**Smart farm**

**Problem statement**

Few dairy farmers keep comprehensive records which is a major challenge for their business as they lack proper information on how to track their venture. And the methods of recording data included writing on walls, blackboard, papers and human memory and this lead to loss of needed information on the farm cows and lead to loss of the business track.

**Project description**

Smart farm will be an application focused on the dairy livestock production, it will be facilitating farmers to record every detail on the livestock and facilitating the farmer to record the animal heathy and by putting the cows ear tag you can see all the detailed information about its heathy, milk production, its recorded weight, the vaccines it received and the number of births (calving), the name of the bull (ikimasa) it was bred to, and the application will be used by expert(veterinary) to give any advice to the farmer in case of a certain outbreak and the app will be able to give an alert or a reminder about any activity that has been recorded, so the app should contain a calendar for different activities

**Project main features**

Livestock records

Activity records

Financial records

Calendar for reminder

Feeding records

Categories to focus on: the user will select one of these.

1. Cows
2. Heifers
3. Calves
4. Sires/bulls

Section 1: livestock records

Category 1: cow

The app will be used to record the cows

* Ear tag
* Breed type:
* Ankole
* Crossbreds
* Holstein-Friesian
* Jersey
* Brown Swiss
* 2.status cow’s:
* Pregnant(irahaka), if pregnant expected date of giving birth and the
* Calf number (nimero yinyana)

Not pregnant (ntago ihaka)

* Lactating:
* Yes
* no
* number of calving
* litres of milk it produces

Category 2 calf(inyana):

Ear tag number (nimero yiherena):

Date of birth (igihe yavukiye):

Mothers ear tag (nimoro yanyina):

Sires ear tag (nimero yikimasa yavutseho):

Weight at birth (ibiro ivukanye):

Weaning period (igihe cyo gucyutsa):

Category 3 bull (ikinyamasa):

Ear tag number (nimero yikimasa):

Mothers ear tag number (nimero yanyina):

Sires ear tag number (nimero yikimasa yavutseho):

Weaning period (igihe cyo gucyutsa):

Castration period (gukona):

Category 4 heifer:

The app will be used to record the cows

* Ear tag
* Breed type:
* Ankole
* Crossbreds
* Holstein-Friesian
* Jersey
* Brown Swiss
* status cow’s:
* Pregnant(irahaka), if pregnant expected date of giving birth and the
* Calf number (nimero yinyana)
* Insemination period;

Not pregnant (ntago ihaka)

* Lactating:
* Yes
* no
* number of calving
* litres of milk it produces

**If purchased from outside the farm should indicate:**

Where it was purchased (aho yaguriwe:

Purchased date (itariki yaguriweho):

Weight (ibiro yaguriwe):

Breed type:

* Ankole
* Crossbreds
* Holstein-Friesian
* Jersey
* Brown Swiss

Section 2: Activity record

Activity section the feature should include different activity a farmer should do in his farm in different period and their date:

Features include:

Treatments and vaccination:

* Treatment date (igihe ivuriwe)
* Ear tag of affected animal (nimero yiherena ryirwaye)
* Disease diagnosed
* Dosage in (ml)
* Route (in route we include the way we have administered the medication):
* Intramuscular
* Intramammary
* Intranasal
* Intraocular
* Intraruminal
* Intrauterine
* Intravenous
* Oral
* Other
* Vaccination date:
* Vaccine administered:
* Ear tag number of vaccinated animal:

castration

* castration date
* ear tag number of castrated bull:
* castration method
* Elastrator rubber rings
* Banders
* Burdizzo clamp
* Conventional knife
* Emasculator
* Manual twist
* Castration knife
* Castrated by: (izina ryuwa koze igikorwa):
* How it went (uko byagenze):
* Successful
* Unsuccessful

Weaning

* Weaning date
* Weaning weight
* Ear tag number of weaned animal

Breeding

* Breeding date
* Ear tag of the cow to bred
* Method of breeding:
* Natural service,
* Artificial insemination
* End date
* How it went:
* Successful
* Unsuccessful

calving

* calving date (igihe cyo kubyara):
* cow ear tag number:

the calf should be added to the farm.

Dead animal record (iya pfuye):

Death date:

Ear tag number of dead animal

Causes of death:

Ready to be a bull:

Ear tag of an active bull calf to become a bull

Date:

Ready to be a cow:

Ear tag of an active calf to become a cow

Date:

**Section 3: financial records**

Include the sales that the farmer performed and the litres sold,

And include the ear tag of the animal sold

Section 4 feed consumed

The farmer will use this section to enter the type of feeds used

Type of feeds:

Quantity used (kg)

**Section 4 : main diseases and their symptoms**

**1.Bloating**

a. Symptom

- Left flank bloat

- The feeling when touching on the left flank is like touching an inflated rubber ball

- Other symptoms: low appetite, no rumination, slobber, nervous, etc.

**2.HEAT STROKE**

a. Symptom

- Fever: 41-42°C

- Dry skin, bloody eye mucus membrane

- High pulse and respiratory rates.

- Convulsive

**3.FOOT AND MOUTH DISEASE**

a. Symptom

- Fast spreading disease

- High fever 40-41°C, low appetite, like drinking much water

- At the beginning, the mouth is swollen, close tightly and has crackling sound

- 2-3 days after, vesicles appear on mouth, foot, leg and udder.

- Hard moving

- The reddish nodes appear on broken vesicle. Injuries may result in inflammation and secondary diseases.

**4.TUBERCULOSIS**

Chronic disease caused by Mycobacterium tuberculosis.

It is dangerous for people who drink milk of cow with TB for they may be infected

**5.MASTITIS**

This is one of the biggest problems causing big economic loss in dairy farming

a. Symptom

Symptoms of mastitis are very different, depending on the causes, types of bacteria and level of infection:

- Udder temperature: hot

- Udder size: swollen

- Udder color: reddish

- When we touch the udder, the cattle feel painful

- We can also see the changes in physical and chemical performance of milk; lumpy or stringy, bloody, pussy milk

**6.PASTEURELLOSIS**

a. Symptom

- High fever: 41-42°C

- Eye and nasal mucus is redish. Later brown

- Tearing, nasal discharge, husky coughing, coughing fit.

- Depressed respiration and high presure

- At the begining, the feces is constipated but later become bloody diarrhea

- Much mucus and underskin bleeding

- Exhausted, low rumination

- Mortal rate is high therefore we have to vacinate regularly.

**7.NAVEL INFECTION**

a. Symptom

- Usually on 5-7 day-old calf

- The calf drink litle or no milk

- Navel part is swollen, painful

**8.PNEUMONIA**

a. Symptom

- Fever 40-41°C

- Glassy, exhausted, no appetite, tearing, nasal discharge

- Depressed respiration, abnormal breathing sound

- Coughing, especially in night time and early morning.

**9.COCCIDIOSIS**

a. Symptom

- Usually on 2 - 4 month old calf

- Coccidiosis injure endointestinal hair and intestinal wall muscle and mucus membrane, therefore the calf has bloody diarrhea with some mucus membrane.

- Curved back, tail up, little feces.

- Coccidiosis secrete enzyme and toxic chemical making the calf shiver, fever and secondary diseases.

**10.FACIOLOSIS**

4. Symptom

- Hepatitis and liver injury

- The cattle is thin, fat tissue and muscle are atrophied

- Pale conjunctive, anemia, yellow skin

- Edema fauces, dewlap and under lower jaw

- Low appetite, low digestion, crushed feces

**11.Anaplasmosis**

a. Symptom

- The parasite use nutrition, destroy RBC, makes the cattle thin and serious anemia.

- Eye and vagina mucus membrane is pale color.

- The toxin secreted from the parasite affects the central nerve system causing nervous symptoms

**Section 5: reference**

*[1.https://epoultry.africa](https://www.google.cm/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwiN0uu_3LmCAxUPVKQEHazLBH8QFnoECAsQAQ&url=https%3A%2F%2Fepoultry.africa%2F&usg=AOvVaw0GEX_J6AfUuhXKJInj4Mak&opi=89978449)*

*[2.https://agtech.folio3.com › cattlytics](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwjp5Pnd3bmCAxX5Y6QEHatgAP0QFnoECBIQAQ&url=https%3A%2F%2Fagtech.folio3.com%2Fcattlytics%2F&usg=AOvVaw3ps2YNk_pEe72t2o_xeNWv&opi=89978449)*

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4.https://www.youtube.com/watch?v=Hj9VnQWz-Uo&t=20s&pp=ygUNc21hcnQgY293IGFwcA%3D%3D

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