

# USER MANUAL (Draft)

KALRO POULTRY FEED FORMULATOR



Republic of Kenya



THE WORLD BANK



Kenya Climate Smart  
Agriculture Project

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# 1.0 Introduction

KAPOFF (KALRO Poultry Feed Formulator) is mobile application developed by Kenya Agricultural and Livestock Research Organization (KALRO) and is intended for use by poultry farmers to help them formulate poultry feeds at least cost using locally available ingredients. The app is developed on android mobile platform and comes pre-populated with an Ingredients Library that is based on the average analytical values for each feedstuff

KAPOFF is designed to generate diet for various categories of chicken at different age levels while considering the nutritional levels and limits for each bird

## 1.1 Getting started

## 1.2 Requirements

To install KAPOFF mobile app, you require a smart phone with Android operating system

The minimum Android version should be 4.2

Phone requires space of about 10mb

## 1.3 How to download and install the app

To download KAPOFF you will need to be connected to the internet

- Open Play store on your mobile phone by clicking on Play store icon
- Search for KAPOFF and click on "INSTALL" to install the application
- KAPOFF will be installed on your phone and has an icon shown in Figure 1



Figure 1: KAPOFF icon

## 1.4 Registering and logging in

- Launch the application by clicking on the KAPOFF icon
- The login window will come into view as shown Figure 2

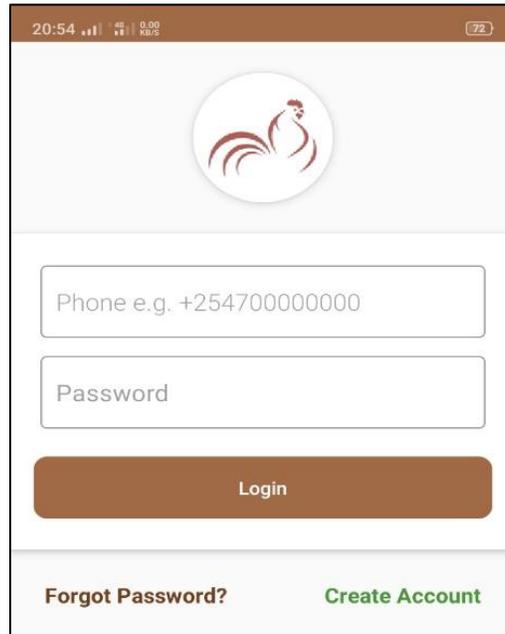


Figure 2: login/Registration interface

- As a new user, click on “Create Account” to register

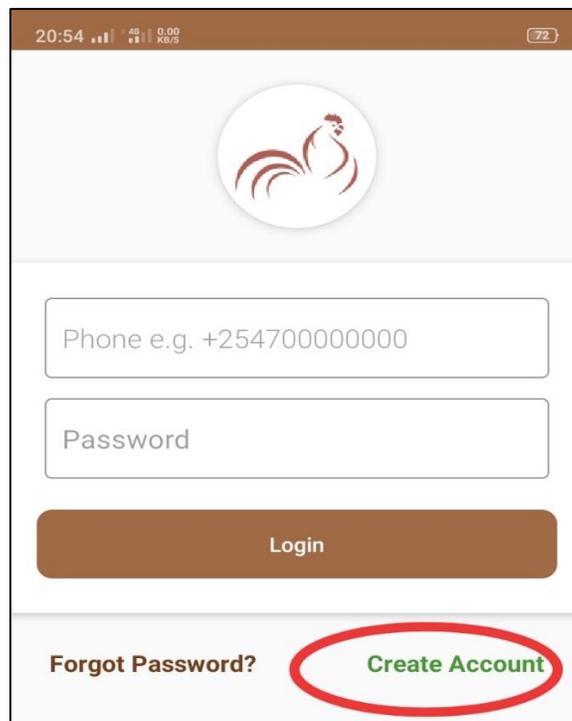
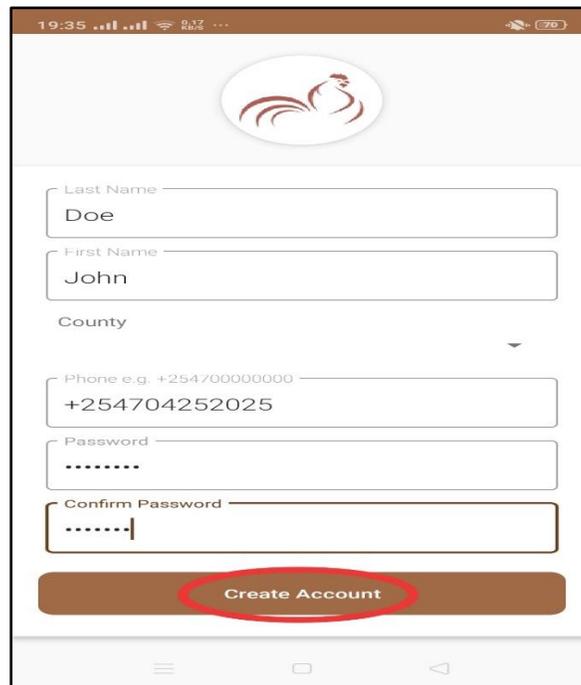


Figure 3: Create Account button

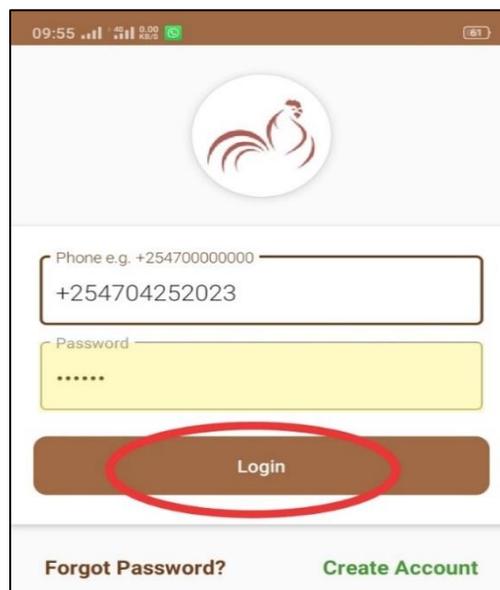
- Fill in all the required details, that is; Last and first name, County, Sub County, Ward, phone number and password then click on “Create Account” as shown in Figure 4

*Note: Start with the country code when keying in the phone number e.g +254 for Kenya or +256 for Uganda, e.t.c*

A screenshot of a mobile application registration form. At the top, there is a logo of a rooster inside a circle. Below the logo are several input fields: 'Last Name' with the value 'Doe', 'First Name' with the value 'John', a 'County' dropdown menu, 'Phone e.g. +254700000000' with the value '+254704252025', 'Password' with six dots, and 'Confirm Password' with six dots. At the bottom of the form is a large brown button labeled 'Create Account', which is circled in red. The status bar at the top shows the time 19:35, signal strength, Wi-Fi, and battery level at 70%.

**Figure 4: Final Create Account button**

- Enter the phone number and password you provided during registration and click “login” button to login to the application as shown in Figure 5

A screenshot of a mobile application login form. At the top, there is a logo of a rooster inside a circle. Below the logo are two input fields: 'Phone e.g. +254700000000' with the value '+254704252023' and 'Password' with six dots. At the bottom of the form is a large brown button labeled 'Login', which is circled in red. Below the button are two links: 'Forgot Password?' and 'Create Account'. The status bar at the top shows the time 09:55, signal strength, Wi-Fi, and battery level at 61%.

**Figure 5: Login button**

In case you forget your password, click “Forget password” (Figure 6) enter the phone number and your new password then click on “Reset password” (Figure 7)

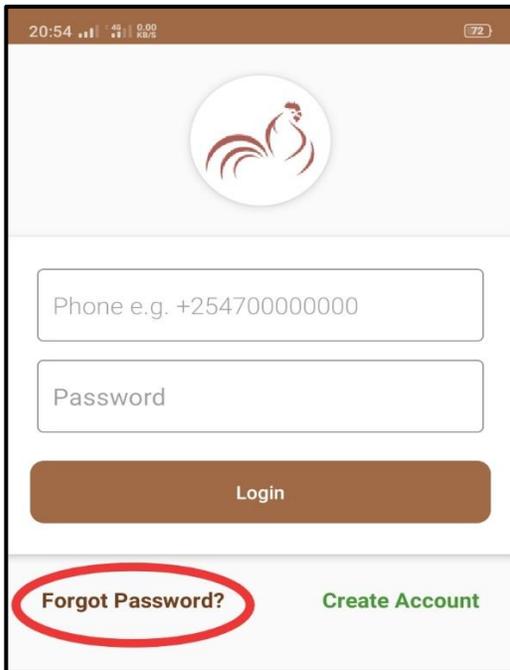


Figure 6: Forget password button

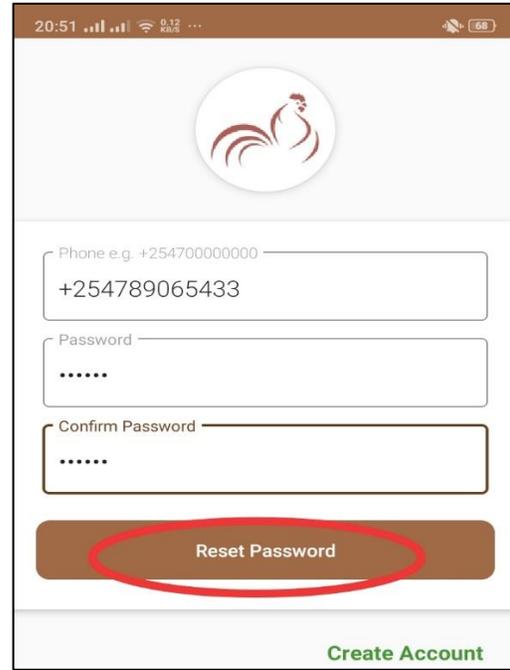


Figure 7: Reset Password button

## 2.0 Sections of KAPOFF

After logging in, a screen interface will come into view as shown Figure 8

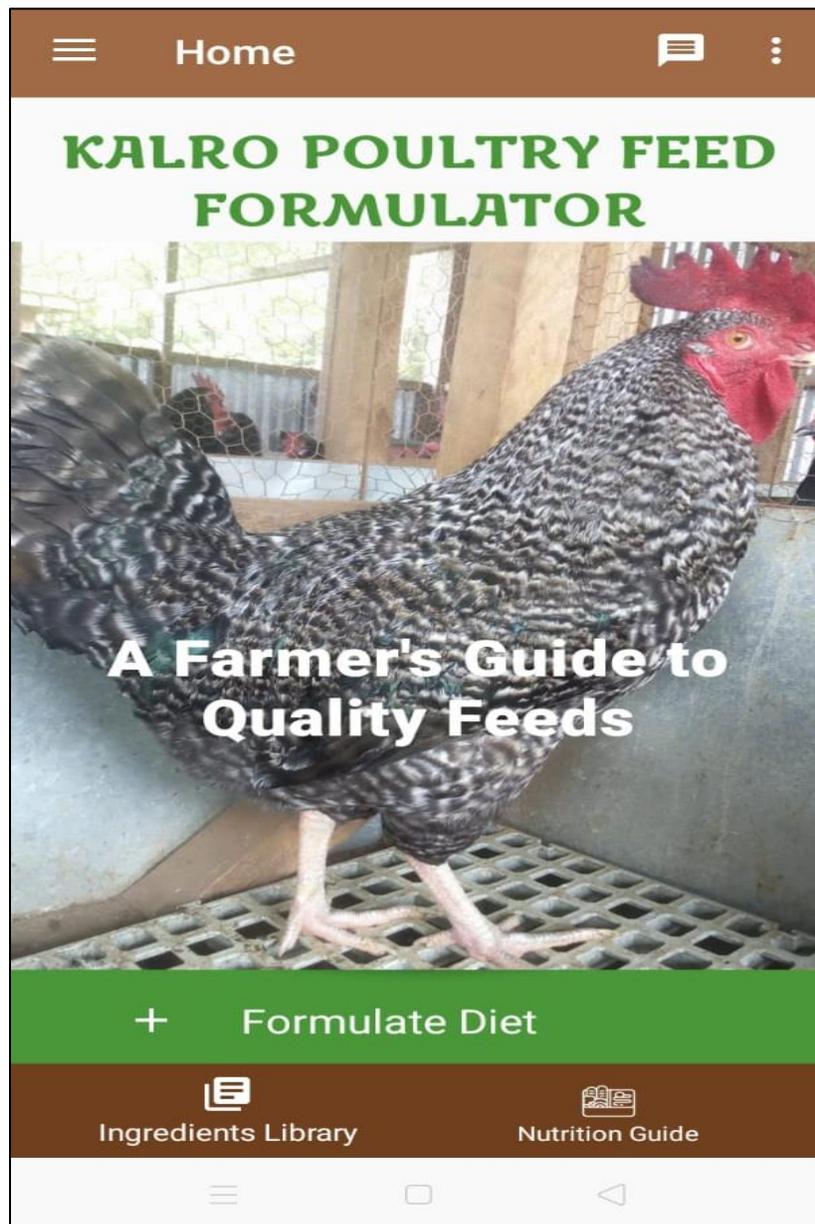


Figure 8: KAPOFF Home page screen

### 2.1 Ingredients Library

Shows all the ingredients in the database with each ingredient containing its nutritional composition information including names and pictures.

Use the downward arrow at the right hand side of the ingredient to expand and view the other nutritional composition of the ingredient as shown in figure 9

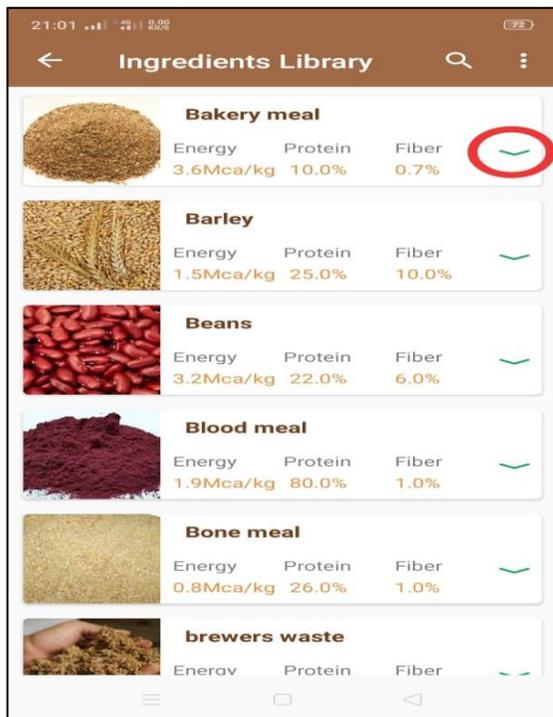


Figure 9: Ingredients library

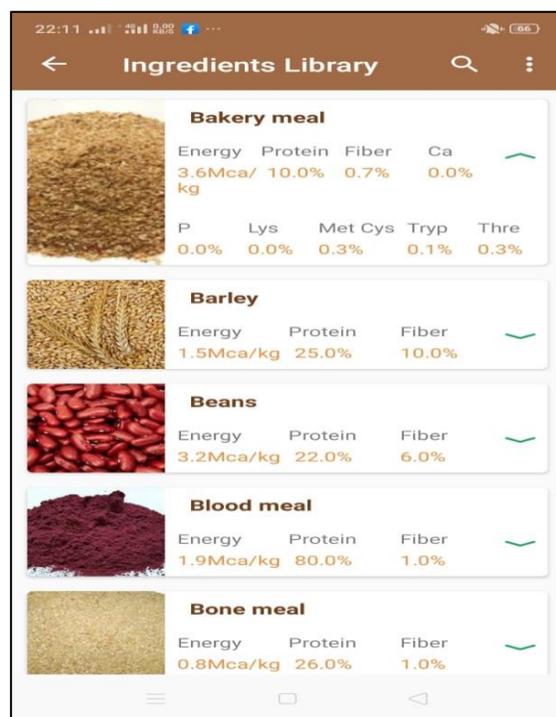


Figure 10: Expanded ingrediednts library

## 2.2 Nutritional Guide

Shows information about the nutritional contents required for each of the chicken categories. For example, the nutritional content for layer chicks as in the guide is; 1.00% Ca, 0.53% P, 19.00% Protein, 0.80% Lys, 2.70Mca/kg Energy, 3.00% Fiber, 0.30% Met Cys, and 0.00% Tryp.

Layer Chicks (0-8wks)			
Ca	P	Protein	Lys
1.00%	0.53%	19.00%	0.80%
Energy	Fiber	Met Cys	Tryp
2.70Mca/kg	3.00%	0.30%	0.00%
Thre			
0.00%			

Layer Growers (9-18wks)			
Ca	P	Protein	Lys
1.30%	0.43%	15.00%	0.40%
Energy	Fiber	Met Cys	Tryp
2.60Mca/kg	4.00%	0.26%	0.00%
Thre			
0.00%			

Layers (19-78wks)			
Ca	P	Protein	Lys
3.30%	0.43%	15.00%	0.60%

Figure 11: Layer birds' nutritional guide

## 2.3 Navigation panel

This is a sliding panel on the left of the application that contains a menu of additional features within the application. The panel appears when the user touches the three horizontal lines (Hamburger) on the app bar or when the user swipes from the left edge of the screen.

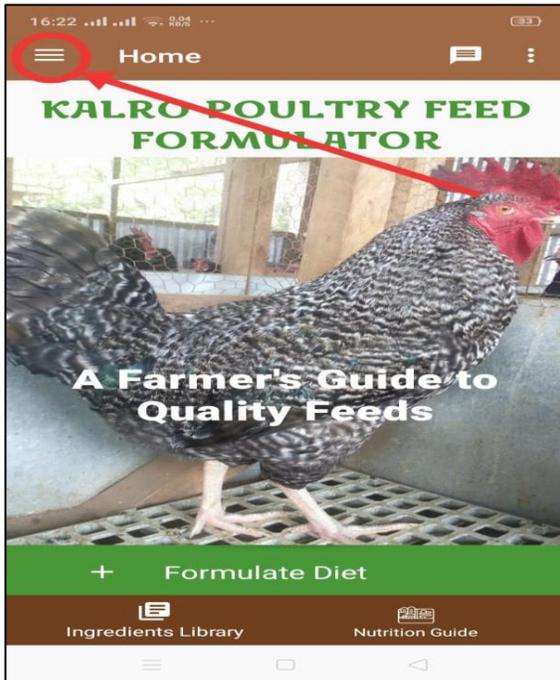


Figure 12: Hamburger icon

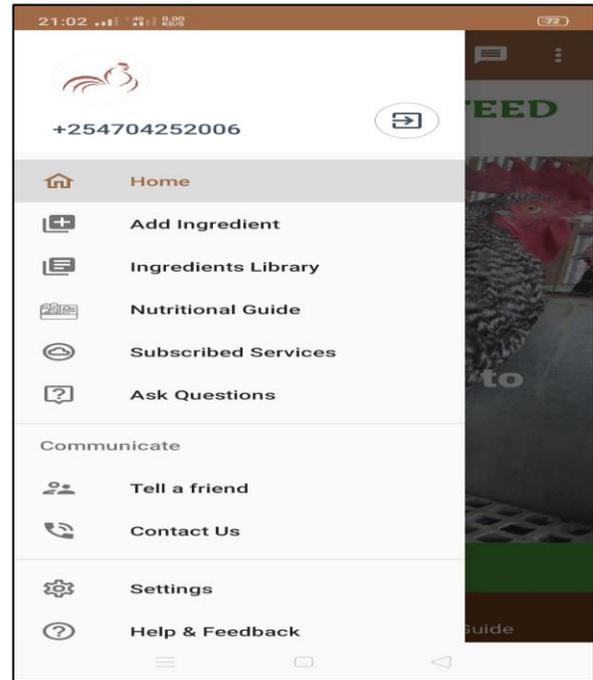


Figure 13: Navigation drawer menu items

Additional features within the navigation drawer are:

- **Subscribed services:** Here the user can subscribe to **poultry care** services. Poultry care section will help the farmer know how to diagnose chicken diseases and how to treat them, monitor progress and notify when to vaccinate the chickens, as well as get a guide on proper housing, hygiene, and management of their flock.
- **Requests and asking questions:** The user can make a request, ask a question and post their comments.
- **Tell a friend:** This section allows the user to share and network about KAPOFF to others through a link
- **Contact Us:** This section provides contact details in case one wants to inquire more about the application, feed formulation and poultry care
- **Help and feedback:** A user can give a feedback about the app and its usability in this section as well as get help on maneuvering within the application

### 3.0 Feed formulation (Formulate Diet)

This is the key section of the application where the user is able to formulate a diet for the different categories of their chicken

#### 3.1 How to carry out the feed formulation

1. Click on the “Formulate Diet” button as shown in Figure 14

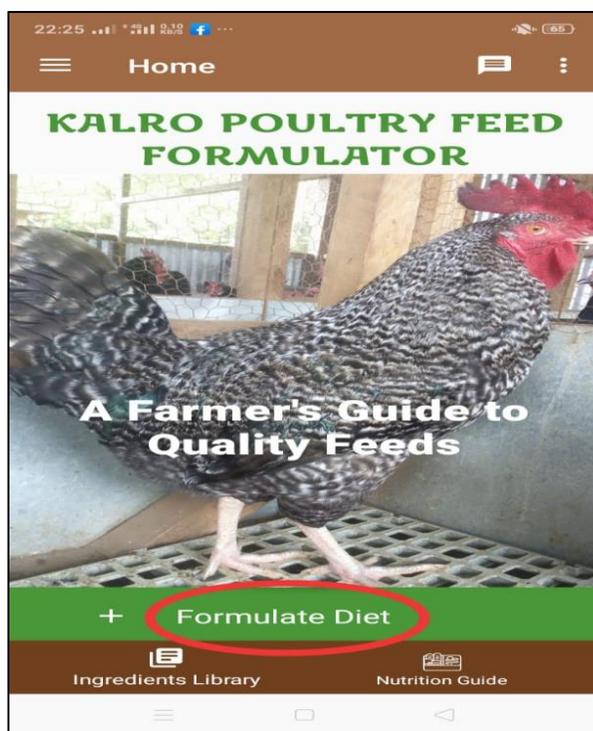


Figure 14: Formulate diet button

2. Select the chicken category that you want to formulate feeds for

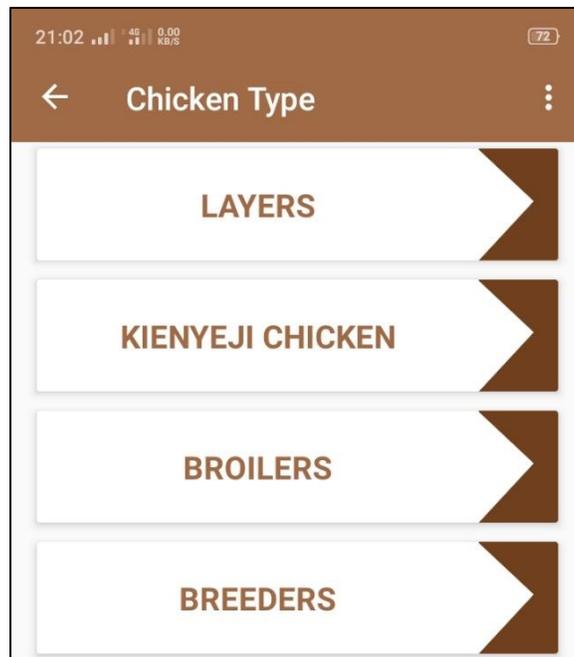


Figure 15: Chicken categories

3. Choose the specific growth stage of the selected chicken category

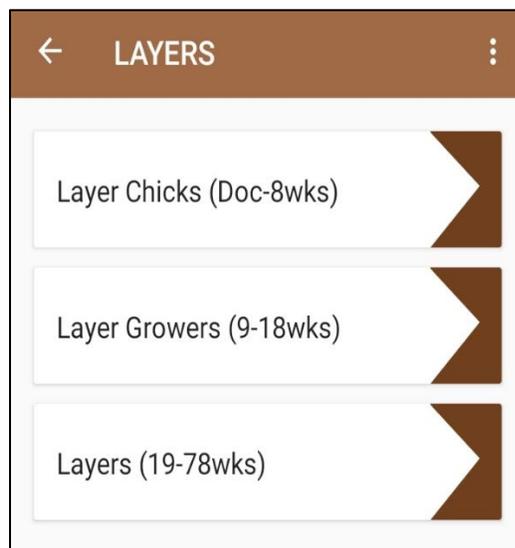


Figure 16: Layer birds' growth stages

4. Add your locally available ingredients

- Choose the ingredient by clicking the check box  on the right side of the ingredient.
- You can locate the ingredients by searching (click on  then type the name of the ingredient) or scroll down until you find the ingredient
- Key in the cost of the ingredient based on the market price in your locality.
- Select a premix which is a mandatory ingredient in feed formulation.

(Consider the three main nutrients in a diet; **Protein, fiber and energy**, while choosing the ingredients.)

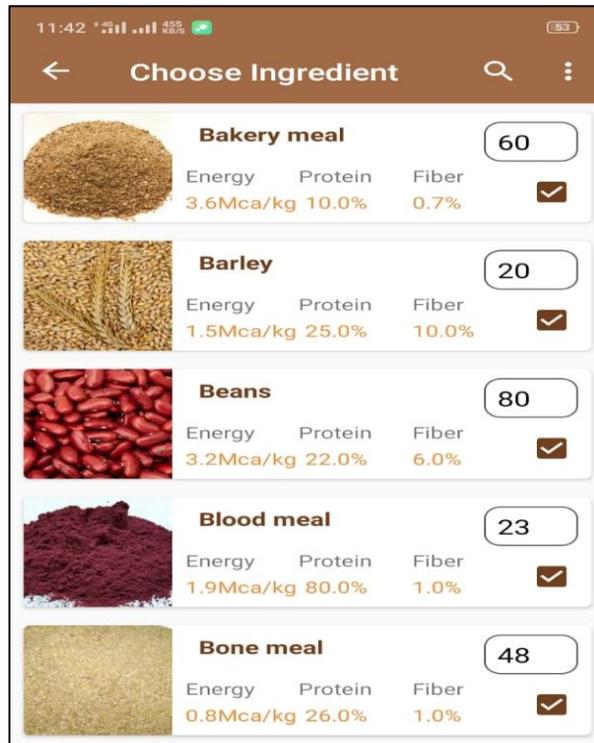


Figure 17: List of selected ingredients

5. Save your selected ingredients by clicking on "Save Diet" as shown in Figure 19

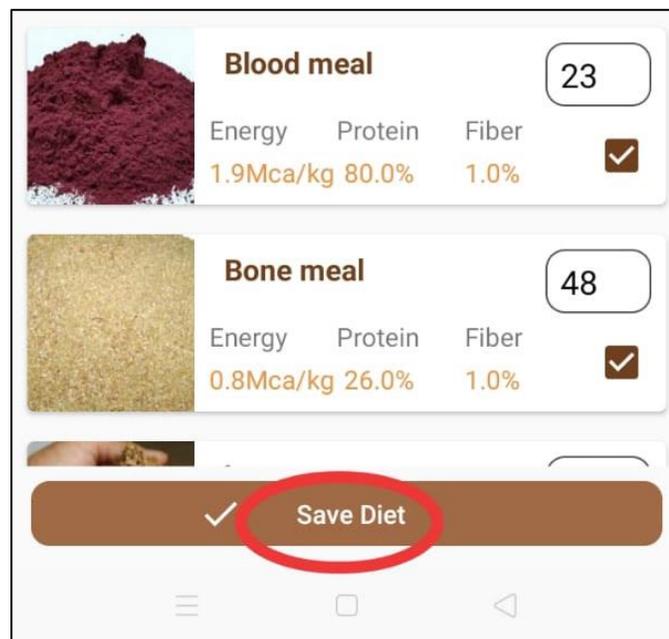


Figure 19: Save Diet button

6. If any of the three main composition (Protein, fiber and energy) in your list does not meet the threshold, a pop up message will appear indicating the nutrient to adjust

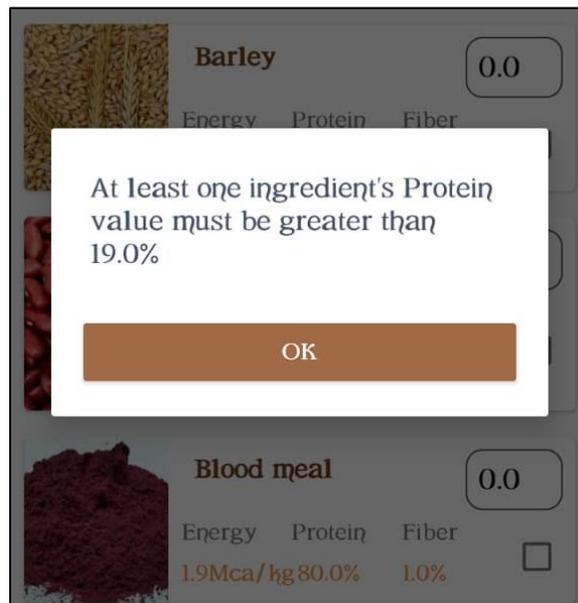


Figure 20: Message box

7. Formulate your diet by clicking on the "Formulate" button as shown in Figure 21  
*Note: If you need to add or remove ingredients click on the Add ingredient button, and to begin a new ingredients list, click on the Reset button*

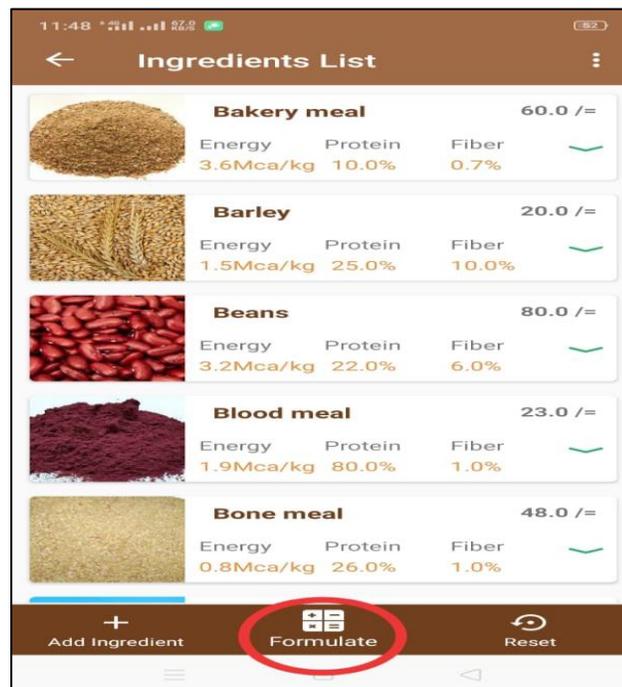
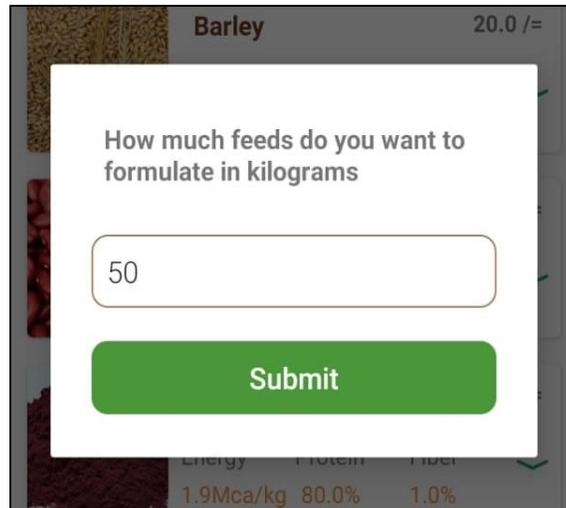


Figure 21: Formulate button

8. Connect your phone to the internet
9. Decide the amount of feed you want to formulate in Kgs then click "Submit".



Barley 20.0 /=

How much feeds do you want to formulate in kilograms

Figure 22: Quantity of feed to formulate

10. After submitting, the system generates a diet formula which could either be **Recommended** or **Not recommended**.

### 3.2 Recommended diet

(View the detailed diet comparison by clicking on “Click for more details”)

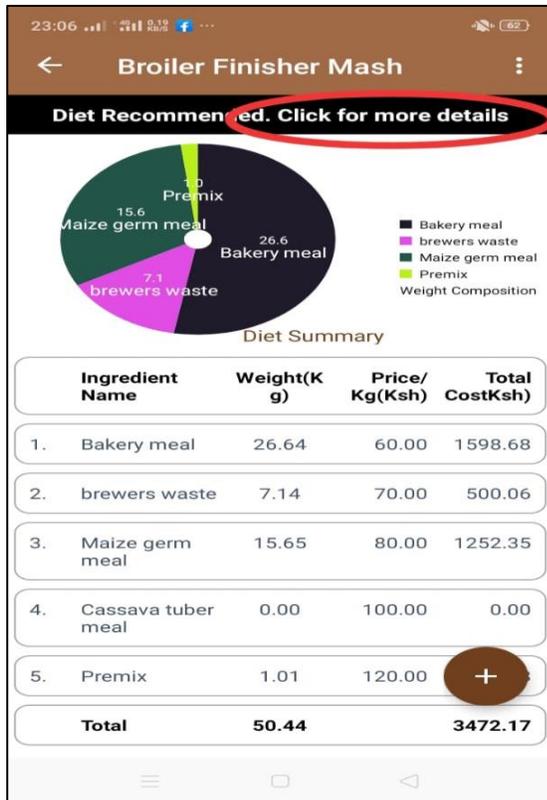


Figure 23: A recommended diet

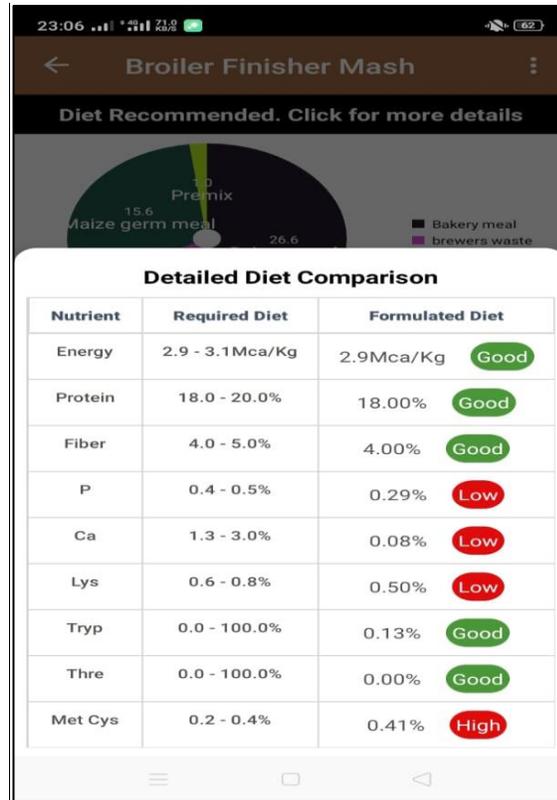


Figure 24: Detailed diet comparison

The above diet formula is recommended as the three main nutrients, that is; Energy, Protein and Fiber are within the required levels. This is indicated with the word Good and colored green

As indicated in Figure 23: the farmer will be required to obtain the ingredients on the list with their respective weights in Kgs. These ingredients will form the basis of the formulation for that particular diet

### 3.3 Not recommended diet



Figure 25: Non recommended diet

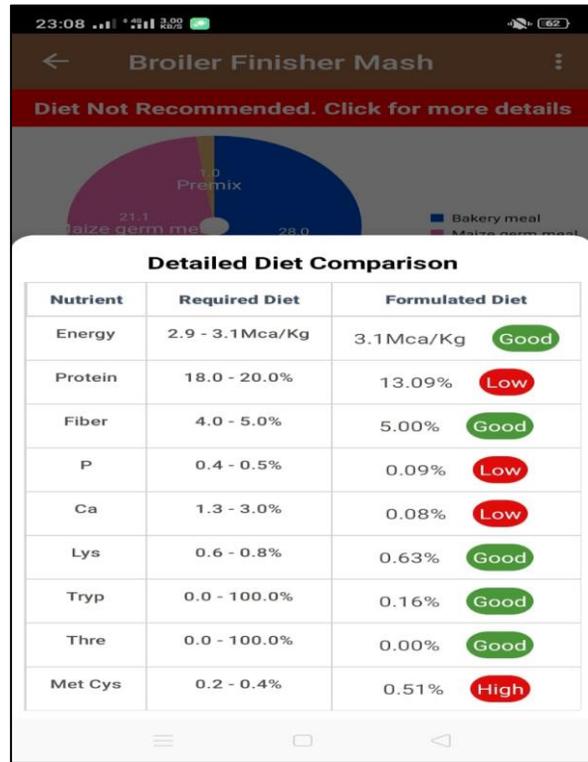
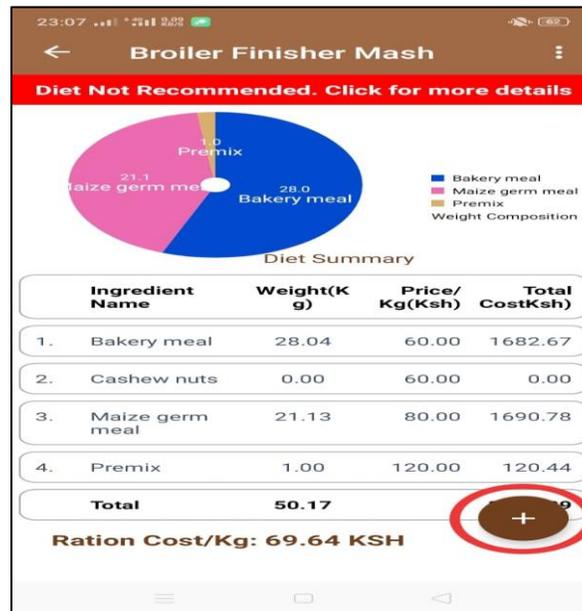


Figure 26: Detailed diet comparison

The above diet formula is not recommended as Protein which is one of the main nutrient is low (indicated low with red color). For a diet to be recommended, Protein, Fiber and Energy must be within the required levels.

For the case of not recommended, you will need to click the plus button (+) to edit or adjust the ingredients



**Figure 27: Button to edit ingredients**

## 4.0 Summary

KAPOFF has been developed to aid farmers formulate their own feed using cheap locally available ingredients. This comes as a relief to the farmer as a wide range of commercially available feeds are of high cost and the quality is wanting

Any farmer with an Android smart phone can have access to KAPOFF by downloading it on Play store, carry out the preliminary registration, logs-in and proceeds to formulation

For quality feed diet, a farmer should use a minimum of five ingredients taking into consideration sources of three main nutrients (Protein, Fiber and Energy), A premix must be included during formulation with KAPOFF as this will ensure that the diet is balanced with the required minerals and vitamins.

KAPOFF is designed to formulate chicken diet that meet the highest standard of quality as well considering the lowest cost of ingredients to come up with least cost formula. During the formulation process, you will note that some of the ingredients will be abandoned in favor of some ingredients of the same nutrient source but are of low cost.

Chicken feed formulation is now within the reach of the common farmer, thanks to KAPOFF