



## MOBILE AND WEB APPLICATION FOR TECHNICAL AND ECONOMIC ADVICE ON DAIRY CATTLE FEEDING IN SUB-SAHARAN AFRICA



Co-design  
balanced  
individual  
rations with  
farmers



Formulate  
economically viable  
rations with  
optimised costs



Develop low  
methane-  
emitting rations  
(CH<sub>4</sub>)



A decision-support  
tool available on  
Android and as a  
web application

### The approach

CIRAD, INRAE and their partners developed Jabnde, a decision-support system for African family dairy farms, aimed at improving the technical and economic performance of milk production on the farm.

It enables livestock technicians and agricultural advisors to provide tailored recommendations to farmers regarding individual rations for dairy females (zebu, taurine or crossbred).

Jabnde makes it possible to formulate rations under two feeding systems:

- Free grazing
- Cut and carry

The tool incorporates a rich database of nearly 500 feed resources (rangelands, fodder, and concentrates) to calculate the intake capacity and energy, protein, and water requirements of each animal.

### Our assets

► Jabnde is specifically designed to meet the needs of African dairy cattle farmers. It has been tested on around **one hundred** pastoral and agropastoral farms.

► Free application available on the Play Store and on the web. It allows offline data collection in the field.

### Optimizing feed ration formulation

**FORMULATE** individual rations together with the farmer to reach a milk production target.

**ASSESS** whether the required energy and protein levels are met, as well as the animal's intake capacity saturation levels.

**MONITOR** the quantities of feed grazed or distributed in kg of raw material.

**CALCULATE** ration cost, margin over feed cost, and the amount of CH<sub>4</sub> emitted.

**ADJUST** target production levels up or down and adjust feed quantities.

Download the app from Google Play Store

Learn more : <https://jabnde.cirad.fr/>

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## [Africa Milk], Burkina Faso

## Formulating feed rations for free-grazing zebu

Adjusting feed and forage supply to balance and ensure the economic viability of zebu rations during the dry season.

## ► The challenge

In the Sahel, milk production comes mainly from zebu cattle fed on pasture and supplemented with fodder and livestock feed. Milk yields are low (0.5 to 5 L/day). While grazing is free, fodder and livestock feed are not. During the dry season, feeding becomes more challenging as the vegetation on the pastures becomes poorer in quantity and quality.

## ► The idea

Provide milk-producing zebu with the quantity of fodder and feed required to achieve the farmer's milk production target, satisfy the nutritional needs of their zebu and ensure the economic viability of their activity during the dry season.

## Results

- The farmer's production target was reached in 68% of cases.
- Ration cost decreased by 37% (from 142 to 89 FCFA/zebu/day).
- Margin over feed cost increased by 25% (from 208 to 261 FCFA/zebu/day).

## The support

- Training technicians in the use and understanding of the application, as well as in data interpretation.
- Personalised advice to farmers (ration composition and ration costs).
- Proposal of additional actions to be implemented to optimize the feeding of their zebu cattle.



## [Africa Milk], Madagascar

## Formulating feed rations for stall-fed dairy cows

Formulating balanced mixed rations of fodder and feed

## ► The challenge

In Madagascar, milk production mainly comes from small farms with 2 to 3 cows, producing 5 to 15 L/day. Their nutritional requirements are higher than those of zebu cattle in the Sahel. Fed from troughs with rations combining several types of fodder and livestock feeds, these cows often receive quantities exceeding their intake capacity, which increases ration costs. Manually balancing such complex rations is difficult, highlighting the value of using a tool such as Jabnde.

## ► The idea

Provide dairy cows with sufficient fodder and feed to meet their nutritional needs without exceeding their intake capacity, while controlling ration costs and achieving the farmer's milk production target to ensure the viability of their business.

## Results

- Nutritionally balanced rations formulated in 100% of cases.
- No excess of intake capacity in 90% of cases.
- Reduction in ration cost in 50% of cases by reducing livestock feed and increasing the proportion of fodder.

## The support

- Training technicians in the use and understanding of the application, as well as in data interpretation.
- Personalised advice to farmers (ration composition and ration costs).
- Proposal of additional actions to optimize the feeding of their cattle (diversification of high-quality fodder crops).

