application of every drug given to the animals on the farm, you also record the withdrawal period for these drugs

ADMINISTRATION OF DRUGS

Farms:	*Municipality:*
Owner:	*State:*

Date the drug was administered	Drug (trade name)	Active ingredient	Batch	Dose	Treated Animal/Group	Number of animals	Withdraw al period (days)	Date of release	Individual who applied the drug

Whenever possible, it is good practice to have a Veterinary Health Plan, which is a guide containing information on the most common diseases and conditions that can affect the herd. This material can and should always be consulted when necessary, and be updated annually by the technically responsible individual.

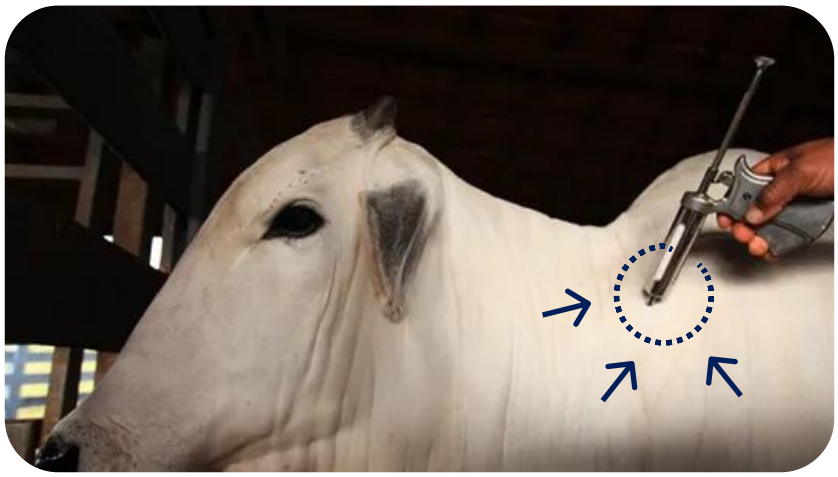
The drug's withdrawal period will ensure the health of the animal, as well as that of the individuals who will consume products obtained from that animal. It is important to follow the instructions given in the drugs' Information for Use, such as the dosage, the species for which use of the product is indicated, and the recommended withdrawal period — that is to say the period in which the drug can be used safely, and in which the animal's organism may benefit from, and eliminate, the product used. The presence of these substances at safe levels in animal products is thus guaranteed

Structure / Organization

It is recommended that the storage of veterinary drugs (in the farm's dispensary) be in a dry, signposted location, and that the drugs' Instructions for Use be kept, and that expired drugs should not be used.
Animals undergoing specific treatment must be identified (for example, marked with a colored baton, or having their tail "brush" hair trimmed, etc.) and must be separated from the other animals in a signposted location (sick bay).
It is important not to mix animals that have recently arrived at the farm in with those already on the farm, in the same pasture, without first respecting a quarantine period.

Application of Drugs

To avoid stressing the animals unnecessarily, and to ensure workers' safety and maintain animal welfare, it is very important to observe the correct location for the application of drugs, as illustrated below.



Surgical Procedures

In certain situations, some surgical procedures such as castration, dehorning, disbudding, deliveries and cesarean sections, need to be carried out. If they are carried out, however, they must be performed by a competent professional, and the pre-surgical and post-surgical precautions must strictly adhere to the best practices.

Traditional castration techniques may be replaced by immunocastration. This procedure is a safe alternative to commonly used techniques, providing the advantages of castration, while ensuring the welfare of the animals.

Branding is used in order to identify the animals in a herd. However, it may be replaced by more modern techniques that ensure the welfare of the animals, such as the use of ear tags, whether plastic or electronic. Ear tags cause the animals less discomfort, if applied at the right moments, in the correct location, and by a trained professional.

We condemn any practices involving in-the-field mutilations that cause the animals pain and suffering.

Accidental breakage of needles

CIf any needle breaks accidentally during routine animal handling practices, it is important to:

- Identify the animal
- Extract the needle
- Inform the technically responsible individual
- Observe the animal in case it suffers any inflammations
- Record the incident

Routine handling practices in animal health

Practices which should be carried out during routine inspections of the animals:

- If any disease is suspected, separate the animal(s) and inform the technically responsible individual immediately.
- Keep the animal separated from the others until it has been examined by the technically responsible individual.
- Only administer a drug upon instruction to do so by the technically responsible individual.
- Record the application of the drug and identify the animal.
- Follow up the animal's recovery.

Antibiotics

Marfrig believes that animal welfare practices enable animals to enjoy better health and with consequently less need to administer any kind of drugs or antibiotics. These routines are present in a range of Marfrig's activities such as the Carbon Neutral Beef program, in which the production system makes shade available for animals, more nourishing pasture, and balances GHG emissions through an integrated crop-livestock-forest system. This is also allied to a range of instructional materials and training initiatives given to our supply chain by the +Marfrig program and by our animal welfare specialists who operate in each of our units.

Tudo isso aliado a diversos materiais e treinamentos difundidos na nossa cadeia de fornecimento tanto pelo programa +Marfrig quanto pela equipe de especialistas em bem-estar animal em cada uma de nossas unidades.

- The nature of our operations means that Marfrig receives cattle for slaughter that are supplied by producing farms, which means that the Company does not use or apply any kind of antibiotics in the animals. Nonetheless, Marfrig addresses the topic with all the care and attention that the issue deserves.

- It is very important to remember that the use of any antibiotic must be followed by a withdrawal period to avoid any residues remaining in the meat.

- The World Health Organization (WHO) recommends that farmers and the food industry should cease the routine use of antibiotics to promote growth and/or prevent diseases in healthy animals. The WHO recommendations aim to help preserve the efficacy of antibiotics that are important for human medicine (MIA – Medically Important Antimicrobials), reducing their unnecessary use in animals, because excess and unwarranted use of antibiotics in animals and humans can lead to an increasing threat of antibiotic resistance

- Marfrig has been a member of GRSB (the Global Roundtable for Sustainable Beef) since 2012, and participated in the **Declaration on the Use of Antibiotics***, a document inspired by the GRSB document which has been adapted to Marfrig's own supply chain, and has been disseminated to its suppliers of animals for slaughter, so as to encourage the spread of medication-aware practices by sustainable beef growers, veterinarians and other stakeholders in the livestock value chain.

- As part of this process, we also provide below a list of drugs that are **not recommended for use in animal production**, as they have been included in the HPCIA - Highest Priority Critically Important Antimicrobials category, or considered critically important antibiotics for human use (CIA - Critically Important Antimicrobials), or Medically Important Antibiotics (MIAs), according to the World Health Organization (WHO) classification.

- The Company’s guidance is that antibiotics should only be used when necessary, only to treat diseases, and only under the supervision of a veterinarian. That is to say, when an animal falls ill a veterinarian is invited to attend, and, on a case-by-case basis, antibiotics may be administered for treatment.
- The use of antibiotics is assessed in consultation with our supply chain of animals for slaughter by means of a +Marfrig Program production system verification document.
- Veterinary drugs should not be given for prophylaxis (i.e. non-therapeutically), but the responsible use of antibiotics should be adopted, whereby they are prescribed only by trained professionals in order to ensure animal health and food safety.
- Antibiotics should not be used to promote the animals’ weight gain or growth or to boost feeding efficiency.

This information is disseminated through educational materials that Marfrig has developed, such as the company's website and the Marfrig Animal Welfare Report.

HIGHEST PRIORITY CRITICALLY IMPORTANT ANTIMICROBIALS (HPCIA)

These drugs are **not recommended for use** in animal production, except when application is necessary as the only alternative

Active ingredients:

- Cephalosporins (3rd,4th,5th and newer generation)
- Glycopeptides
- Macrolides
- Polymyxins
- Quinolones

*https://www.marfrig.com.br/en/Lists/CentralConteudo/Attachments/2/Statement%20on%20antimicrobial%20stewardship.pdf

TRACEABILITY

Tracing the animals means ensuring the origin and quality of the supplied product, enabling identification of safety and harmlessness, and compliance with legislation in terms of the handling performed while the animal was being raised.

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Animal information

We suggest that for enhanced control, farms practicing the complete beef-production cycle should identify these animals at birth, or at the latest, at weaning. When animals are acquired by purchasing, they should be identified as soon as they arrive at the farm, using an identification system that ensures verification and proof over time of the information given concerning the animals' histories.

When animals arrive at or leave a farm they must be accompanied by a corresponding Animal Movement Permit (GTA - Guia de Trânsito Animal) and respect the purchasing quarantine period, as well as husbandry control on the farm, and whatever reproductive or animal health handling they underwent must be kept up-to-date.

For best management, we make available the templates of plans and forms (listed below). The farm should use them and adapt them to its circumstances.

1. **Management Plan:** This helps in the control of activities;
2. **Veterinary plan:** Helps control all animal health operations;
3. **Agricultural chemicals plan:** Seeks to help in environmental control;
4. **Form for controlling activities on the farm;**

The farmer must update the daily routine on the farm, and if possible insert individual information as follows:

1. Entry and exit weights
2. Animals that have given birth
3. Dead animals
4. Animals sold
5. Animals bought
6. Medication applied
7. Births
8. Gender
9. Animal category (calves, steers, heifers, etc.)

Births							
Month	Nelore-bread Male	Cross-bread Male	Nelore-bread Female	Cross-bread Female	Total Male	Total Female	Total Births
January							
February							
March							
April							
May							
June							
July							
August							
September							
October							
November							
December							

Farm approved in SISBOV (ERAS farm)

Farms that are keen to advance in beef cattle management, and sell their animals to more demanding markets, must trace their animals in SISBOV (System for the Identification of Beef Cattle and Buffaloes).

After the farmer has asked to accede to the system, the animals on the farm must be 100% ear-tagged and a traceability certifying agency must carry out an inspection.

Inform the responsible certifying agency of all movements at the farm (transfers, sales to third parties or slaughterhouses, purchases, etc.).

Trace

After a farm has been included in the national database BND, the certifying agency requests a MAPA audit. After that, a final audit takes place within 90 days (without an appointment), in order to certify the farm for the TRACE platform.

The entire herd is checked on farms with fewer than 600 animals.On farms with more than 600 animals checking is performed as follows: 300 animals by ear-tag numbers, 300 to check whether they are in fact carrying the ear tags and buttons.

Feeding information

We recommend controlling the invoices for the entry of inputs: they may be printed out and kept in a file or kept in electronic form on a computer, in the case of electronic invoices.

We suggest defining a nutritional plan to facilitate this control:

CALENDAR ON NUTRITIONAL HANDLING														
Action	Responsible	Year												Remarks
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
Protein Salt														
Fat Salt														
Energy Salt														
Feed														

- It should show a date of entry and the quantity of the inputs purchased.
- It should present the quantities given per animal in order to know how much is converted into weight gain. Keep a history of feed formulations that are used in raising the animal, stating the composition and quantity.
- Keep a technical prescription for medicated feeds.

Animal Health Information

- We suggest that information concerning the application of drugs be controlled by lot or individually.
- Control the information on the drugs used, their withdrawal period, the number of the batch and/or lot, the laboratory, and the product's expiration date.
- Keep this on file for any animal that has received a given drug.
- Never use drugs such as Quinolones, 3rd or 4th generation Cephalosporins, Ractopamine or Hormones.

Action	Year												Lot	Animal	Remarks
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec			
Male Calves															
Female Calves															
Cows															
Bulls															
Growth Weaning															
Growth Over One Year of Age															

FOOD

In order to ensure the production of food that is free of residues and without a socio-environmental impact, we must pay special attention to animal feed, both in terms of its quality and of its origin. We therefore suggest the following practices be adopted.

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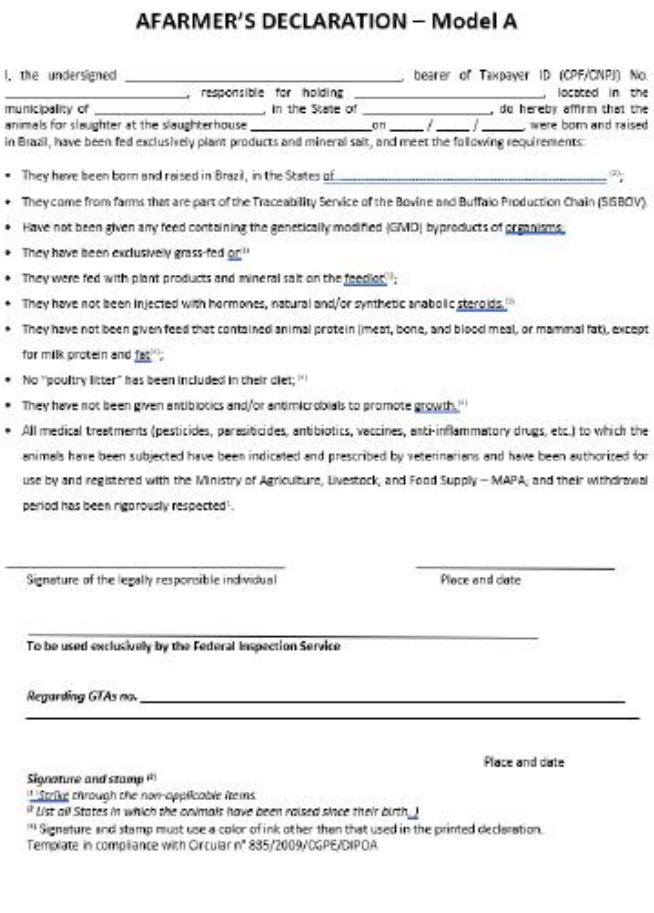
Documentation

Animals for slaughter should be accompanied by the Farmer's Declaration (Template "B"). At the moment a farm becomes a Traces list farm, it should receive the Declaration (Template "A").



AFARMER'S DECLARATION – Model A

I, the undersigned _____, bearer of Taxpayer ID (CPF/CNPJ) No. _____, responsible for holding _____, located in the municipality of _____, in the State of _____, do hereby affirm that the animals for slaughter at the slaughterhouse _____on ____ / ____ / _____ were born and raised in Brazil, have been fed exclusively plant products and mineral salt, and meet the following requirements:

- They have been born and raised in Brazil, in the States of _____ [2];
- They come from farms that are part of the Traceability Service of the Bovine and Buffalo Production Chain (SISBOV).
- Have not been given any feed containing the genetically modified (GMO) byproducts of organisms;
- They have been exclusively grass-fed or[1]
- They were fed with plant products and mineral salt on the feedlot[1];
- They have not been injected with hormones, natural and/or synthetic anabolic steroids.[1]
- They have not been given feed that contained animal protein (meat, bone, and blood meal, or mammal fat), except for milk protein and fat[1];
- No "poultry litter" has been included in their diet; [1]
- They have not been given antibiotics and/or antimicrobials to promote growth.[1]
- All medical treatments (pesticides, parasiticides, antibiotics, vaccines, anti-inflammatory drugs, etc.) to which the animals have been subjected have been indicated and prescribed by veterinarians and have been authorized for use by and registered with the Ministry of Agriculture, Livestock, and Food Supply – MAPA; and their withdrawal period has been rigorously respected[1].

_____ _____

Signature of the legally responsible individual Place and date

_____

To be used exclusively by the Federal Inspection Service

Regarding GTAs no. _____

_____

Place and date

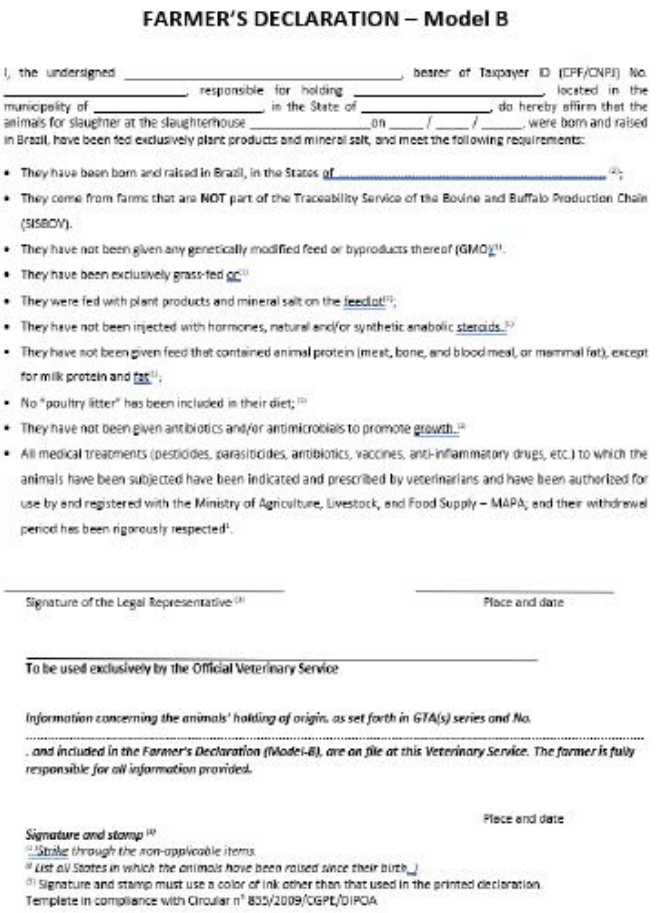
Signature and stamp [3]

[1] *Strike through the non-applicable items.*

[2] *List all States in which the animals have been raised since their birth.)*

[3] Signature and stamp must use a color of ink other than that used in the printed declaration.

Template in compliance with Circular n° 835/2009/CGPE/DIPOA



FARMER'S DECLARATION – Model B

I, the undersigned _____, bearer of Taxpayer ID (CPF/CNPJ) No. _____, responsible for holding _____, located in the municipality of _____, in the State of _____, do hereby affirm that the animals for slaughter at the slaughterhouse _____on ____ / ____ / _____, were born and raised in Brazil, have been fed exclusively plant products and mineral salt, and meet the following requirements:

- They have been born and raised in Brazil, in the States of _____ [2];
- They come from farms that are **NOT** part of the Traceability Service of the Bovine and Buffalo Production Chain (SISBOV).
- They have not been given any genetically modified feed or byproducts thereof (GMO)[1].
- They have been exclusively grass-fed or[1]
- They were fed with plant products and mineral salt on the feedlot[1];
- They have not been injected with hormones, natural and/or synthetic anabolic steroids.[1]
- They have not been given feed that contained animal protein (meat, bone, and blood meal, or mammal fat), except for milk protein and fat[1];
- No "poultry litter" has been included in their diet; [1]
- They have not been given antibiotics and/or antimicrobials to promote growth.[1]
- All medical treatments (pesticides, parasiticides, antibiotics, vaccines, anti-inflammatory drugs, etc.) to which the animals have been subjected have been indicated and prescribed by veterinarians and have been authorized for use by and registered with the Ministry of Agriculture, Livestock, and Food Supply – MAPA; and their withdrawal period has been rigorously respected[1].

_____ _____

Signature of the Legal Representative [3] Place and date

_____

To be used exclusively by the Official Veterinary Service

Information concerning the animals' holding of origin, as set forth in GTA(s) series and No.

. and included in the Farmer's Declaration (Model-B), are on file at this Veterinary Service. The farmer is fully responsible for all information provided.

Place and date

Signature and stamp [3]

[1] *Strike through the non-applicable items.*

[2] *List all States in which the animals have been raised since their birth.)*

[3] Signature and stamp must use a color of ink other than that used in the printed declaration.

Template in compliance with Circular n° 835/2009/CGPE/DIPOA

The farmer should be able to show control of the entry of inputs for animal feed by the invoices.

When commercial feed is used, it is important to acquire the technical specifications sheet for all the ingredients used as well as the levels of guarantee. If the feed is formulated on the farm, information about the composition must be available in an easily visible location.

Control the entry of inputs, giving date, quantity, supplier, origin, type of supplement and invoice number for up to 2 years on the farm.

Structure

For raising beef cattle, structures must be functional, economic, sturdy and safe. Inappropriate structures jeopardize the quality, value and profitability for the farmer, because of wounds and hematomas on the carcass.

Safety

Supplementation with animal by-products:

Due to significant animal health concerns, Normative Instruction no. 8 was passed on March 25, 2004 to ban the use of animal protein in the feeding of ruminants; for example:

- Chicken litter;
- Meat meal;
- Bone meal;
- Feather Meal, etc.;

**Is liable to criminal prosecution, sanitary slaughter of the herd, and the banning of the farm.*

- Additives, according to Decree no. 76,986 enacted January 6, 1976, are "substances that are intentionally added to the feed in order to preserve, intensify or modify its properties, provided that they do not jeopardize the nutritional value with antibiotics, dyes, preservatives, antioxidants and others";
- Therefore, prior to purchasing an additive, you should check whether it complies with the standards current in Decree no. 6,296/07 and in Normative Instruction no. 13/04, available at the MAPA site;
- We advise farmers not to use antibiotics as growth promoters in animal feed;
- When ionophores are used in the animals' diet, the farmer must have a prescription issued by the technical individual and that is approved for that use.

Origin Control

We encourage changes in the production and handling processes, such as crop rotation and the integration of livestock systems with forestry and agricultural production. We also encourage suppliers to use free-grazing methods, giving their cattle a predominantly pasture-based diet. The use of soy in feeds, when feed supplementation is practiced, is discouraged whenever it is not possible to check the origin. We check the origin to make sure that the product does not come from deforested areas. This procedure is in line with our practice of supporting inputs that comply with the soy moratorium, an initiative that has had significant effects on the control of deforestation.

Another important practice for controlling origins in order to guarantee a good management process and prevent hazards, is to note down the inputs used in animal feeding. Therefore, whenever possible, farmers should acquire the habit of noticing down which input has been used, the amount purchased, who the supplier was, and the purchasing date.

ANIMAL WELFARE

Studies addressing this topic have been becoming sophisticated for more than a decade, and we now understand that animals should be treated decently throughout their life cycles.

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Animal Welfare

It is in our interest to introduce and keep up such procedures in order to guarantee the quality and safety of our products and the satisfaction of our customers, as well as constant improvement in all steps of handling, as far as possible seeking adaptations that uphold animals' five inherent freedoms. Locations where animals are kept, should:

- Ensure free and easy access to water;
- Provide clean water and sanitized drinking troughs;
- Possess mechanisms to ensure a supply of water to drinking troughs in the event of a mechanical or electrical failure;
- Have easy-to-clean facilities for storing inputs;
- Be protected against rodents, thus avoiding the spread of diseases;
- Prevent cross-contamination;
- Always observe whether the physical characteristics are suitable for consumption (for example are they free of mold, moisture and so on);
- When using bagged feeds they should be stacked on pallets, separated by type, and identified;

Animal Welfare Policy

Our policy aims to produce safe, ethical foods that comply with environmental legislation, guaranteeing the utmost respect for animal welfare in accordance with Brazilian legislation and the needs of our clients. We work with our suppliers and employees as partners, seeking to achieve the best animals and the best quality for products.

Marfrig researches the information given in the literature and conducts studies to develop better ways of handling the animals, in order to prevent stress. As a result, virtually all the lairage built in our units over the last decade has a "fishbone" design, using the insights of Dr. Temple Grandin, a reference for animal welfare. Drawing on further concepts introduced by Temple Grandin we seek to install curved corridors and circular raceways in our facilities, always with closed sides to avoid distracting the animals.

Realizing that even animals that are more resistant to the Brazilian climate need thermal comfort, our units possess sprinklers in the lairage to refresh the animals without bothering them. Many units also installed shading, with specific roofing that does not allow gases that could bother the animals to build up, positioned in such a way as to avoid behavioral problems that could lead to stress.

We have therefore selected some key points to guide you.

Good Handling Practices

The animals should be observed, preferably on a daily basis, except in those cases where the terrain or the distances involved hinder daily inspection; in those cases, inspection should be adapted to be as frequent as possible.

Measures should be taken to avoid the animals suffering from or being placed in stressful situations: examples are the use of flags when handling small lots of animals, choosing the cooler times of day, and avoiding excessive shouting.

The indiscriminate use of an electric prod should be avoided, and sensitive parts of the animals should never be touched: their eyes, noses, muzzles, tails or genitals.

Another key point is not to use dogs, thus avoiding unnecessary stress and possibly injuries to the animals.

An animal welfare plan should be adopted to cover handling procedures performed on the farm and within the infrastructure used for daily activities. We suggest that this plan should be prepared by trained professionals.

Structure

Pasture:

To avoid discomfort, the environment in which animals are kept should be designed so that they can display their natural behavior.

Pastures should have shaded shelters that allow the animals to cool off.

Facilities for providing the animals with feed supplementation should whenever possible be dry and shady.

Feedlots:

When an intensive fattening system is chosen, it should present a stocking density per animal of at least 10 m2, guaranteeing the mobility to lie down, stand up, turn around, walk and preserve their individual space.

Facilities:

Handling facilities (for example pens/corridors) must always be inspected so that no elements such as nails or splinters can injure the animals.

The farm's facilities/structures must be inspected, and if issues are found, precise maintenance must be carried out so as to avoid harming the physical integrity of animals and humans.

SOCIAL RESPECT

Farms, being part of human society, are responsible for complying with social and labor requirements.

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Labor Standards

Farm hands must be over 18 years of age and be registered, with working papers.

There must be first aid kits for farm workers that are easy to access and kept in strategic locations.

Keep the personal protection equipment (PPE) for farm workers to use in good repair. Record deliveries using documents signed by the farm workers.

Housing

When there are more than one family on the farm, they must be housed in individual residences, with electricity and running water, as well as containers for domestic waste.

School

The children of farm workers (younger than 18) must be enrolled in the school, and suitable, safe transportation must be provided.

You should check the attendance record and the educational achievement records of the children on the farm.

Incentives

There should be no delays to the payment of workers, which might jeopardize their commitment. The farm workers should have the opportunity to grow professionally through following courses/capacity-building in the field in which they work, and this should be proven by attendance sheets or signed certificates.

At least one day per week should be a rest day.

All the employees' working conditions should be in accordance with national and local legislation concerning salaries, workers' ages, the number of hours worked, safe working conditions, respect for freedom to join unions, retirement, health demands, and basic necessary conveniences in their houses and lodging. Farmers have legal and accounting consultancy specifically for these purposes.

RESPECT FOR THE ENVIRONMENT

Not only is this a market trend and requirement, but we also advocate the suitable management of natural resources in compliance with environmental law.

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Vegetation

Maintain a natural reservation area on the farm, and/or forested areas. All pasture areas should have trees to provide the animals with shelter from heat.

The farm map should identify each field, livestock facility, pen, pasture and so on.

Where flammable products are kept, the facility should possess a fire extinguisher.

There should be a written plan laying down actions that will favor habitats and boost biodiversity on the production unit. The plan should be specific to the production unit, or it should be a regional plan if this encompasses the production unit, or the unit is part of it.

Degradation of pasture

The deterioration of pasture is one of the most serious issues in Brazilian livestock-raising and consists of a sharp continuous drop in the productivity of the pasture over time, leading to major economic and environmental losses. Farmers should understand the process and know how to avoid and reverse the problem in order to boost the farm's yield and reduce deforestation.

Good farm management by means of suitable handling is the most effective way of avoiding the degradation of pasture. Therefore, the following are all recommended practices:

- Choose the right species of forage in accordance with the region's soil and climate conditions;
- Routinely control the stocking density (number of animals per area of pasture);
- Annually analyze the soil, periodically maintaining its fertility;
- Control weeds and insect pests;

In addition to suitable agricultural and forestry management, another alternative for preventing the degradation of grazing lands is to adopt an integrated crop-livestock system (ICL), integrated crop-livestock-forest systems (ICLF) or merely livestock plus forestry (silvopasture system), thereby recovering soil fertility, avoiding erosion, diversifying income, and helping remove CO2 from the atmosphere, carbon dioxide being one of the major causes of climate change on the planet.

More information on the degradation of pasture land and agricultural management can be found at the link below to the EMBRAPA website:

https://www.infoteca.cnptia.embrapa.br/infoteca/bitstream doc/1070416/1TC1117 CartilhaPastagemV04. pdf

Legal Reserve

Legal Reserves are important for ensuring local biodiversity, curbing deforestation, preserving areas of forest and native vegetation, and promoting the persistence of natural enemies to agricultural pests, and preserving the water balance, as well as providing shelter for the region's native flora and fauna.

Legal Reserves are areas on farms that are delimited in accordance with their regions, with the purpose of helping preserve and rehabilitate processes. Another important function of legal reserves is to sequester carbon; that is to say, remove the CO2 from the atmosphere, carbon dioxide being the main cause of planetary climate change.

Legal reserve areas should be registered with the competent environmental agency by means of a CAR (rural environmental registry) deed, and must be preserved with native vegetation coverage. Forest management is one mechanism for preserving native forests, reducing deforestation, and mitigating the effects of CO2 in the atmosphere.

- Legal limits of Legal Reserves in the so-called "Legal Amazon" (Law no. 12,651, enacted May 25, 2012)
- 80% (eighty per cent) of a farm located in a forest area;
- 35% (thirty-five per cent) of a farm located in the Cerrado area;
- 20% (twenty per cent) of a farm located in a mixed-vegetation area;
- Legal limits of a Legal Reserve in other regions of Brazil: 20% (twenty percent);

Residues

Recipients for garbage collection should be installed in strategic locations, such as the handling facilities, so that empty medication packs can be disposed of.

Choose a suitable location, which is padlocked and signposted, for storing agricultural chemicals.

Empty packaging of agricultural chemicals is to be neutralized and returned to a suitable location, and the documents proving that it has been returned should be kept on the farm.

Possess a written plan that is easy to understand and kept up to date, in order to address waste reduction, pollution and recycling, taking into consideration the air, soil and water.

One practice that is gaining space in terms of better uses for animal wastes is fertigation. In fertigation, wastewater discarded after use in the unit's facilities, is used for irrigating the farm's productive areas. Being a liquid waste, the organic matter and nutrients help improve the soil and the crop. This also reduces the use of conventional fertilizers.

Soil

The burning of vegetation should not exist as a management practice on the farm.

There should be a suitable place, signposted and hedged around, for carcasses to be disposed of quickly by means of landfill and/or incineration.

There should be containment traps underneath locations posing possible threats to the environment (such as beneath fuel tanks).

Water

All housing and other farm structures should receive and/or treat sewage. If there is no treatment of sewage, septic tanks should be at a minimum distance of 15 meters from wells.

Wash empty agricultural chemicals packaging at a minimum distance of 30 meters from wells, rivers and tributaries.

There should be practices for collecting rainwater in order to avoid erosion and allow the rainwater to penetrate (for example, terracing, contour lines etc.). Vegetation should preserve springs and watercourses.

Rational water use

Water is a scarce resource and must be preserved by all of Brazil's industries, including agriculture and livestock-raising. In order to reduce the farm's water consumption and ensure quality in production, we recommend that good water use practices be adopted.

Examples are given below:

- Collecting rainwater
- Crop rotation
- No-Tillage
- Troughs for animals to drink from
- Fertigation
- A tool for measuring water consumption

More details on the use of water resources in livestock can be found at the link below.

Animal production and water resources - Embrapa

https://ainfo.cnptia.embrapa.br/digital/bitstream/item/202069/1/Producao-Animal-Recursos-Hidricos.pdf

Agricultural chemicals

Agricultural chemicals are chemicals that help control plant pests and blights; however, they may harm the health of humans, animals and the environment.

Mandatory procedures exist for the use of agricultural chemicals, covering their storage and handling.

- Store residues of the same type in suitable recipients.
- Do not mix unknown residues together, because this may cause chemical reactions leading to the emission of hazardous gases, fires or explosions.
- Residues of flammable products should be stored in a cool, well-ventilated location and in suitable containers.
- Never pour chemicals or flammable residues into the drainage system, because this may provoke explosions and large fires.
- Any individual who has generated a residue is always responsible for that residue.

Others

Possesses 50% (fifty per cent) natural grazing land in its total area.

Applicable on farms in the State of Rio Grande do Sul.

The total area of the farm should possess 50% natural grazing land (in accordance with the Alianza del Pastizal protocol).

Applicable only to farms located in the Pampa Biome and complying with the Alianza del Pastizal protocol.

REGULARIZATION AND PURCHASING CRITERIA

For us, acting in a socially and environmentally responsible way also means adopting responsible purchasing criteria. This principle, which guides our sustainability management, ensures that we offer reliable, high-quality products that have won awards and are recognized in the world's largest consumer markets.

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Responsible Cattle Sourcing

In July 2020, Marfrig made a public commitment against deforestation in its production chain across all Brazilian biomes where it operates. This plan reaffirms the 2009 Livestock Public Commitment, where Marfrig achieved deforestation-free status in its direct supplier chain, and goes further: In 2023, Marfrig announced it would advance by five years its goal to achieve full traceability in the purchase of animals for slaughter (previously targeted for 2030), from both direct and indirect suppliers across all Brazilian biomes. This underscores our commitment to sustainable practices, ensuring that our production chain remains free from deforestation and environmentally responsible.

To qualify as a supplier of animals to Marfrig, farms must meet the socio-environmental requirements set by the company, including commitments to deforestation-free practices, compliance with land and environmental laws, and conditions of labor on the property. Additionally, we do not support animal raising activities within indigenous or quilombola territories.

In case of any irregularity, the producer is unable to proceed with negotiations with Marfrig and remains "blocked" until the situation is properly rectified. Marfrig provides technical support to facilitate the producer's reinstatement as a supplier through the regularization process.

For the supply of animals, the following are requested:

- Compliance with current and applicable environmental legislation;
- The GTA (Animal Transit Guide) upon disembarking the animals;
- Presentation of documents such as Land Regularity Certificate (SNCR or equivalent), Rural Environmental Registry (CAR), Letter of Guarantee, Marfrig Club Protocol Checklist, among others;
- Respect for human rights, dignity, equity, aspirations, culture, and livelihoods based on natural resources, and avoidance, minimization, and/or compensation for any adverse impacts on local communities;
- The property must be free from deforestation, refrain from animal production in deforested areas or any area with vegetation suppression, and avoid any other environmental irregularities. Additionally, it should not acquire or trade products originating from such practices after August 2008 when located in the Amazon biome;
- Compliance with current protocols in cases where the property overlaps with Conservation Units , Environmental Protection Areas, Settlements, Quilombola communities, and Indigenous Peoples.
- No trading and/or production of animals in areas listed by the following agencies: Brazilian Institute of Environment and Renewable Natural Resources , Chico Mendes Institute for Biodiversity Conservation, and State Environmental Departments;
- Not listed on the Dirty List of Slave Labor (Employer Registry) by the Ministry of Labor and Employment;

Learn More

For **environmental regularization**, the Rural Environmental Registry (CAR) is the initial step towards normalizing rural properties in Brazil. After registering in CAR, the responsible state environmental agency will assess whether the property has any environmental liabilities related to Permanent Preservation Areas (APP), Legal Reserves (RL), and Restricted Use Areas (AUR). If no environmental liabilities are found, the property will be considered regularized. However, if the environmental agency identifies any liabilities, the property owner can opt to join the Environmental Regularization Program (PRA) to rectify these issues and achieve full compliance.

For **land regularization**, the National Institute for Colonization and Agrarian Reform (Incra) prioritizes agrarian reform, maintains the national registry of rural properties, and administers federal public lands in Brazil. It operates nationwide through Regional Superintendencies.

The **Rural Property Registration Certificate (CCIR)** is issued by Incra and serves as proof of the cadastral regularity of rural properties in Brazil. This certificate includes information about the property holder, area, location, land use, and land classification. The data provided in the CCIR are declaratory and strictly relate to registration, and do not confer ownership or possession rights.

The CCIR (Rural Property Registration Certificate) is essential for legalizing in a notary's office the transfer, leasing, mortgage, subdivision, merging, and division of any rural property in Brazil. It is also crucial for obtaining agricultural credit, as it is required by banks and financial agents.

To issue the CCIR, the rural property must already be properly registered in the National Rural Cadastre System (SNCR). The certificate can be issued online, and individuals can also visit Incra's service units in the states for assistance.

PROBLEMS ISSUING THE CCIR

If the system prevents you from issuing the CCIR via the internet, follow the steps below according to the message:

"The data entered is not correct. Go to your nearest Incra office." It is necessary to update the rural property's data in order to issue a new CCIR. Access the Declaration for Rural Registration and update the data of the property or possession registered with Incra.

"Property does not have a processed declaration" - Property not registered in the system or not registered at all. Go to an Incra network unit or access the Rural Registration Declaration to make the registration inclusion.

Read more: https://www.gov.br/incra/pt-br/assuntos/governanca-fundiaria/cadastro-imovel-rural

Traceability

In order to guarantee raw materials that comply with its socio-environmental commitments, Marfrig has developed a number of tools to enable producers to assess the origin of the animals purchased for rearing or fattening in accordance with the best socio-environmental practices.

All of these tools are based on the Indirect Information Request Form, a practice that partner producers are already familiar with within the actions of the Verde+ program. Our job here was to make these practices easier, more agile, safer and more transparent.

Conecta Blockchain Platform: The tool makes it possible to cross-reference official supplier data, such as CAR and herd data, with public and/or private databases, making it possible to identify the origin of the herd throughout the supply chain. The process is certified and protected by blockchain technology, making all the information reliable.

VISIPEC Platform: Visipec is a joint effort between several institutions, the National Wildlife Federation (NWF), AVP, and researchers from the Land Use and Environment Laboratory (GLUE) at the University of Wisconsin-Madison (UW). It works in a complementary way to the monitoring and traceability systems used by meatpackers in Brazil. The aim of the tool is to help reduce the risk of exposure to deforestation in the early stages of the supply chain. To do this, it cross-references information from public databases, providing regularly updated data in a seamlessly integrated tool. Visipec provides improved visibility of the cattle supply chain and more effective monitoring of deforestation.

SOIL NUTRIENT MANAGEMENT

Marfrig recognizes the importance of responsible soil nutrient management to promote sustainability and environmental health across the supply chain.

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Responsible Soil Management is essential to ensure sustainable agricultural productivity, the health of the ecosystem and the quality of the products supplied. In order to promote **responsible and sustainable agricultural practices in our value chain**, we have made available, through this guide, a series of guidelines for our livestock suppliers who grow their own grain or acquire it from third parties.

1. Responsible Soil Management

Carry out comprehensive soil tests to assess not only nutrient levels, but also the physical structure and biological health of the soil. This broader analysis allows for a more complete understanding of the soil's needs and the management practices required.

2. Sustainable Use of Agricultural Inputs

In addition to fertilizers, consider using soil amendments such as limestone, agricultural gypsum, and organic matter to correct acidity, salinity, and compaction issues. This promotes a more balanced and healthy soil environment for plant growth

3. Preference for Organic Fertilizers

Explore the production or acquisition of organic fertilizers, such as agricultural waste composts, manures, and biofertilizers. In addition to providing nutrients, these fertilizers promote soil health, increase microbial activity, and reduce dependence on chemical inputs.

4. Crop rotation and consortia

Implement crop rotation systems and consortia that promote a diversity of plant species in the field. As well as improving soil fertility, these systems reduce disease and pest pressure, improve nutrient use efficiency and increase the resilience of the agricultural system.

5. Understanding the practices of your suppliers

Establish partnerships with suppliers who share the same values of sustainability and environmental responsibility. Choose suppliers that adopt responsible soil nutrient management practices, offer high-quality products, and are committed to transparency in their operations.

CLIMATE CHANGE

Due to being one of the most critical topics for the global livestock sector, capable of influencing sustainable growth throughout the entire supply chain, climate change receives special attention from Marfrig.

Marfrig

CARBON PROGRAM: REDUCTION AND REMOVAL

A carbon program is a strategic plan or set of actions designed to reduce greenhouse gas (GHG) emissions into the atmosphere. These projects generally aim to mitigate climate change and promote environmental sustainability. Here are some common steps in emission reduction and/or removal projects:

REDUCTION OF CARBON FROM THE ATMOSPHERE

Improvement of Food Efficiency and Genetics

- **Precision Nutrition:** Adjust the cattle's diet to improve digestion and reduce enteric methane production. Feed supplements, such as oils and specific additives, can reduce enteric fermentation.
- **Genetic Efficiency:** Creating animals with higher feed efficiency to reduce the time required for them to reach slaughter weight. Rapid growth leads to lower methane production and consequent emission reductions.

Pasture and Soil Management

- **Pasture Rotation:** Managing pasture rotation to maintain healthy vegetation, which can increase carbon removal from the atmosphere and its capture in the soil.
- **Green Manuring and Pasture Improvements:** Use green manure techniques, adopt species more suited to climatic conditions to increase productivity and reduce the need for additional grazing areas.

Waste Management

- **Composting:** Improving animal waste management through composting to reduce methane and nitrous oxide emissions is crucial in sustainable agriculture. Composting animal waste creates a virtuous cycle where nutrients extracted from the waste are made available to plants, thereby reducing the need for chemical fertilizers or other external inputs.
- **Biodigesters:** If possible, using biodigesters to treat animal waste and capture the methane produced, converting it into biogas for energy (electricity or heat).

Reduction of Deforestation and Degradation

- **Sustainable Land Use:** Adopting good production practices avoids the need to expand pastures into forest areas.

REMOVAL OF CARBON FROM THE ATMOSPHERE

Reforestation

- **Tree Planting in Low Productivity Areas:** To promote tree planting in unused or low-productivity areas to increase carbon sequestration.
- **Silvopastoral Systems:** Integrating trees into pasturelands to combine meat production with carbon sequestration through these trees.

Soil improvements

- **Increasing Soil Organic Carbon:** Implementing practices to increase soil organic matter, such as adding organic fertilizers or maintaining permanent vegetative cover.
- **No-till farming:** Adopting no-till techniques to reduce soil disturbance and increase carbon sequestration.

WEATHER EVENTS

Weather events are natural phenomena that can have impacts on ecosystems, societies, and economies. From storms and river floods to prolonged droughts and extreme heatwaves, these events vary in scale and intensity, influenced by global climate change.

In this context, it is important to stay vigilant and prepare well to ensure the success and resilience of your production. Monitoring weather forecasts and taking preventive measures are essential steps to mitigate these impacts and ensure sustainable livestock operations.

1. Landslides

Landslides can occur on steep slopes after heavy rains, displacing earth and rocks, damaging structures, affecting animals and causing difficulty in accessing the property.

2. Floods

Overflow of water from channels, rivers, lakes, and reservoirs due to excessive rainfall, reaching equipment, affecting structures and animals, and also making operations and access to properties unfeasible.

3. Heatwaves

Heat waves are times when temperatures are very high for several days, which can cause increased discomfort in animals, increased consumption of water and electricity, as well as health problems.

4. Meteorological Drought

These are characterized by a lack of water due to an abnormal imbalance between precipitation and evaporation, leading to increased costs due to the increase in the price of cattle or even the difficulty of acquiring them, and a reduction in operations due to the unavailability of water.

5. Storms

These are violent atmospheric disturbances with heavy rains, strong winds and sometimes accompanied by lightning, thunder and lightning, which can cause power outages or damage to structures, such as roofs and even animals.

6. Changes in Wind Patterns

Sudden movement of an air mass over the surface of the earth, which can cause trees to fall and roofs to collapse, affecting employees and animals.

Guide to
Sustainable Practices

Marfrig