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Calf-removal prototype developed at ITSH

Prototipo para extraer terneros desarrollado en el ITSH

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Abstract

Currently there are different types of tools that are used to assist a complicated calving in cows, one of them is the calf extractor, although in our region they are not known, their main function is to help a calf that cannot be born, obtaining help in the calving of the animal Due to important factors when calves are usually born with a very large head, sometimes it affects its position, inside the womb, in addition to the fact that when a cow is first-timer it is usually very narrow for this reason the cow cannot give birth This is where you should intervene. Sometimes the calf can come in a cranial or caudal position, the maneuver can be carried out holding the hands or legs as the case may be.

Extraction, Womb, Tool, Optimization

Resumen

Actualmente existen diferentes tipos de herramientas que se utilizan para asistir un parto complicado en vacas, uno ellos es el extractor de becerros, aunque en nuestra región no son conocidos, su principal función es ayudar a un becerro que no puede nacer permitiendo ayudar en el parto del animal. Debido a factores importantes cuando los becerros suelen nacer con su cabeza muy grande, en ocasiones afecta la posición de este, dentro del vientre además que cuando una vaca es primeriza por lo regular es muy estrecha por esta razón la vaca no puede parir es aquí donde se debe intervenir. En ocasiones el becerro puede venir en posición craneal o caudal, la maniobra puede ser llevada a cabo sujetando las manos o las patas según sea el caso.

Extracción, Vientre, Herramienta, Optimización

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† Researcher contributed as first author.

Introduction

Domestic cattle are descended from a group of auroch breeds, Bos taurus primigenius, now extinct. Aurochs, of which the last specimen died in a Polish park in 1627, were once very common in Europe and their territory stretched across North Africa and the Middle East to Southeast Asia and China.7 There are 2 main types of domestic cattle, the zebu (Bos primigenius indicus) which have a pronounced hump at the level of the back, and the taurine (Bos primigenius taurus) which have no hump, the latter being the most popular in regions such as Africa and Asia.

A farmer by experience always keeps track of the pregnant cows, as well as the date they were in heat and when the bull mounted, from this point onwards nine months are counted and a week beforehand he prepares himself to help the cow if necessary.

The calf extractor is a tool that is used to help cows in calving, in case of any complications, specifically when the calf cannot be born. Cattle farming is becoming increasingly important because of its contribution to meeting the country's demand for meat and milk. The project allows the producer to intervene in the calving of the cow to save her calf.

Problem statement

We have observed the problem that arises when a cow is unable to calve, so what we want to achieve is to reduce the loss of a calf if this is the case, and sometimes even the cow itself can be lost.

The application of this project was carried out in the calving of a cow as it is used to pull the calf out so that the extraction is constant to get the calf out of the mother's womb, this is carried out by means of a band attached to the ratchet allowing the calf to be pulled, the structure of this tool allows the tool to be correctly positioned on the back of the cow as it has two supports so that it remains stable at the time of the manoeuvre.

Objectives

General objective

To ensure that livestock production is not affected by situations of this type, therefore, concerned about this problem, the calf extractor is the right tool to improve the calving process of cows in a state of complication.

Specific objectives

To satisfy the needs of the cattle producers (bovine).

- To help the cow to calve.
- Facilitate the work applied to extract a calf that has complications.
- Avoid economic losses.
- Avoid loss of the calf.

Theoretical framework

Animal reproduction: Calving in bovines.

Calving is the expulsion of the foetus that has been developing for nine months and is ready to be expelled. Calving includes the birth of a calf and the expulsion of the placenta.

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Calving includes the birth of a calf and the expulsion of the placenta. It is triggered mainly by hormonal factors. The foetus naturally rests on its abdomen with its front legs pointing towards the uterine opening (the cervix) and its head resting between its front legs.

The birthing process can be divided into three stages:

Uterine contractions and dilatation of the cervix: This stage lasts from 1 to 24 hours, the periods are shorter in more experienced cows, the normal time span is between 2 and 6 hours.

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Expulsion of the foetus: The calf starts to pass through the birth canal, breaking the water sac at this stage, finally passing through the vaginal canal and is born. This phase lasts from 1 to 3 hours. First-time cows need frequent assistance.

The expulsion of the placental membranes: this period lasts about 5 hours.

In a normal calving a female should calve alone and without assistance. Special attention must be paid to the nutritional and sanitary management of both cow and calf.

In the expulsion phase, uterine contractions intensify. There is one contraction every 2-3 minutes with a duration of 60 to 90 seconds. In the process of intensification of uterine contractions a reflex is triggered by the pressure of the calf's head on the base of the sacrum, releasing more oxytocin.

A complicated moment in calving is always the expulsion of the head together with the hands and the area of the back as it has a larger diameter. As a consequence of the greater internal pressure exerted by the liquids, the expulsion and exit of the extremities through the vulva takes place.

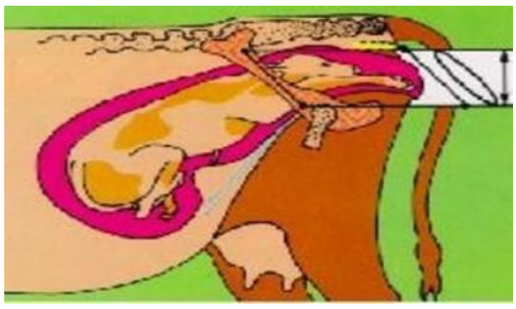

Figure 1 Position of the extractor

Sometimes childbirth requires assistance. A wise decision is to remain calm and to do it with care and patience. The simplest cases of assistance are limited to correctly positioning the calf and exerting additional traction.

Therefore, the calf puller tool is designed in a way that is suitable for placement on the rear of a cow, allowing good positioning of this tool as the calf will have its space in the central part of the structure allowing its passage when leaving its mother's womb.

It is also united in two parts by means of an automotive steering terminal. It is joined to the steering bar by means of its internal thread which allows it to be dismountable to allow it to be moved, this being the base which will allow it to support the force applied in the manoeuvre. A ratchet was adapted to this bar and a lever was released allowing the force applied to be reduced, this is the main mechanism of our project as in this way the calf will be dragged, by means of a fastener which is attached to a lasso which holds the calf's hands and is dragged, saving the life of this animal.

Figure 2 Extraction

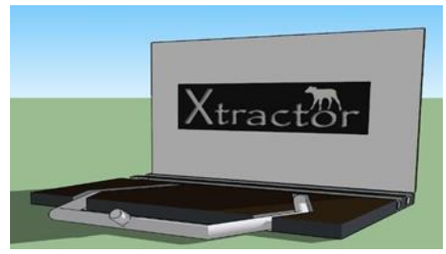

Figure 3 Front view

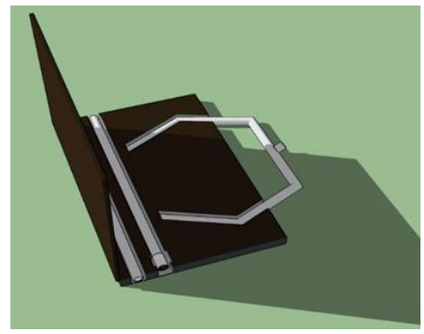

Figure 4 Top view

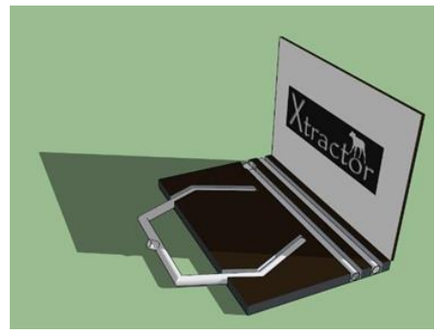

Figure 5 Tool case view

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Conclusions, recommendations, future lines of research

As could be seen, this project is very applicable in the livestock sector, as well as being an innovative project, it is profitable and has a wide range of acceptance by the interested party, it is of international interest because it intervenes in complicated births that are constantly occurring in the livestock sector. By presenting this prototype to the consumer, it is hoped that it will be of interest to them.

It is clear that the project should be given a future innovation to facilitate the process of calving cows.

With this prototype it is intended to satisfy the needs of livestock producers so that their production is not affected by this type of situation.

Figure 6 Tool used

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