FEED FORMULA APP
USER GUIDE

DOCUMENT	DATE
User Guide	**11/03/2021 -** Version 2

Product
Feed Formula App

Description
A comprehensive user manual for a FEED FORMULA APP correct usage.

AN INITIATIVE OF THE DE-BUSHING ADVISORY SERVICE IN COLLABORATION WITH:

DE-BUSHING ADVISORY SERVICE NAMIBIA

FARM4TRADE

UNIVERSITY OF NAMIBIA

MINISTRY OF AGRICULTURE, WATERAND LAND REFORM

THE NAMIBIAN FARMING COMMUNITY STAKEHOL-DERS

SUPPORTED BY

Bush Control and Biomass Utilisation Project

INDEX

LEGEND

SHORT NAME	LABEL	UNIT OF MEASURE	DESCRIPTION
ME	Metabolisable energy	MJ/Kg cal/Kg	Metabolisable energy is the energy avai- lable for use by the animal and it is calcu-lated as Digestible energy minus energy lost in urine and gases (carbon dioxide & methane). **(Feedipedia)**
DM	Dry matter	% / g/Kg	The dry matter of feed refers to the ma-terial remaining after removal of water from the feed. The dry matter includes the nutrients in the feed such as includes carbohydrates, fats, proteins, vitamins, minerals, and antioxidants (e.g., thio- cyanate, anthocyanin, and quercetin). Carbohydrates, fats, and proteins, which provide the energy in foods (measured in kilocalories or kilojoules), make up ninety percent of the dry weight of a diet. (**Wikipedia)**
CP	Crude protein	% / g/Kg	A measurement of protein content. In animal feeds, crude protein is calculated as mineral nitrogen x 6.25 (the assumpti-on is that proteins of typical animal feedscontain 16% nitrogen in average). **(Feedipedia)**
CF	Crude fiber	% / g/Kg	A measurement of fibre content. Also known as Weende cellulose, crude fibre is the insoluble residue of an acid hy-drolysis followed by an alkaline one. This residue contains true cellulose and inso- luble lignin. Even though the more ac-curate Van Soest analysis has supersededit since the 1970s, the analysis of crude fibre remains common in feed laborato ries. **(Feedipedia)**
ADF	Acid Detergent Fiber	% / g/Kg	Acid Detergent Fiber, fraction of the cell walls according to Van Soest, consideredto be roughly equivalent to true cellulose and lignin. **(Feedipedia)**
NDF	Neutral Deter-gent Fiber	% / g/Kg	NDF, fraction of the cell walls according to Van Soest, considered to be roughly equivalent to hemicellulose, true cellulose and lignin. **(Feedipedia)**

SHORT NAME	LABEL	UNIT OF MEASURE	DESCRIPTION
ADL	Acid Detergent Lignin (Fiber)	% / g/Kg	It is the percentage of plant material which is insoluble in 72 percent sulfu- ric acid. Treatment with 72 % sulfuric acid dissolves cellulose and ashing the residue will determine the crude ligninfraction including cutin. Lignin reducesdigestibility of a feed.
CF	Fat	% / g/Kg	Crude fat is the amount of fat or oil content of a feed, which is extracted by petroleum ether. This ether extract contains not only true fat, but fat soluble vitamins A, D, E, K, free fatty acids, cholesterol, chlorophyll, lecithin, resins, and volatile oils
Ca	Calcium (Mine-ral)	% / g/Kg	A major mineral (symbol Ca) essential for living organisms, in particular in cell physiology and for the mineralization ofbone, teeth and shells. (Feedipedia)
P	Phosphorus (Mineral)	% / g/Kg	A major mineral (symbol P) essential for living organisms, in particular in cell physiology and for the mineralization of bone, teeth and shells. In plants, phosphorus is mostly stored in phytic acid. (Feedipedia)

GLOSSARY

LABEL	DESCRIPTION
RATION	Commonly defined the Ration is the total supply of feed given to an animal in a period of twenty–four hours. In this app, a ration is calcu- lated taking into consideration specific animal parameters, the nutri-tional requirements associated to that parameter and the nutritionalvalues of the ingredients used in the ration.
NUTRITIONAL REQUIREMENT	The **requirement** for an essential **nutrient** is the amounts or concent-ration that is needed to maintain health or prevent disease. For manynutrients there is range of acceptable intakes which is defined by the minimum amount required to prevent adverse effects resulting from too little intake (deficiency) or the maximum intake above which, alsoresults in adverse effects (i.e., toxicity). The range of acceptable intakes for any nutrient varies according tothe specific nutrient in question, and the species and life-stage (i.e., growth, adult maintenance, pregnancy and lactation) it is intendedfor. (**WikiVet)**
NUTRITIONAL VALUES	Nutritional value or nutritive value as part of food quality is the measu-re of a well-balanced ratio of the essential nutrients carbohydrates, fat,protein, minerals, and vitamins in items of food or diet in relation to the nutrient requirements of their consumer). **(Wikipedia)**
INGREDIENTS	Elements used for formulating the ration. Ingredient can be single ingredients, feed or milled bush.

INTRODUCTION

Welcome

TO FEED FORMULA APP

Feed Formula Application is an advanced app focused on animal he-alth. By improving animal nutrition, each farmer can obtain the best balance in feed formulas and feed cost, monitoring every step of the process and its outcomes.

The app can be used on a laptop or mobile, using any browser availa-ble on the device.

The Feed Formula Application also works without an internet connec-tion and you can consult and update your library of ingredients and rations using the offline mode.

TO ACCESS THE APP:

Scan the QR Code or go to *https://ffa.dasnamibia.org*

01 REGISTRATION

Registration screen: ffa.dasnamibia.org
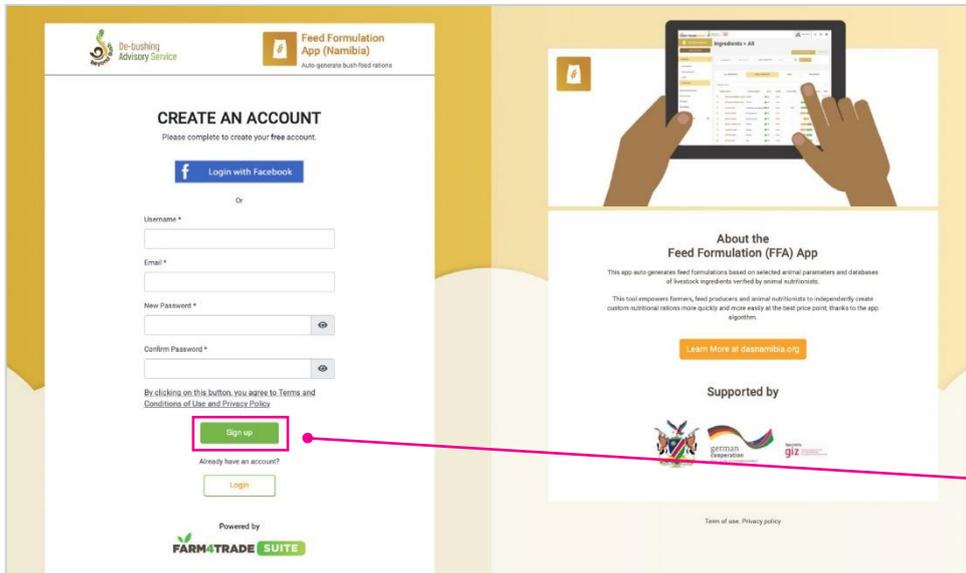
1. THE FEED FORMULA APP IS ACCESSIBLE ON LINEAT THE ADRESS:

https://ffa.dasnamibia.org

If you already have an account, login using your username and password.

If you don't have an account yet, click on the **"SIGN-UP"** button to create a new one.

Registration screen
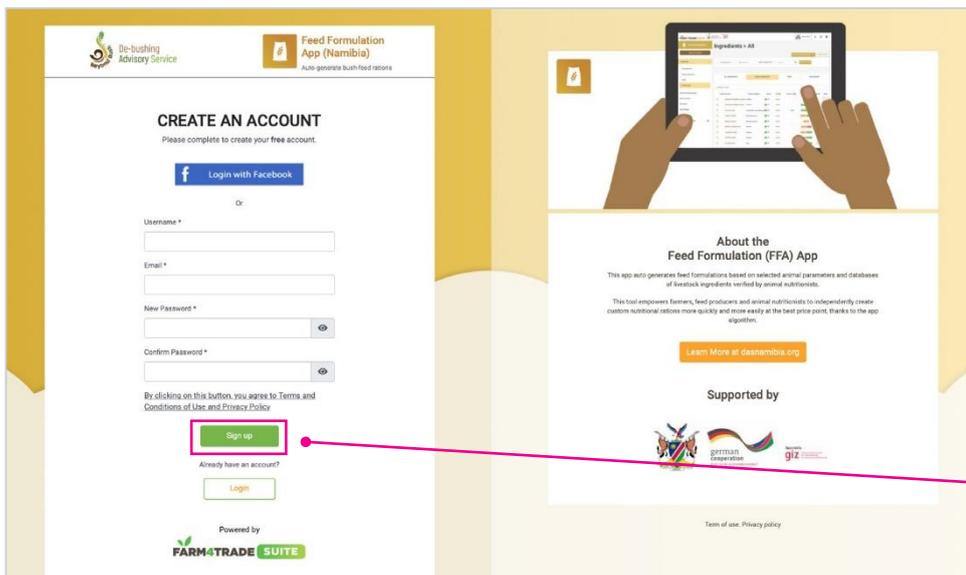
2. INSERT THE REQUIRED INFORMATION:

Username, Email and Password.

The password must be atleast 8 digits long, and include one symbol, one number and an upperca-se and lowercase letter.

Click on **"SIGN-UP"** tocreate your account.

01 REGISTRATION

Verify email screen
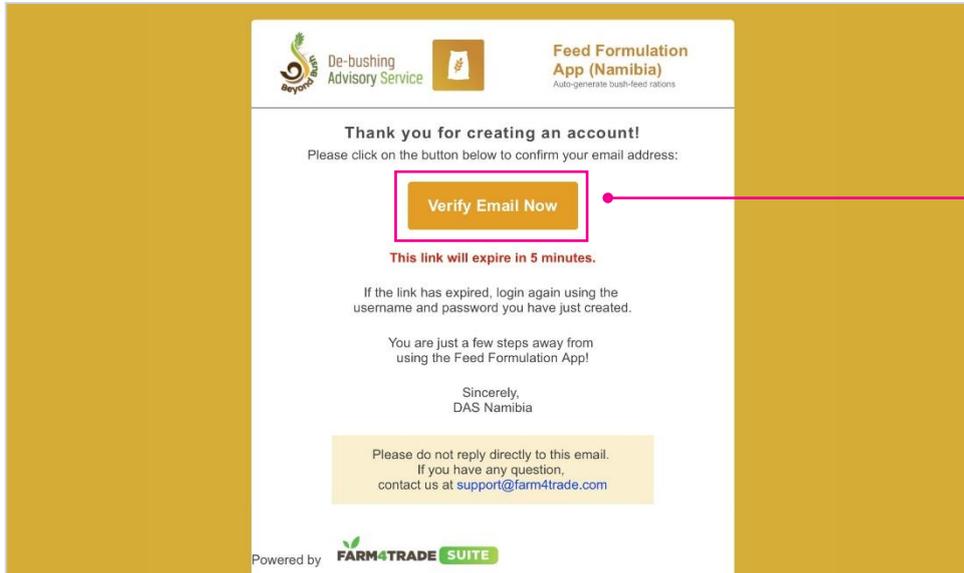
3. GO TO YOUR INBOX TO VERIFY EMAIL:

Click on the link you have received in your inbox to verify your account and access the **Feed Formu- lation App** for the first time.

02 FIRST ACCESS

1. WHEN YOU ACCESS THE APP FOR THE FIRST TIME,

you will be prompted to complete your account with some basic informa-tion.

Complete with your **First**and **Last name**, confirm your **Country** and add your **Phone number**.

The required fields mar-ked with an *asterisk**,

When the informationis complete, click on **"CONTINUE"**.

2. ENTER YOUR FARM'S INFO

Complete with the nameof the farm and confirm the country where the farm is based.

When the informationis complete, click on **"CONTINUE"**.

02 FIRST ACCESS

Registration step 3/3 screen

3. CONFIRM YOUR SETTINGS.

Such as **country**, **curren-cy** and **weight units**.

These last settings will be used in the formulation of the rations in the app.

You can change them af-ter your first login, by go-ing to the **App Settings** section in the app.

When the informationis complete, click on **"CONFIRM ALL"**.

⭐ **TIP:**

When you create an account and login for the first time, it is strongly advised to finish the sub-scription and access the app for the first time from the same device.

03   CREATE RATION

Create ration button screen

1. CLICK ON THE CREATE RATIONS BUTTON

(on the top left), to start creating rations.

For a detailed explanationof the fields, see the **Ani- mal Parameters definiti- on** below.

ANIMAL PARAMETERS DEFINITION:

At the first login, it is advised to select the Geography zone and Baseline unit cost fields and "SAVE", in order to avoid repeated prompts in the Create Rations module.

1. **Select Species:** this is a required field. Select the species of the animal (at the moment onlythe option Cattle is available)

2. **Production Purpose:** this is a required field. Choose between Dairy/Milk or Meat/Beef, accor-ding to your activity.

3. **Sex of the animal:** this is not a required field, but can be useful when calculating distinctrations for animals that are raised for the same purpose but are different sexes.

4. **Production Status:** specify the status of the animal to better adapt the calculation of the rati-on to your production purposes.

5. **Weight range:** this is a required field. Indicate the average weight range of your animals, tobetter adapt the ration. The 100kg range is recommended as a generic range.

The **Production Purpose Level** field is not a required field, and can be used as a more specificindication of your production goal in case of milk production.

You can change the pre-selected **Geography** and **Currency** information if needed.

By indicating the **Budget for 100kg of ration**, the app will compare the prices and show the bestprice match in the generated rations.

03 CREATE RATION

STEP 1: Define animal parameters screen

STEP 1. DEFINE THE ANIMAL PARAMETERS

that you want to use for your ration: complete thefields following the orderfrom 1 to 5. *(ex: first the field Select Species, thenProduction Purpose etc.).*
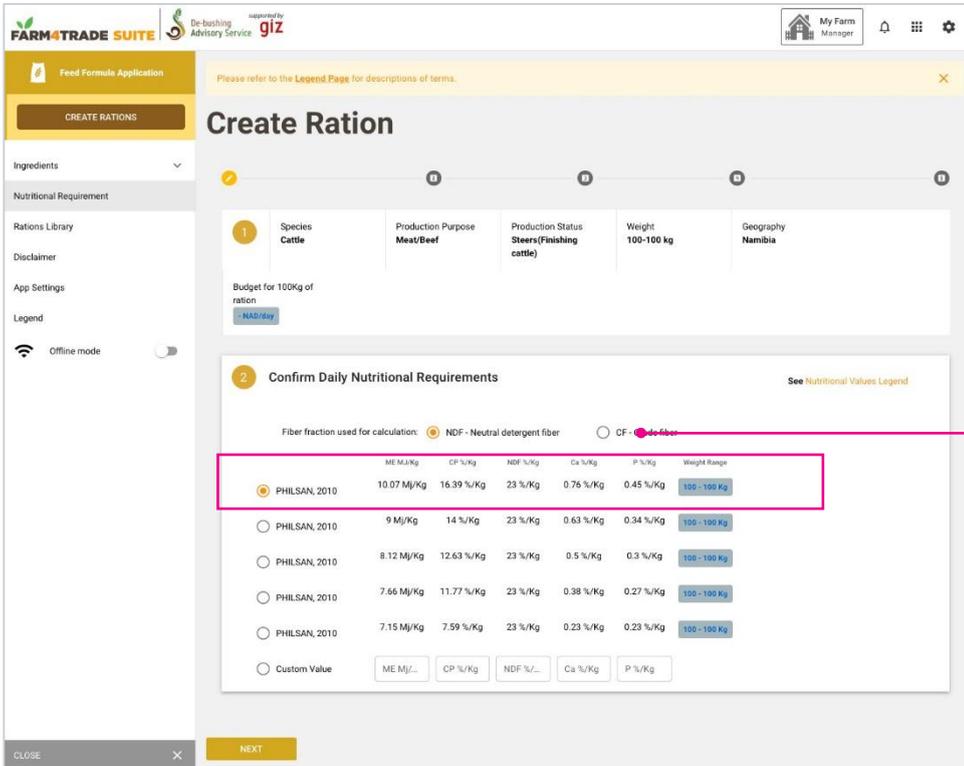
Required fields are mar-ked with an *asterisk**.

Each field is dependent on the previous field ac-cording to your choice.

Click on **"NEXT"** to move to the second step.

03 CREATE RATION

STEP 2: Select a nutritional requirements screen

STEP 2. CONFIRM NUTRITIONAL REQUIREMENTS.

According to the parame-ters chosen in step 1, the app will suggest a list of **Daily Nutritional Requi- rements**, formulated by our experts, that better match your production purposes.

You can choose between**NDF** and **CF** as the fiber fraction used for the cal- culation.

Select one of the nutriti- onal requirements pro- posed by the system. If you prefer or if you don't have any results, enter your custom values (whenentering your custom values, use « . » for de- cimals). These require- ments will be used in the calculation of the ratio of the ingredients that will be part of your Ration.

Click on **"NEXT"** to con- tinue to the next step or on **"BACK"** if you wish to change the entered data.

⭐ **TIP:**

For a detailed explanation of **Nutrional Values** used in these calculations, see the Legend at thebeginning of this guide or click on **Nutrional Values Legend** on the App.

03 CREATE RATION

STEP 3: Compare with your library screen
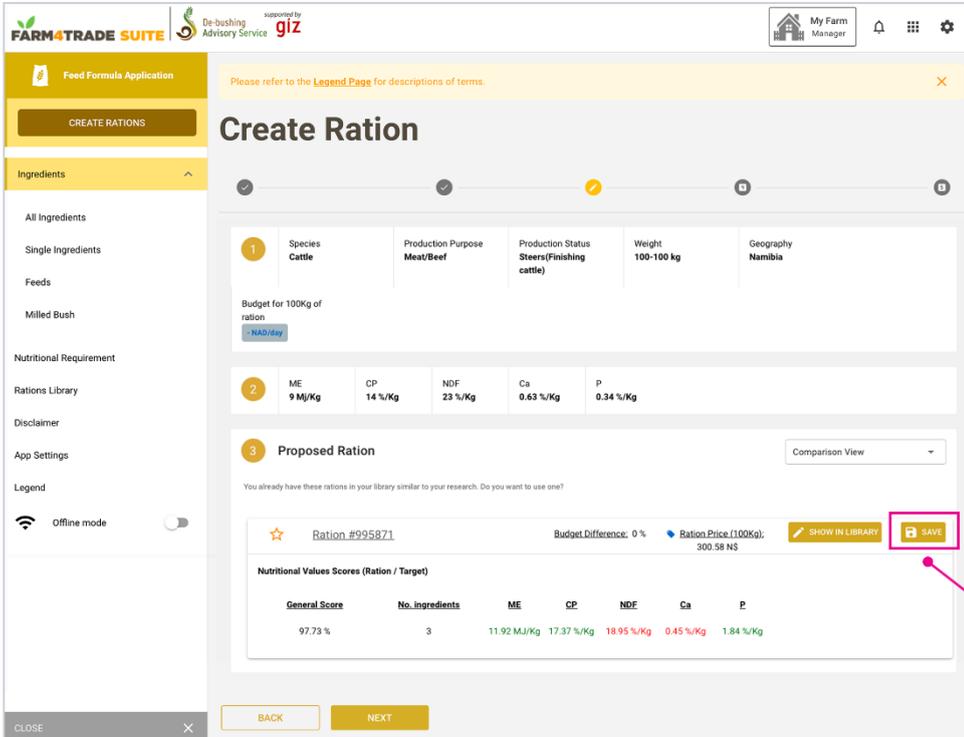
STEP 3. PROPOSED RATION

If your **Rations Library** contains one or more rations similar to the onethat you are creating, theapp will automatically suggest to use it.

For more information on how to read the details ofthe rations, see **Rations Comparison** & **Card view**in the next page.

If you are happy with one of the results and you want to save it with another name inside your library, click on **"SAVE"**. You can also see the ration in detail by clicking on**Show in library**. Another page will open (*see secti-on 07 for more details onthe Rations Library*).

If you have no results orif you want to create a brand-new ration, click on **"NEXT".**

03 CREATE RATION

RATIONS COMPARISON VIEW AND CARD VIEW:

There are two views available to help you compare and understand the generated rations:

1. **Comparison view** (default view)

2. **Card view**

In the **Comparison view**, rations are shown in a list sorted by **General Score**. Switch to **Card view** if you want to compare the rations by looking at the details of the ingredients used. Each view contains the following elements:

- **General score:** the match between the proposed ingredient and the requested nutritional values.

- **Budget difference:** the difference between the cost of the proposed ration compared to the budget indicated in the request

- **Ration price:** the price of 100kg of the proposed ration

- **No. Ingredients:** the number of ingredients used for the proposed ration. If you are using the Comparison view, click on the name of the ration to see which ingredients are used.

- **ME, CP, NDF, Ca, P:** these are the nutritional values scores (see legend for more info on each value). If these values are green, it means that they are above the suggested value, if they are red, they are below.

You can sort the list of rations by clicking on each of the values above. For example, of you wish to sort the list from the highest to the lowest price, click on Ration price.

03 CREATE RATION

STEP 4: Select at least 3 ingredients screen
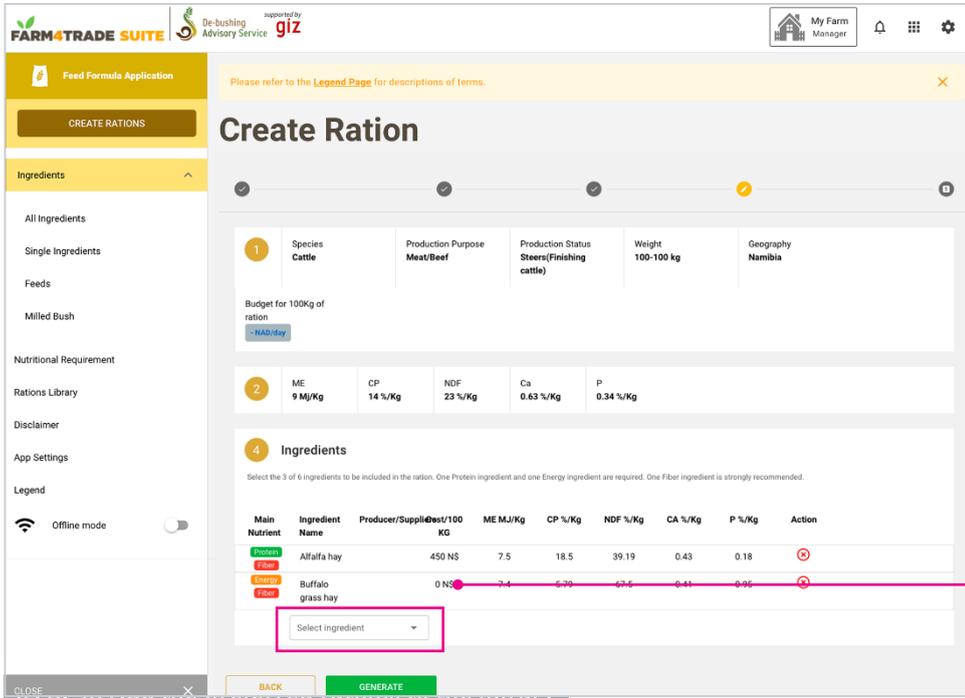
STEP 4. INGREDIENTS

Select 3 to 5 ingredients to include in the ration. One Protein ingredient and one Energy ingre- dient are required. One Fi-ber ingredient is strongly recommended.

Click on the **"SELECT INGREDIENT"** menu and choose from the list. If you are using a laptop, you can start typing youringredient to move fasterin the list.

Once your selection is done, click on **"GENERA-TE".**

STEP 5. PROPOSED RATIONS

The App will provide a list of rations that match your request.

The first three on the list correspond to the

| Best Match | Lowest Price |
| Most Nutrient |

Like in step 3, you can switch between **Compa-rison View** or **Card View** and click on the other values to sort the list dif-ferently.

Choose the ration that matches your need and save it in your **Rations Library** by clicking on the**"SAVE"** button on the ingredient.
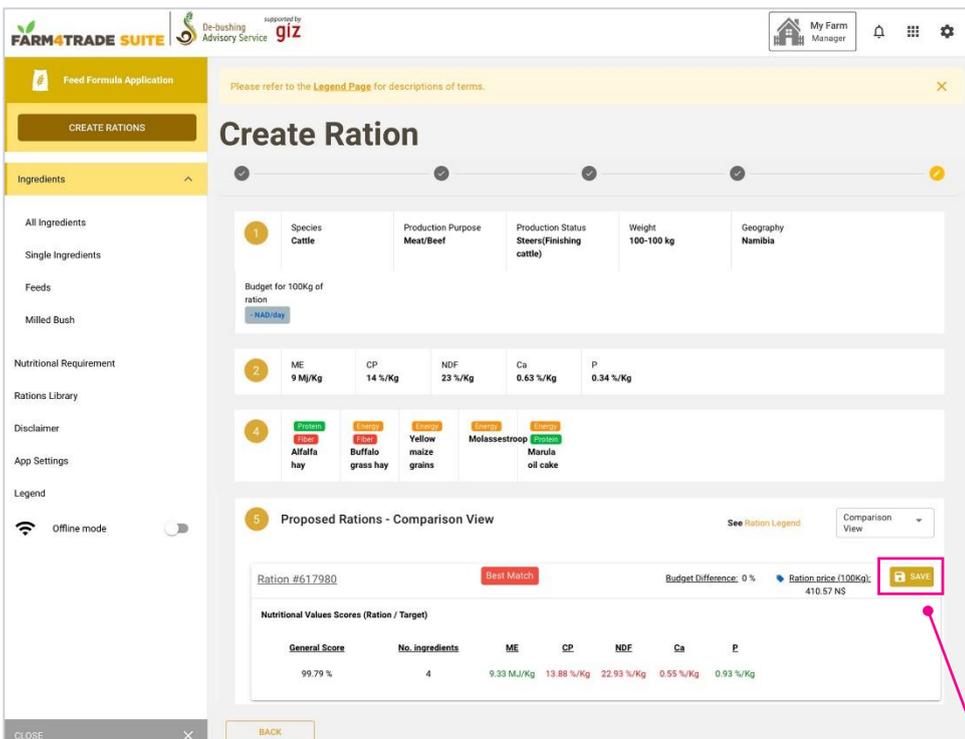
03 CREATE RATION

Save ration screen
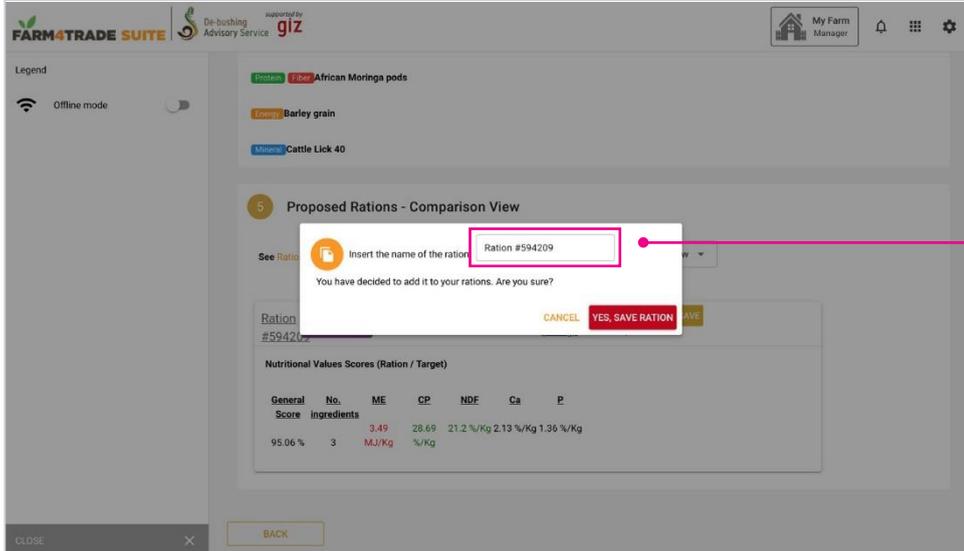
6. RENAME

the ration you have just chosen and click on **Yes, save ration**.

If you want to see the details or make any ch- anges to the **Ration**, click on **"SHOW MY RATION IN LIBRARY"**, or choose **"CLOSE"** if you are done.

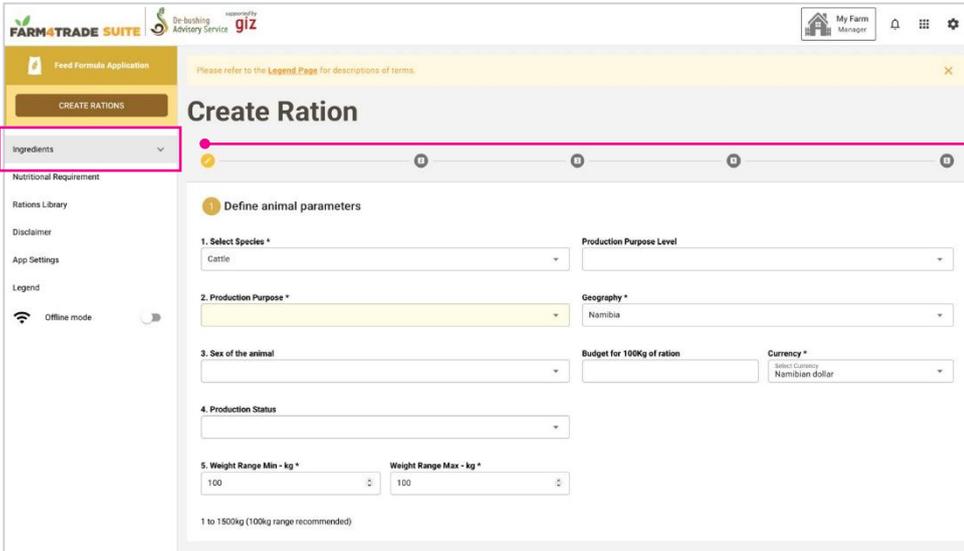Legend info screen
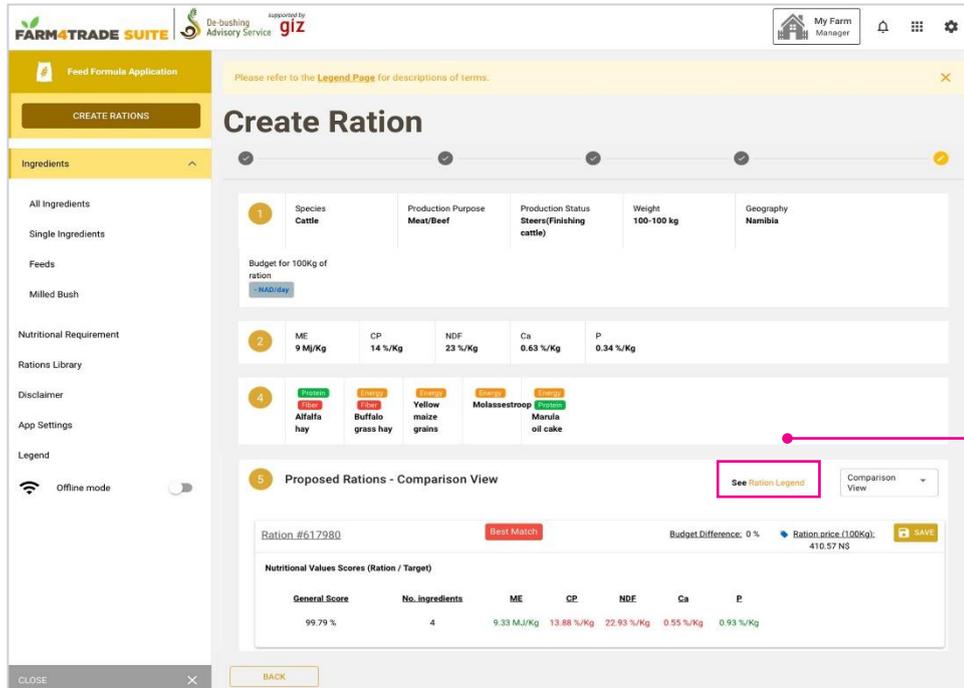
7. FOR MORE INFORMATION,

on how to read this page, click on **Ration Legend**.
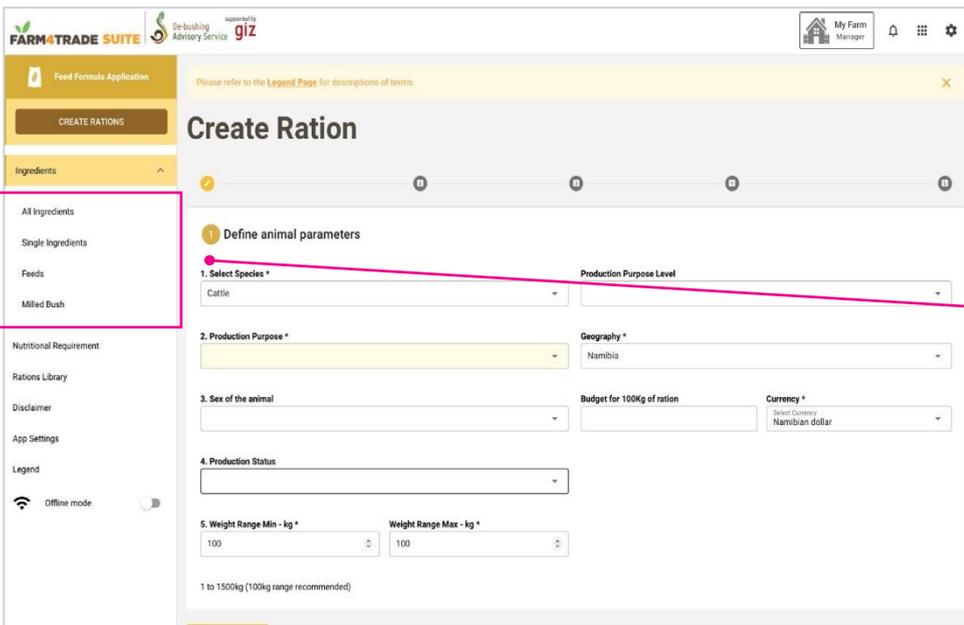
The Legend is always available in the left side menu.

04 INGREDIENTS

Ingredient list screen

1. CLICK ON INGREDIENTS IN THE MENU,

on the left of the screen to access the list of ingre-dients.

Ingredient list screen

2. YOU NOW HAVE ACCESS TO THE LISTOF INGREDIENTS THAT WILL BE USEDTO FORMULATE YOUR RATIONS.

You can choose to view **All ingredients** at once or to filter by **Single Ingredients** *(ingredientscommonly used in ra- tions calculation)*, **Feeds***(processed ingredients normally sold in bulk by a supplier)* and **Milled Bush**by switching item in the side menu or by using thebar on the top of the list.

04 INGREDIENTS

Ingredient list label view screen
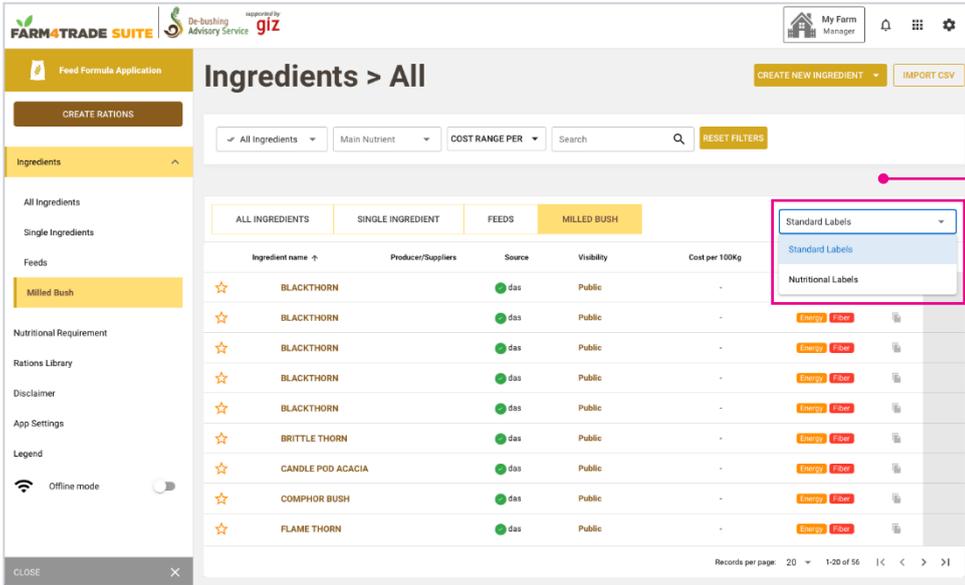
3. SWITCH VIEWS between **Nutritional La- bels** and **Standard Labels** by using the menu on the top right of the list.

Standard Labels will display the general infor- mation of the ingredients(*see Standard Labels definition below for moreinformation*);

Nutritional Labels will show the nutritional valu-es details of the ingre- dients.

STANDARD LABELS DEFINITION:

Ingredient name: name of the ingredient

Producer/ Suppliers: name of the supplier of the ingredient

Source: name of the user who added the ingredient in the list

Visibility: permission status for the ingredients. All ingredients that are verified and added by averified source are "public". Ingredients added by the user are "me" by default.

Cost per 100kg: cost of the ingredient per 100kg. This information is specified during the creationof the Ingredient.

Main nutrient: main nutrient (Energy, Protein, Fiber, Mineral or Additive) of the ingredient (Ingre-dients may have more than one tag).

04 INGREDIENTS

How to filter the ingredients list screen
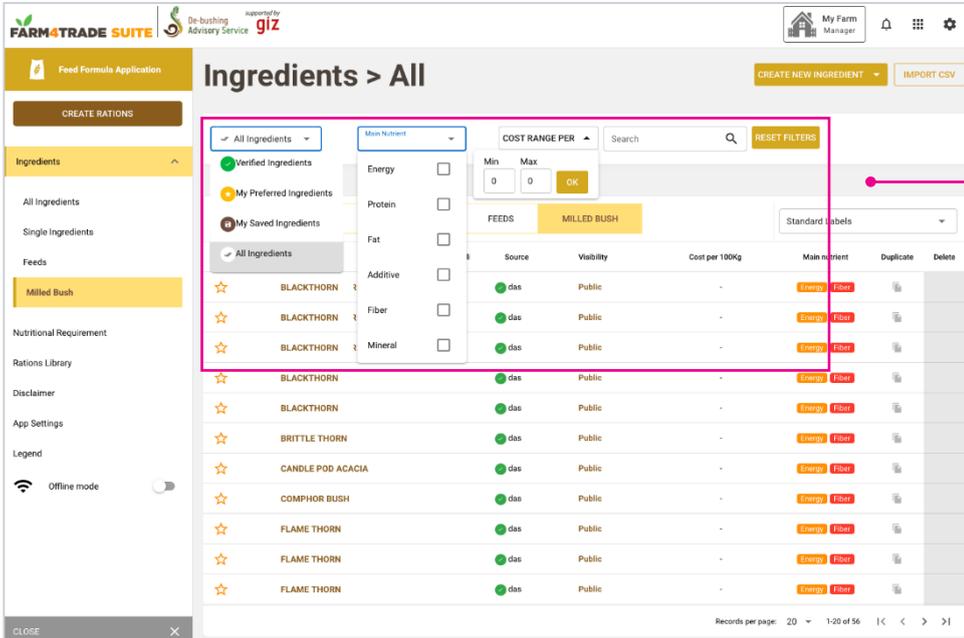
4. IN THE STANDARD LABEL VIEW, YOU CAN FILTER YOUR LIBRARY OF INGREDIENTS BY USING THE SEARCHFILTERS BAR

You can filter your list by:

Verified ingredients: these are standard in- gredients included in theApp, that are validated byAnimal Nutritionists.

My Preferred ingre- dients: ingredients that can be marked as pre- ferred for easier retrievallater.

My saved ingredients: in- gredients that have been created and saved by the user..

You can also filter by choosing the **Main nutri-ent** or by entering a **Costrange** with a Min and a Max value.

You can also search for an ingredient directly bytyping its name in the Search bar.

Click on **"RESET FIL- TERS"**to cancel all filtersand go back to the com-plete list.

⭐ **NOTE:**

When you login, **All Ingredients** is always the default view in all ingredients, requirements andrations lists.

04 INGREDIENTS

Available actions on ingredients list screen
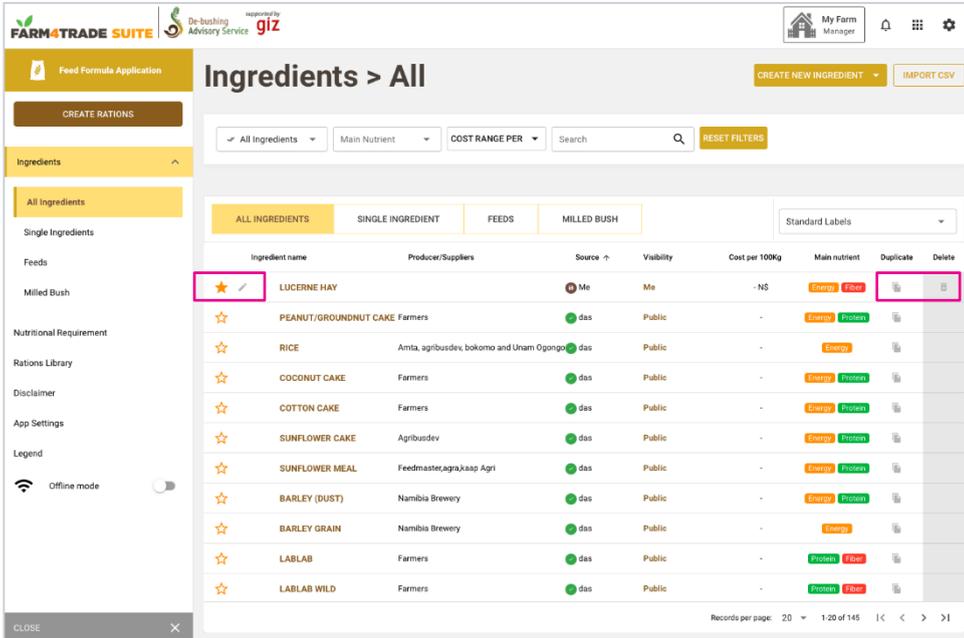
5. THE ICONS IN THE LIST REPRESENT DIFFERENT ACTIONS THAT ARE AVAILABLE:

Click on the **Star** to mark your preferred ingre- dients.

Edit directly each ingre- dient by using the **Pencil icon**. This icon appears only if the user has per- mission to edit.

By clicking on the **Dupli- cate icon**, create a copy of the ingredient, with the benefit of fields being pre-populated from the original ingredient. The copy will appear in the list. You can edit the infor- mation by clicking on the **Pencil icon**.

Use the **Delete function** to delete an ingredient from the list. This function appears only if you have permission rights or if you have created the ingre- dient.

04 INGREDIENTS

Create new ingredient screen
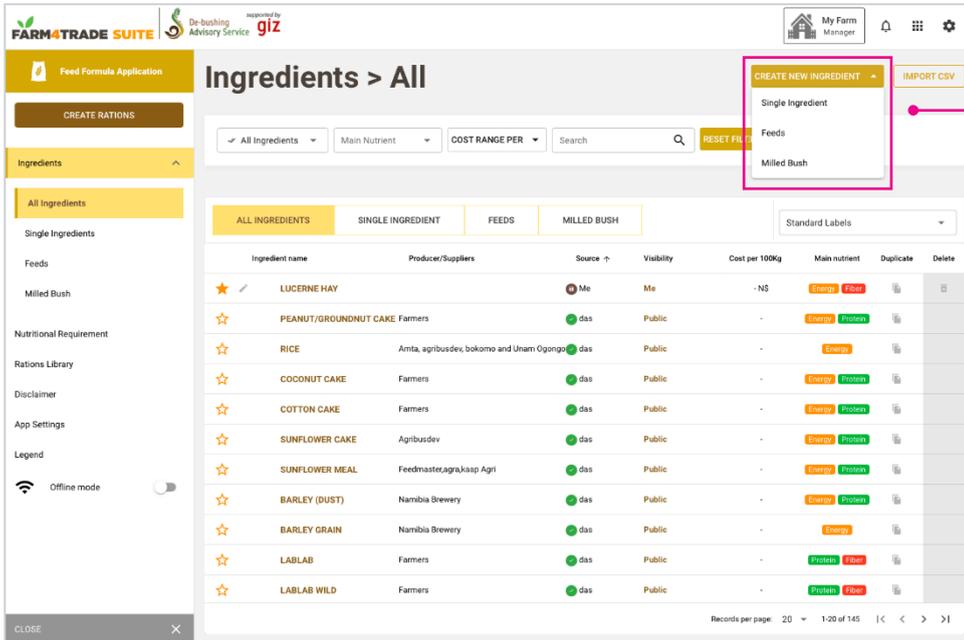
6. YOU CAN CREATEA NEW INGREDIENT

by clicking on **"CREATEA NEW INGREDIENT"** button on the top right ofthe page.

Select in the drop list that appears the type of ingre- dient you want to create: **Single ingredient**, **Feeds** or **Milled Bush**.

Scroll down the page to view all the sections. Click on the yellow section hea-ders to toggle expand andcollapse of info panels.

Complete new ingredient form screen
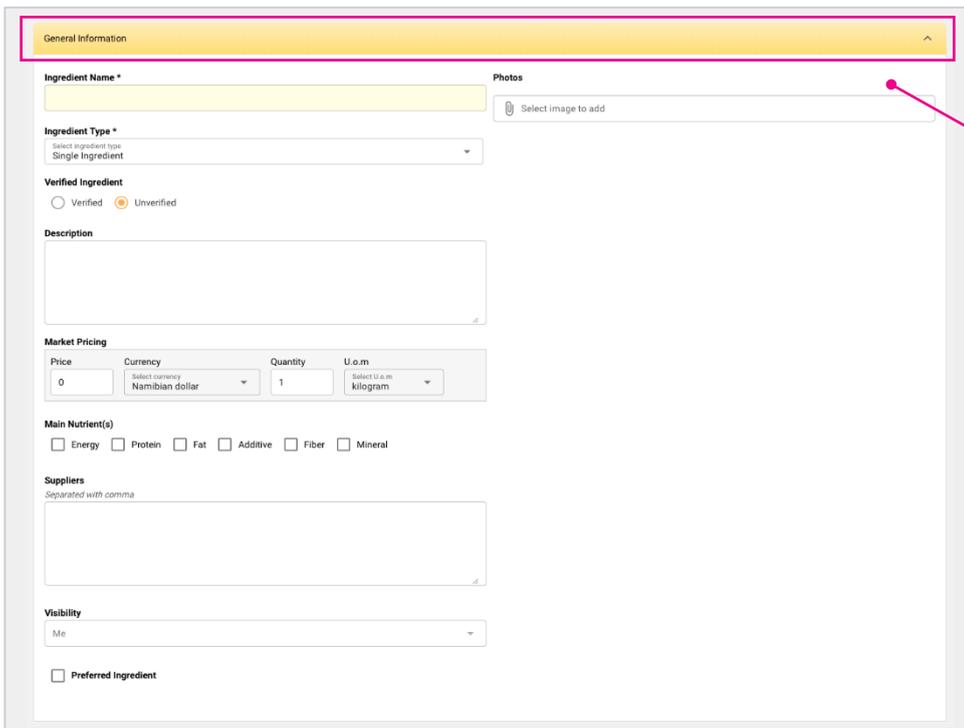
7. START BY ADDING THE GENERAL INFORMATION OF THE INGREDIENT.

Add the **Name**, the **Type** of ingredient and a brief **description**. You can set the **Market Pricing** and also the **Main Nutrients** tag. You can set the in- gredient as a **preferred ingredient** in this section.

All ingredients will be au- tomatically set on **Unveri-fied** and **Visibility** "me".

04 INGREDIENTS

Name translations and technical info screen
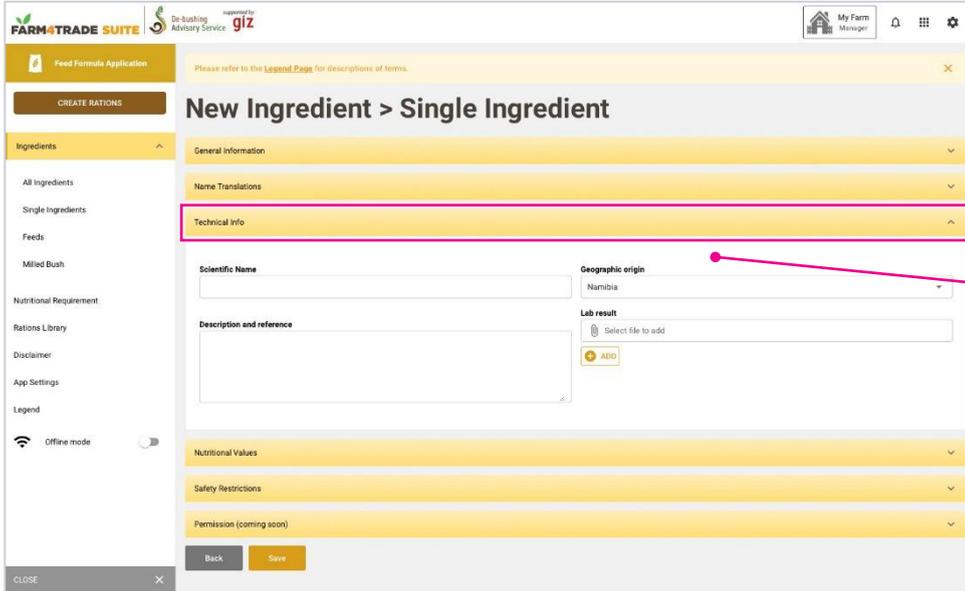
8. TRANSLATE THE NAME OF YOUR INGRE-DIENT IN ANOTHER LANGUAGE,

and add **Technical information** such as **Scientific name**, **Geographic origin** or **Lab results**.

These parts are not compulsory. All required fields are marked with an *asterisk**.

Nutritional values tab screen
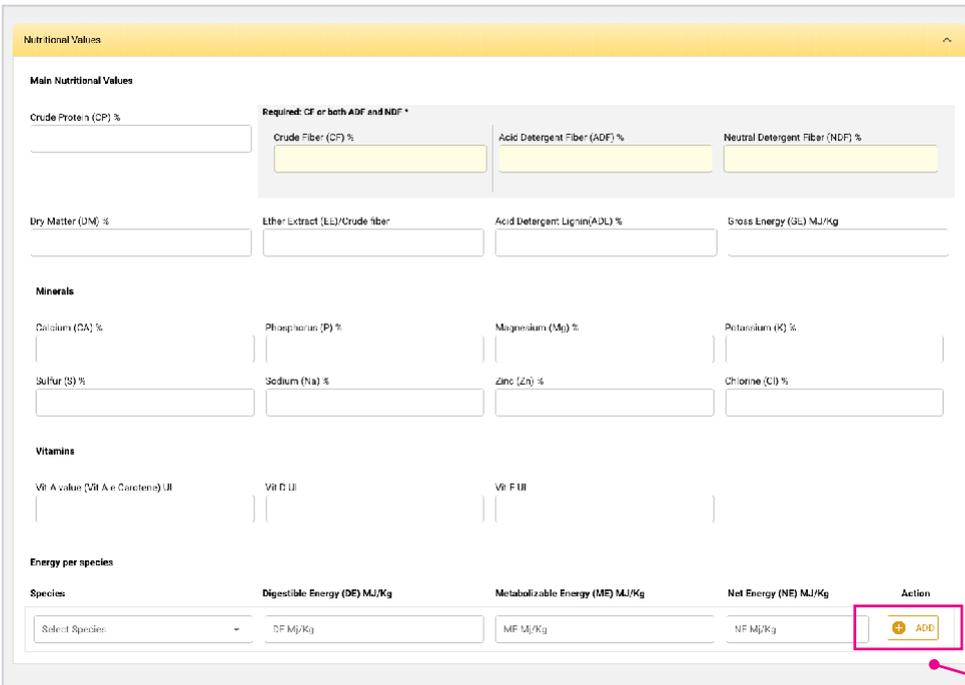
9. IN THE NUTRITIONAL VALUES TAB,

complete the nutritional values information of your ingredient.

Refer to the legend at the beginning of this guide for more information.

Remember: **Crude Fiber** **(CF)** or both **Acid Deter-gent Fiber** **(ADF)** and **Neutral Detergent Fiber** **(NDF)** are required.

In the last part of this section, you can specify the Energy values of the ingredient for a particular species *(at the moment, only Cattle is available)*.

04 INGREDIENTS

Safety restrictions and permission screen
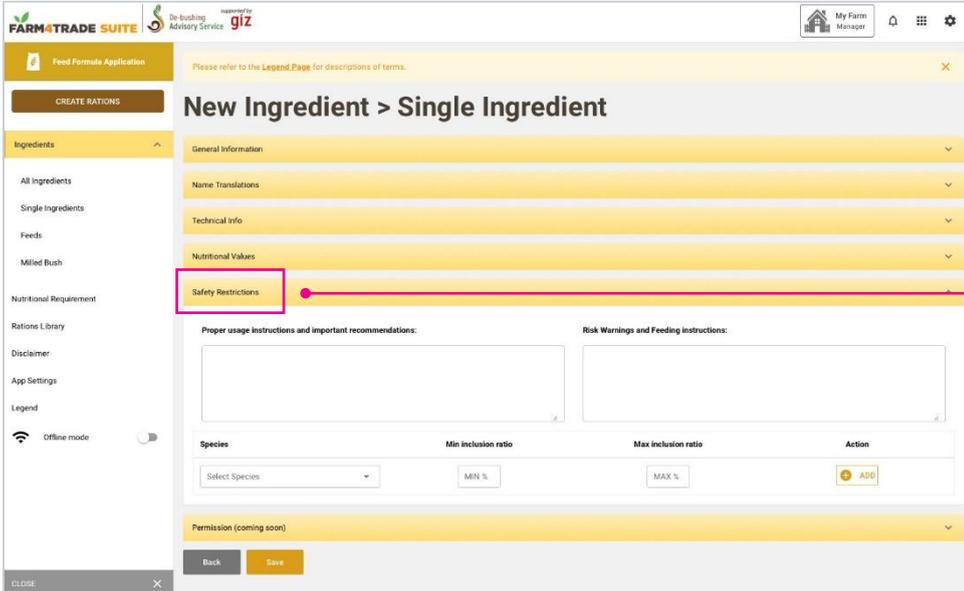
10. COMPLETE YOUR INGREDIENT'S INFORMATION,

by filling up the **Safety Restrictions tab**, where you can add important instructions or recommendations.

The **Permission tab** is not editable at the moment.

Click on **"SAVE"** to add your ingredient.

Milled bush ingredient screen
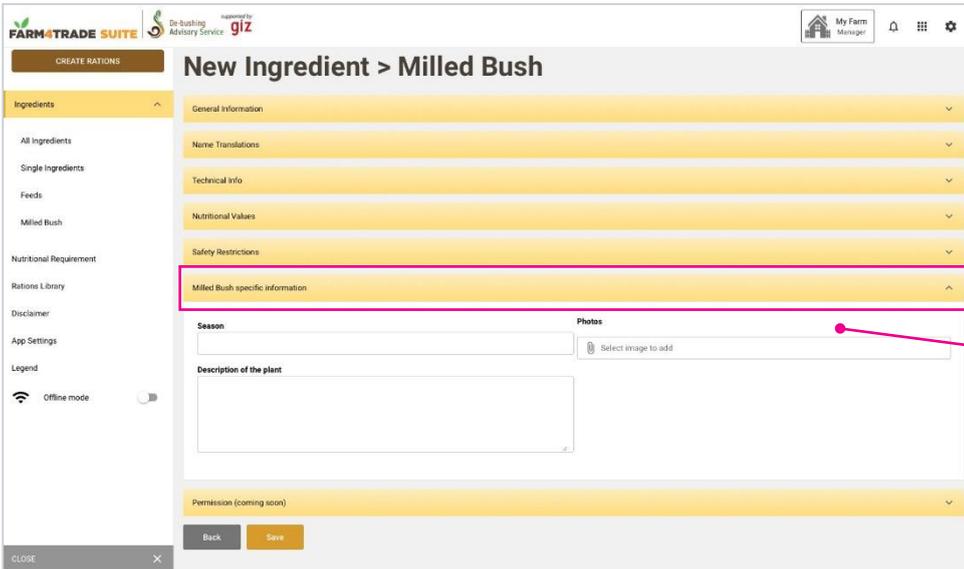
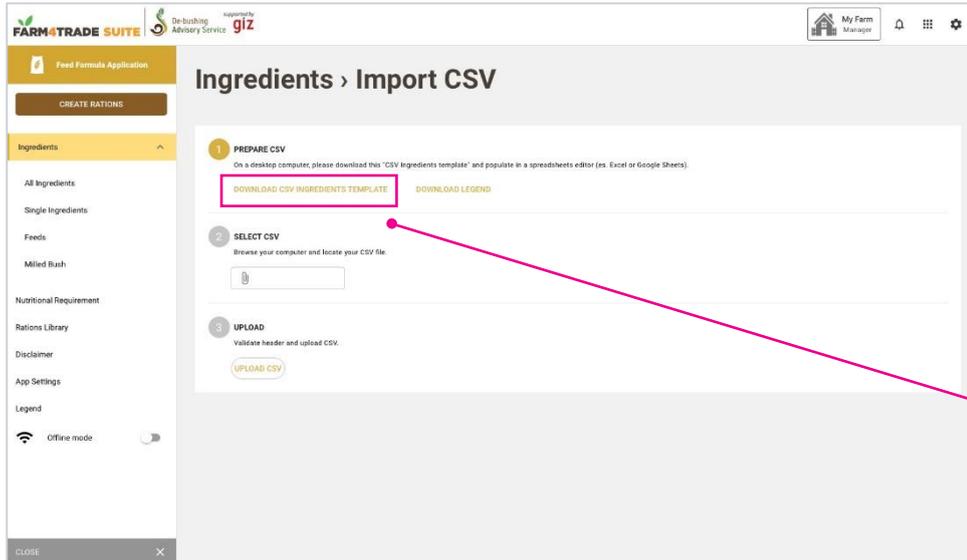**11. IF YOU ARE ADDING A MILLED BUSH INGREDIENT,**

You will find an additional tab called **Milled Bush** specific information, that refers only to milled bush ingredients.

Add information such as the **Season** of the ingredient, the **description** of the plant and upload a picture if you wish.

04 INGREDIENTS

Import ingredients using a CSV file screen

12. YOU CAN UPLOAD A LIST OF INGREDIENTS BYUSING THE IMPORT CSV FUNCTION,

In the All Ingredients list page, click on the importCSV icon you will find in the top right and follow these steps:

1. **Prepare CSV** by downloading the CSV INGREDIENTS TEM-PLATE and entering your data in a spread-sheet software of yourchoice;

2. **Select** the file you wish to import;

3. **Upload** your CSV.

4. **Go back to the list** of ingredients and se- arch for the imported ingredients.

⭐ **TIP:**

During importing, you may be prompted to take action if the system detects duplicate entries.

05 NUTRITIONAL REQUIREMENTS

Nutritional requirements list screen
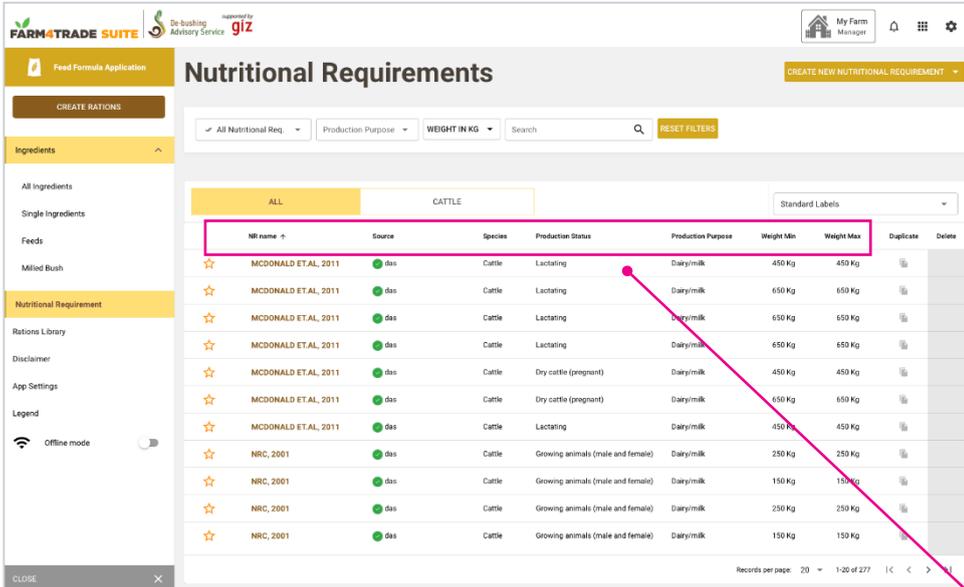
1. YOU CAN ACCESS THE COMPLETE LIST OF NUTRITIONAL REQUIREMENTS,

by clicking on **"NUTRITIONAL REQUIREMENT"** in the left menu.

The nutritional require- ments are formulated by our experts and contain the requirements for a specific species, sex, purpose etc. that will be usedin the formulation of the ration.

The default view of the requirements is set to Standard Labels. This viewwill give you access to the**Name**, **Source**, **Species**, **Production status**, **Pur- pose** and **Weight range** of the requirement. Click on each of the items to sort the list.
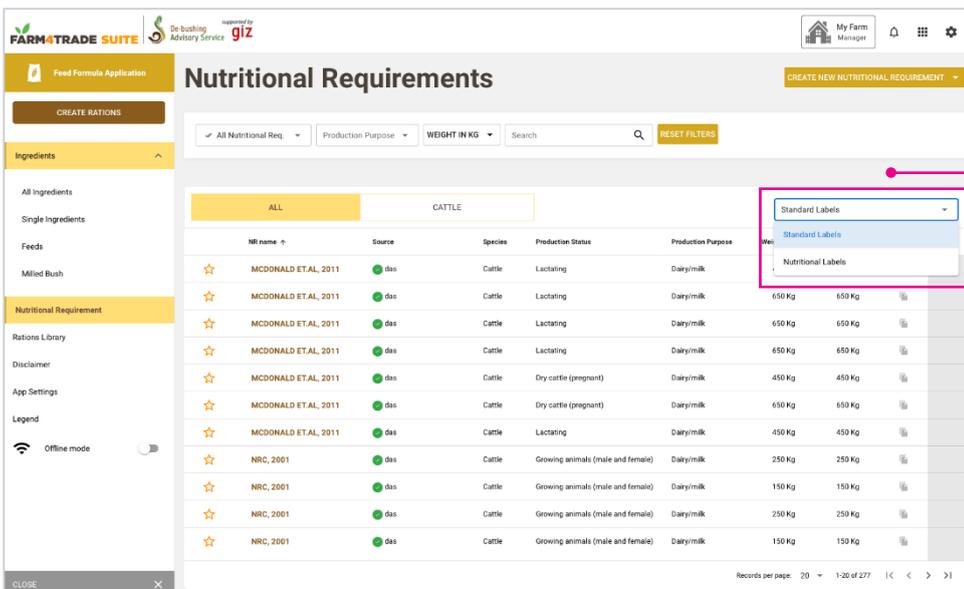
2. SWITCH TO NUTRITIONAL LABELS,

If you wish to have a more detailed view of the nutri-tional elements used for the formulation.

05 NUTRITIONAL REQUIREMENTS

How to filter the nutritional requirements list screen
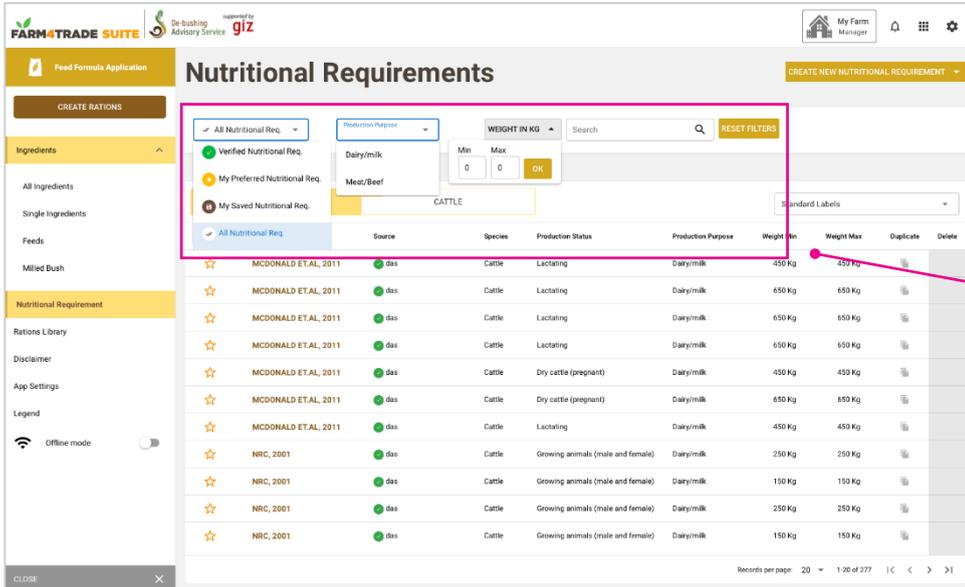
3. FILTER THE LIBRARY OF NUTRITIONAL REQUIREMENTS BY USING THE SEARCH FILTERS BAR.

You can filter your list by:

• **Verified nutritional req:** standard nutritional requirements informati-on included in the App, validated by Animal Nu-tritionists.

• **My preferred nutri-tional req:** nutritional requirements that have already been marked as preferred.

• **My saved nutritional req:** nutritional require-ment information that has been created and saved by the user.

In the Standard Labels view, you can also filter by **Production purpose** and per **Weight in KG** or se- arch directly by typing thename of the ingredient in the **Search bar**.

05 NUTRITIONAL REQUIREMENTS

Add new nutritional requirement screen
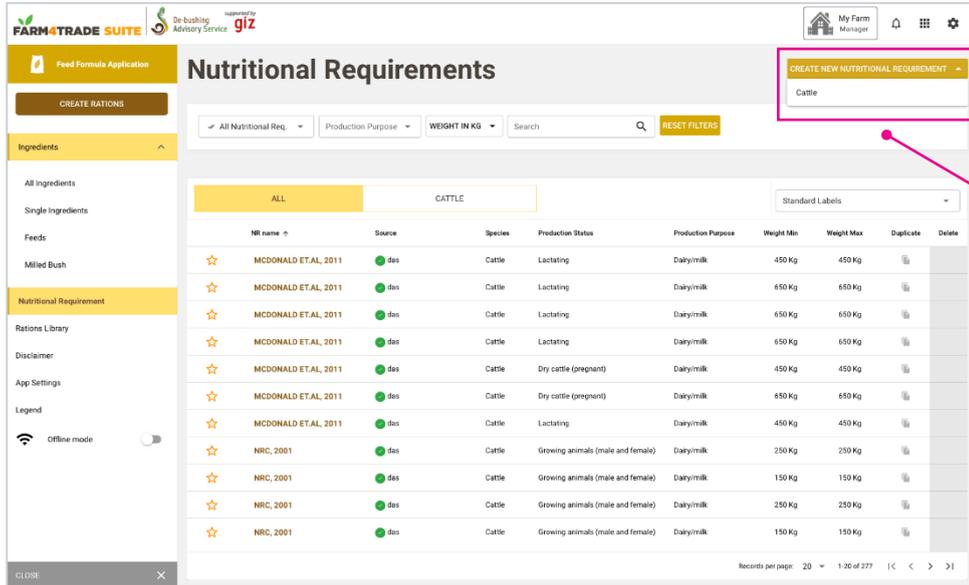
4. YOU CAN ADD YOUR OWN NUTRITIONAL REQUIREMENT.

To do so, click on the button **"CREATE NEW NUTRITIONAL REQUIRE-MENT"** on the top right ofthe page with the Nutriti- onal Requirements list.

Choose the species (*only Cattle is available at the moment*).

Complete animal paramenters screen
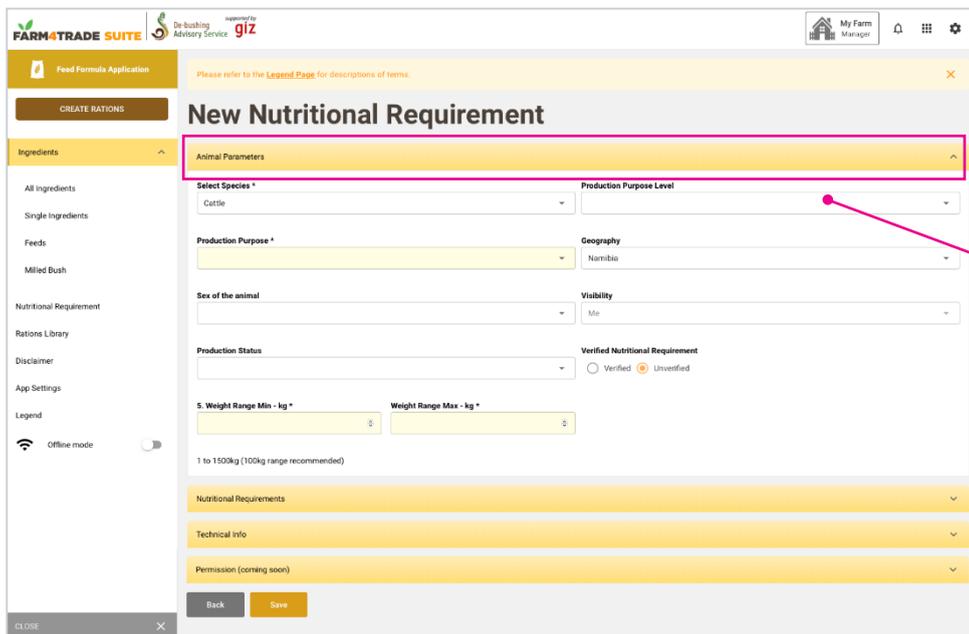
5. COMPLETE THE FIELDS IN EACH TAB.

Required fields are mar-ked with an asterisk.

Insert the **Animal para-meters**, by choosing the species, production pur-pose and weight range.

In the **Nutritional Requi-rements tab**, add the spe-cific information about the Nutritional Target for each nutrient.

In the **Technical Info tab**,you can add a brief de- scription and reference ofthe requirement you are creating.

06 RATIONS LIBRARY

Rations library screen
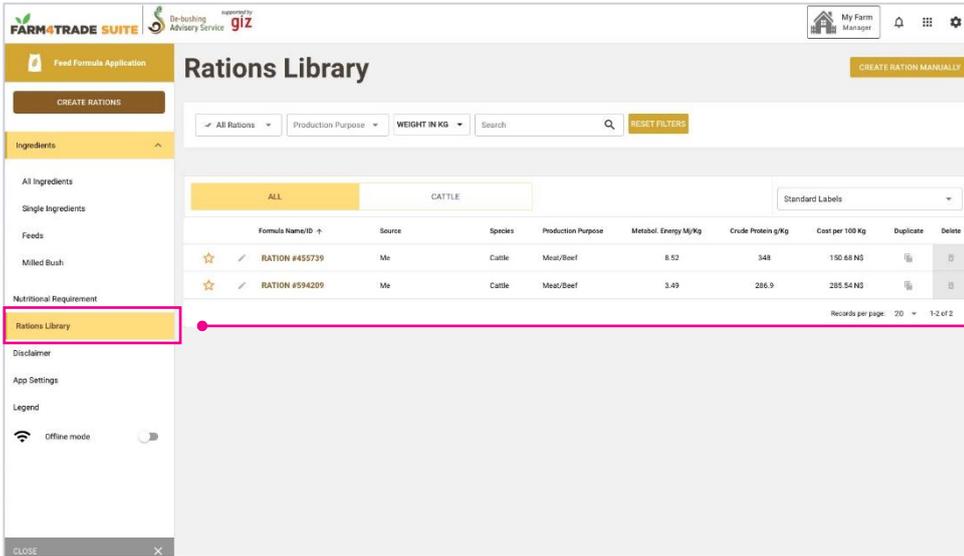
1. IN THE RATIONS LIBRARY,

you will find all the rations created or saved by you.

Click on the name of the ration to see its details and to edit it.

Click on **"SAVE"** if you want to save your chan- ges or on **Delete ration** if you want to delete it.

Rations library label view screen
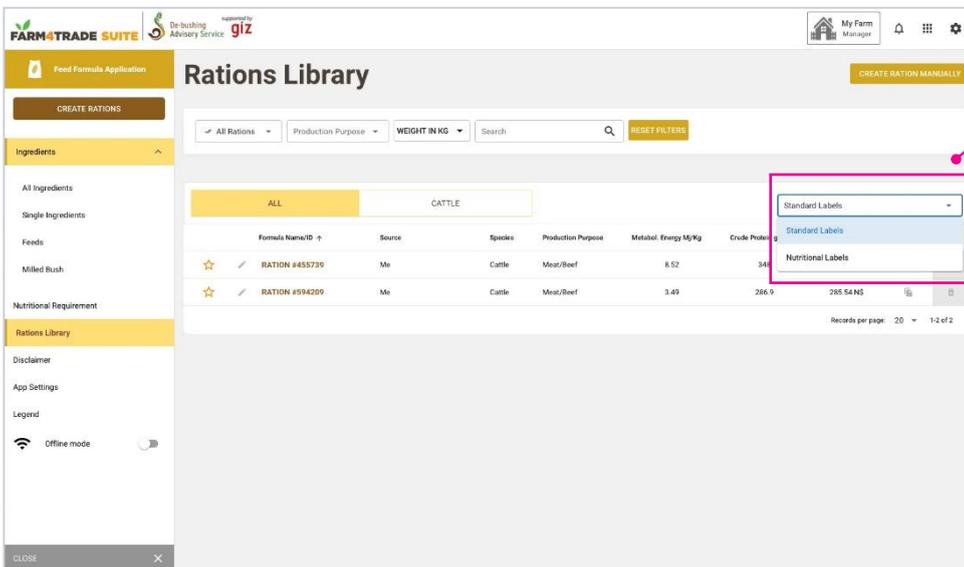
2. SWITCH VIEWS BETWEEN STANDARD LABELS AND NUTRITIONAL LABELS,

by clicking on the drop- down menu on the right on top of the list of ingre-dients.

06 RATIONS LIBRARY

How to filter rations library screen

3. YOU CAN FILTER YOUR LIST BY USING THE FILTERS ON THE TOP OF THE LIST.

You can filter your list by:

- **Verified rations:** crea- ted and included in the App, validated by Animal Nutritionists.

- **Preferred rations:** rations that have been marked as preferred for easier retrieval later.

- **Saved rations:** rations created and saved by theuser.
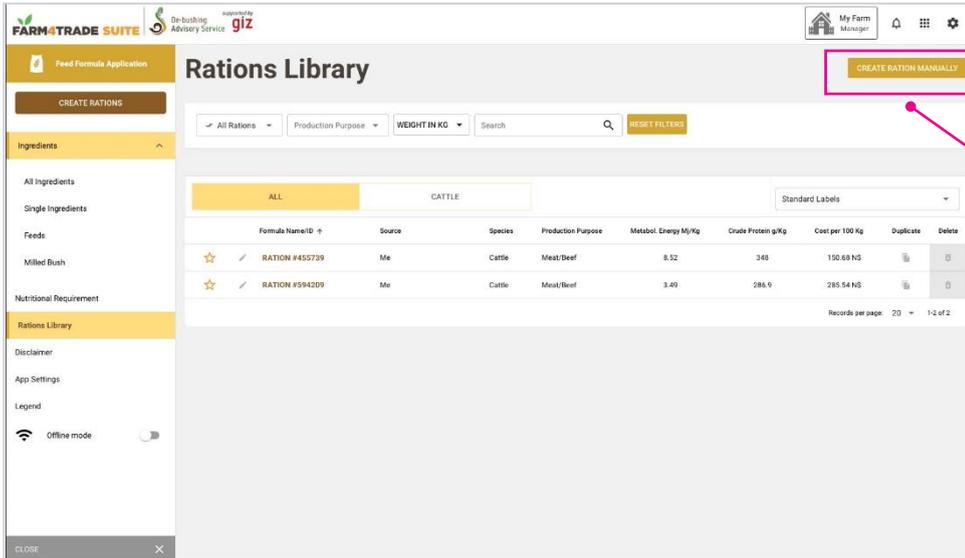
Verified rations is alwaysthe default view.

You can also filter by **Pro-duction purpose** and per **Weight in KG** or search directly by typing the name of the ration in theSearch bar.

Click on **"RESET FILTERS"** to cancel all filters and goback to the complete list.
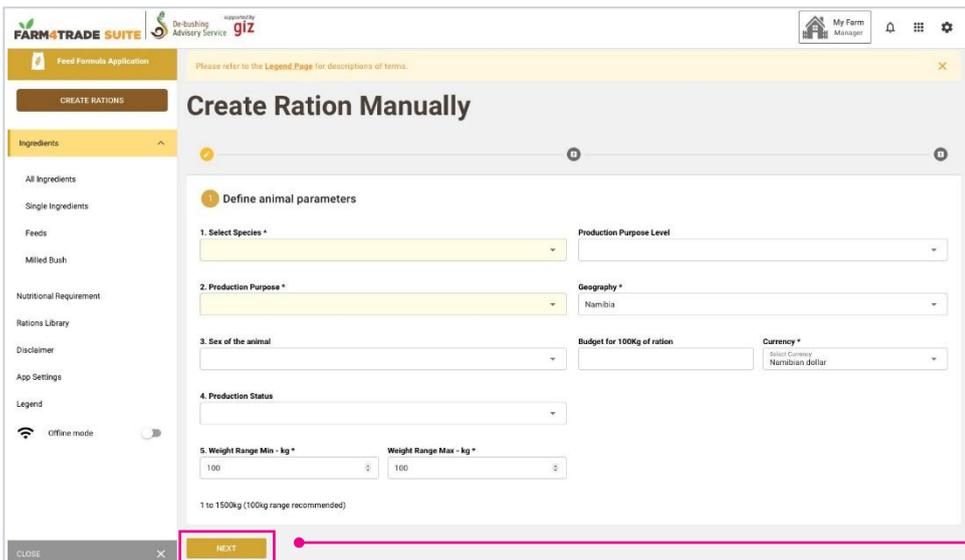
06 RATIONS LIBRARY

How to create a ration manually screen

4. YOU CAN ALSO ADD A RATION MANUALLY TO YOUR LIBRARY.

Go back to the list of ra- tions and click on **"CREA-TE RATION MANUALLY"**.

STEP 1: Define animal parameters screen
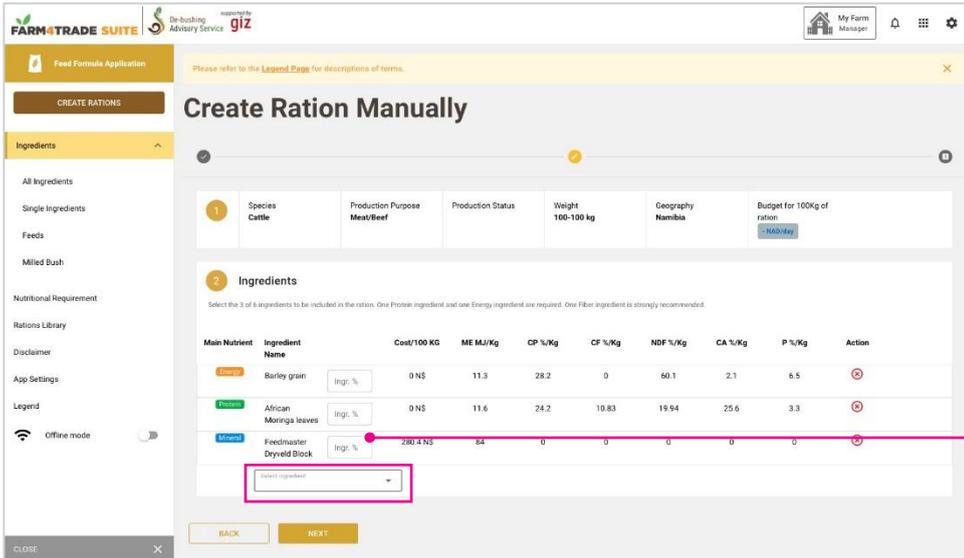

5. DEFINE THE ANIMAL PARAMETERS.

Following the same stepsas illustrated in section 04.1.

Click on **"NEXT"** to moveto the following step.

06 RATIONS LIBRARY

STEP 2: Choose the ingredients screen

6. CHOOSE THE INGRE-DIENTS

from the **"SELECT INGRE-DIENT"** menu.

Unlike the Create Ration section, you will choose the ratio of ingredients that will be part of the ration.
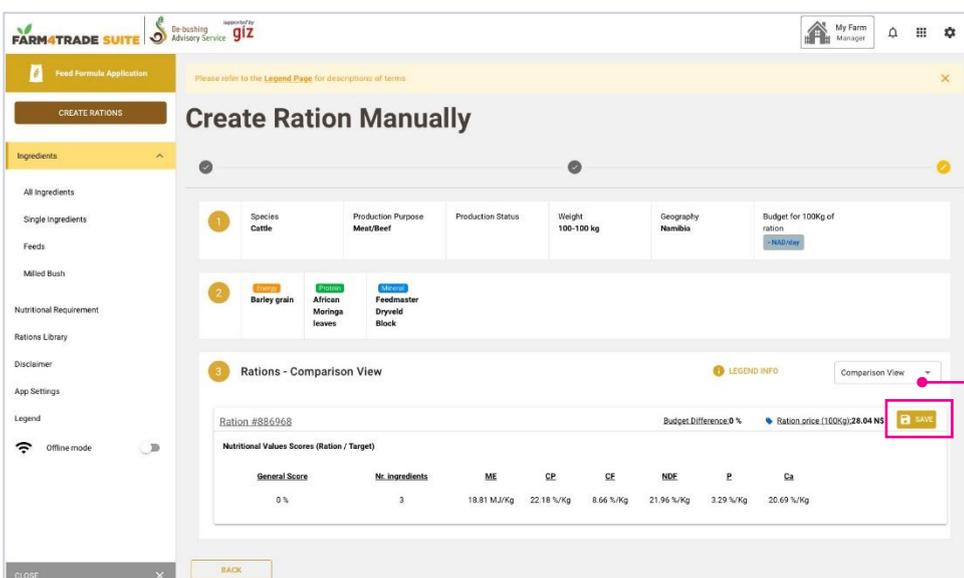
Choose them in the Ingredient Name list and assign them a percentage in the ration in the Ingr.% case that will appear.

Select at least 3 ingre- dients to be included in the ration. One Protein in-gredient and one Energy ingredient are required.
One Fiber ingredient is strongly recommended.

Click on **"NEXT".**

STEP 3: Compare the proposed rations screen
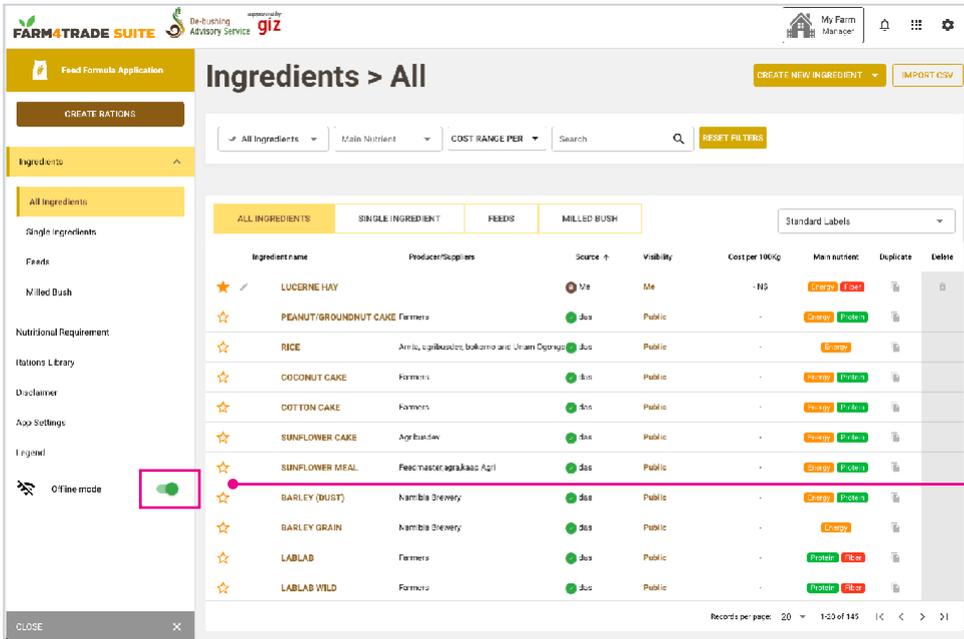

7. COMPARE THE PRO-POSED RATIONS

If you are satisfied with the result, click on **"SAVE"**.

If not, go back and chan- ge the ingredients or the details of the ration.

07 OFFLINE MODE

Activate the offline mode screen

1. SWITCH TO THE OFFLINE MODE.

By clicking on the green toggle switch in the app menu.

When you use the app in offline mode, you canaccess all the features except for the calculationof the rations.

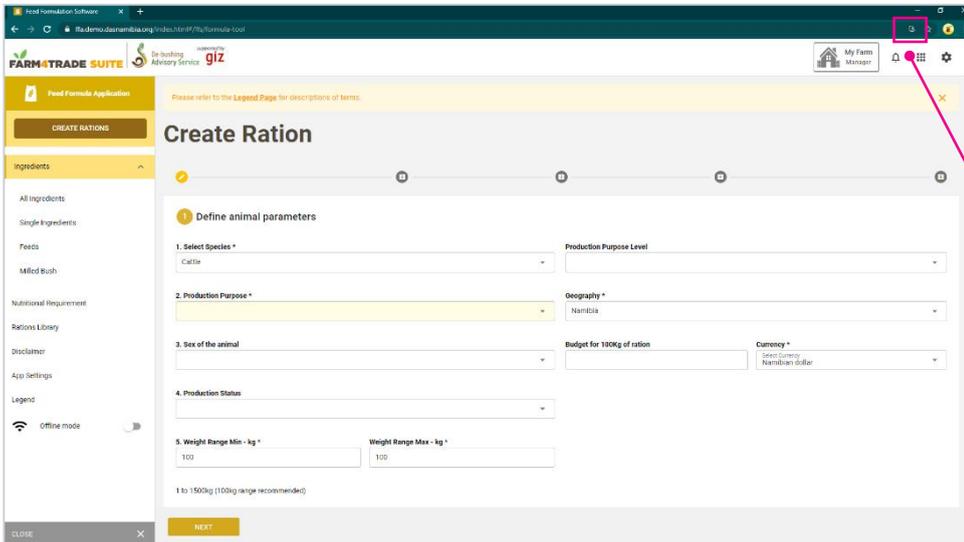Any information or data that you will add (nutritio-nal requirements, manualrations, ingredients) will be automatically updatedwhen you move back to online mode.

You can also click on the three dots on the top right of the browser andchoose the option Add to Home screen on the menu.
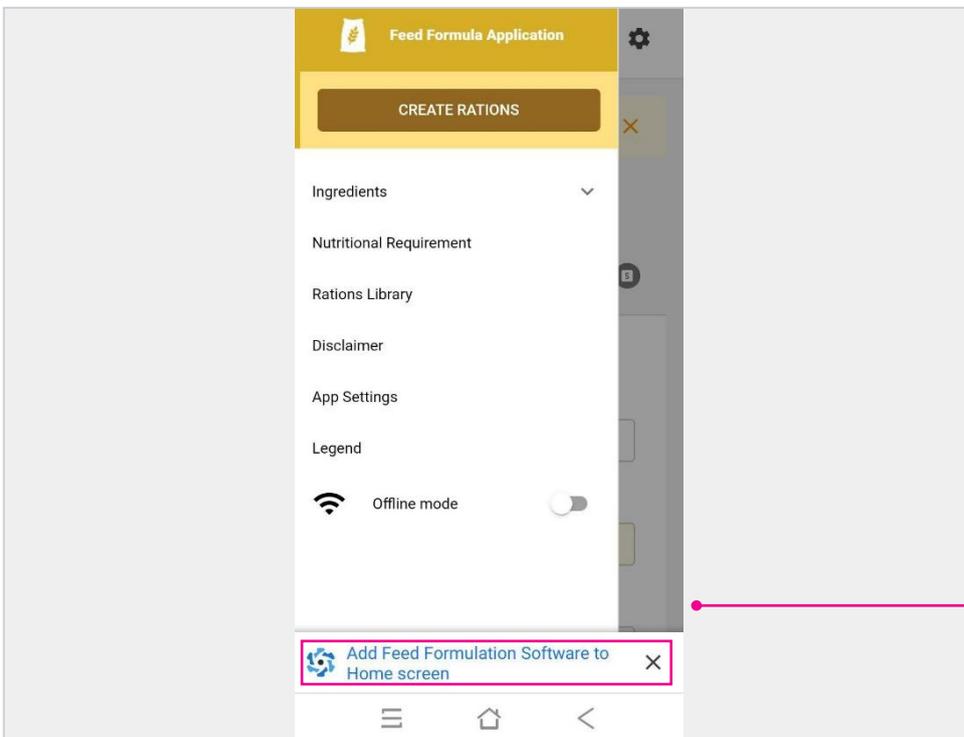
08 PC AND MOBILE APP

Activate the offline mode screen

1. YOU CAN INSTALL THE APP DIRECTLY ON YOUR LAPTOP.

On PC: Use Chrome to connect to the **Feed Formula Application**. On the navigation bar of the browser, click on the + symbol. A shortcut to the app will be automatically added to your desktop.

Activate the offline mode screen

2. YOU CAN ALSO IN-STALL THE APP DIREC-TLY ON YOUR ANDROID PHONE.

On Android mobile: at your first connection, a pop up will appear that suggests to add the app to your screen.

09 DISCLAIMER

Warning: Users who created their own formula do so at their own risk.

This app is not intended to replace professional animal nutritionists. It is always advisableto consult a nutritionist for a balanced diet.

Existing verified rations by Farm4Trade, have been acquired by reliable sources and pro-ven safe if applied accurately.

10 SUPPORT

If you still can't find your answer, please email us at: *support@farm4trade.com* or fill out thecontact form at this link: *https://www.farm4trade.com/contact-us*.

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