# Helping extension services to deliver science to farmers

## A practical decision support tool to improve the feed management of ruminant work animals:

## *Oxfeed.*

**David Smith**

# Project location


Cochabamba: Altitude 2,550 m
17º 24’ S, 66 º 9’ W

# Study sites

| District | Altitude (m) | Annual rainfall (mm) |
|---|---|---|
| Ayopaya | 3800 | 647 |
| Tiraque | 3580 | 531 |
| Capinota | 2380 | 435 |

# Ayopaya

Photo courtesy J.T. Dijkman

# Ayopaya

# Ayopaya

# Tiraque

# Tiraque

# Tiraque

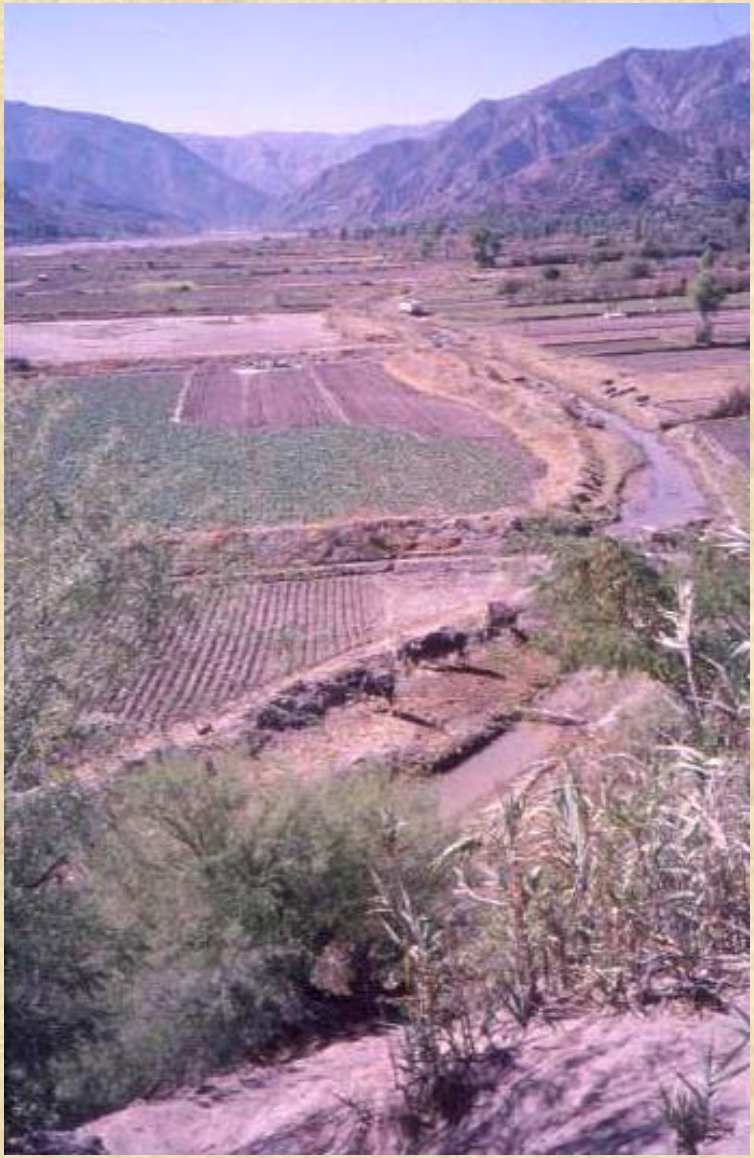
# Tiraque

# Tiraque

# Tiraque

# Capinota

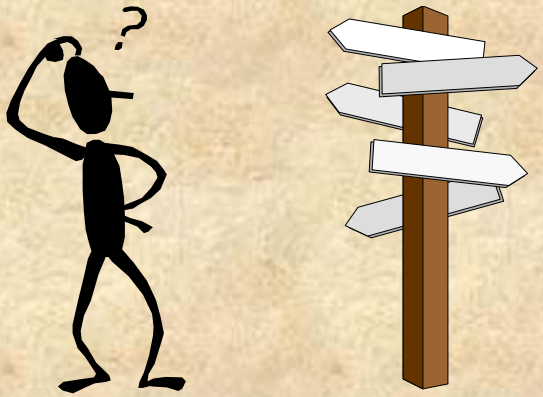
# Capinota



# Capinota

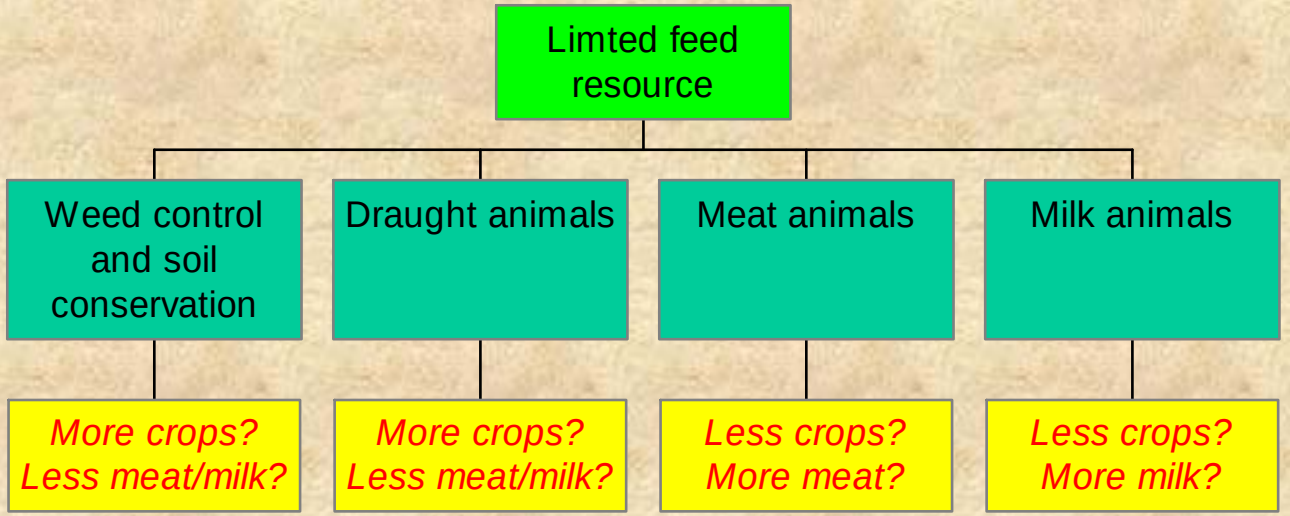
# The OXFEED project

To develop and test a decision support tool that provides extension agents with predictions about the outcome of choices that farmers make

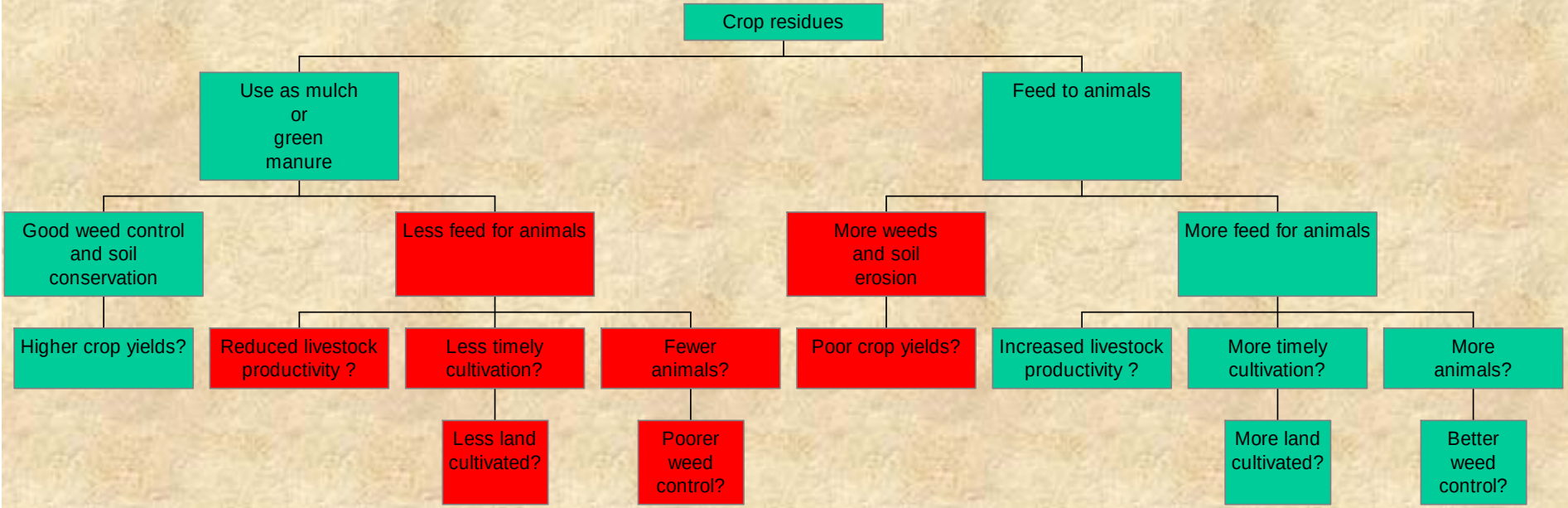


# Multi-purpose, mixed livestock, mixed farming systems.

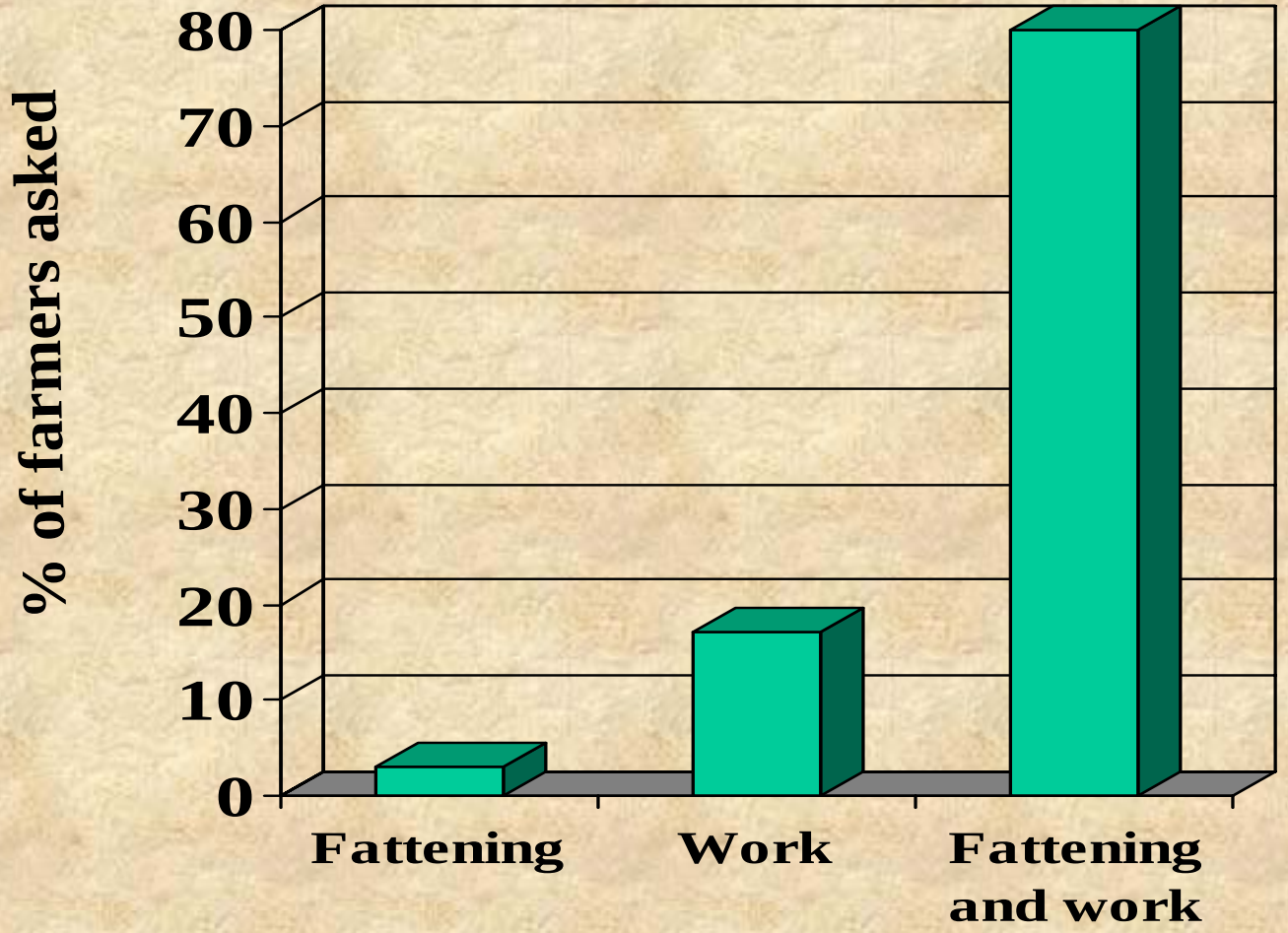
## *Tough decisions!*



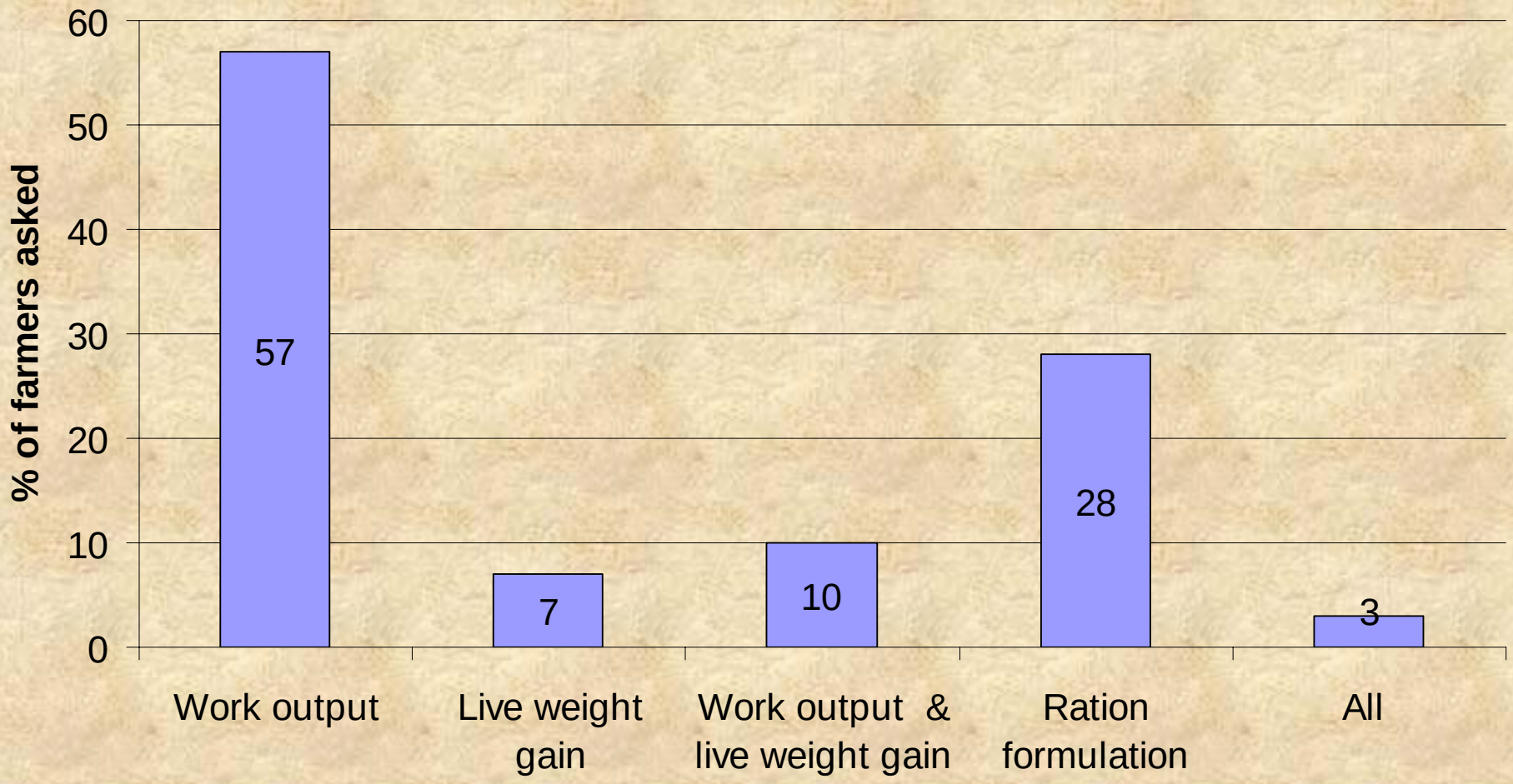
# Dilemmas in resource allocation



# Production objectives of farmers for their oxen



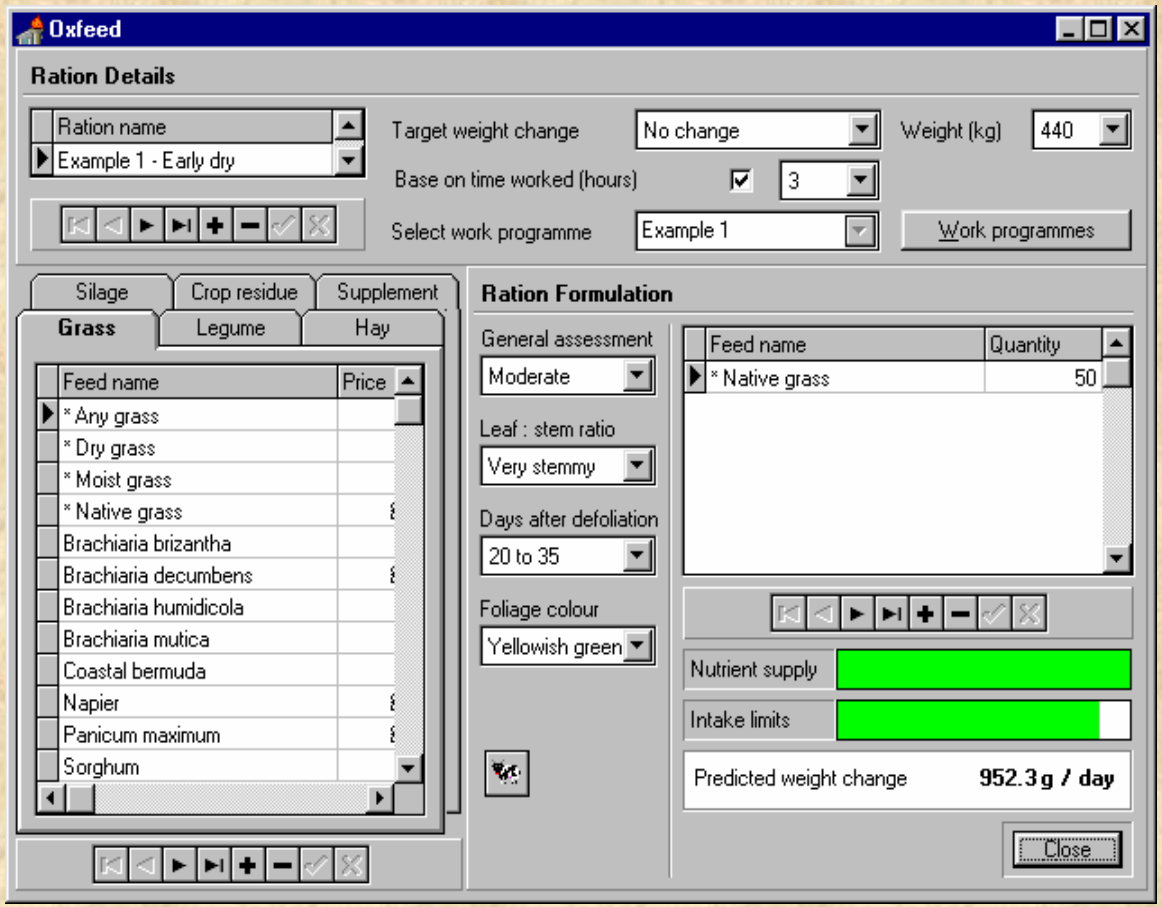
# Farmers want to know how to improve:



# How can OXFEED help?

- Quantifies the cost (extra feed) or benefit (work output or growth) of  a decision
- Allows the cost/benefit of decisions to be compared

# The OXFEED Interface



# Minimal information required

- Live weight of animal
- Quality of available feed
- Dry matter intake of animals
- Work output of animals

OXFEED aims only to provide a best estimate with available information

A good guess is better than a bad measure!

# Estimation of live weight

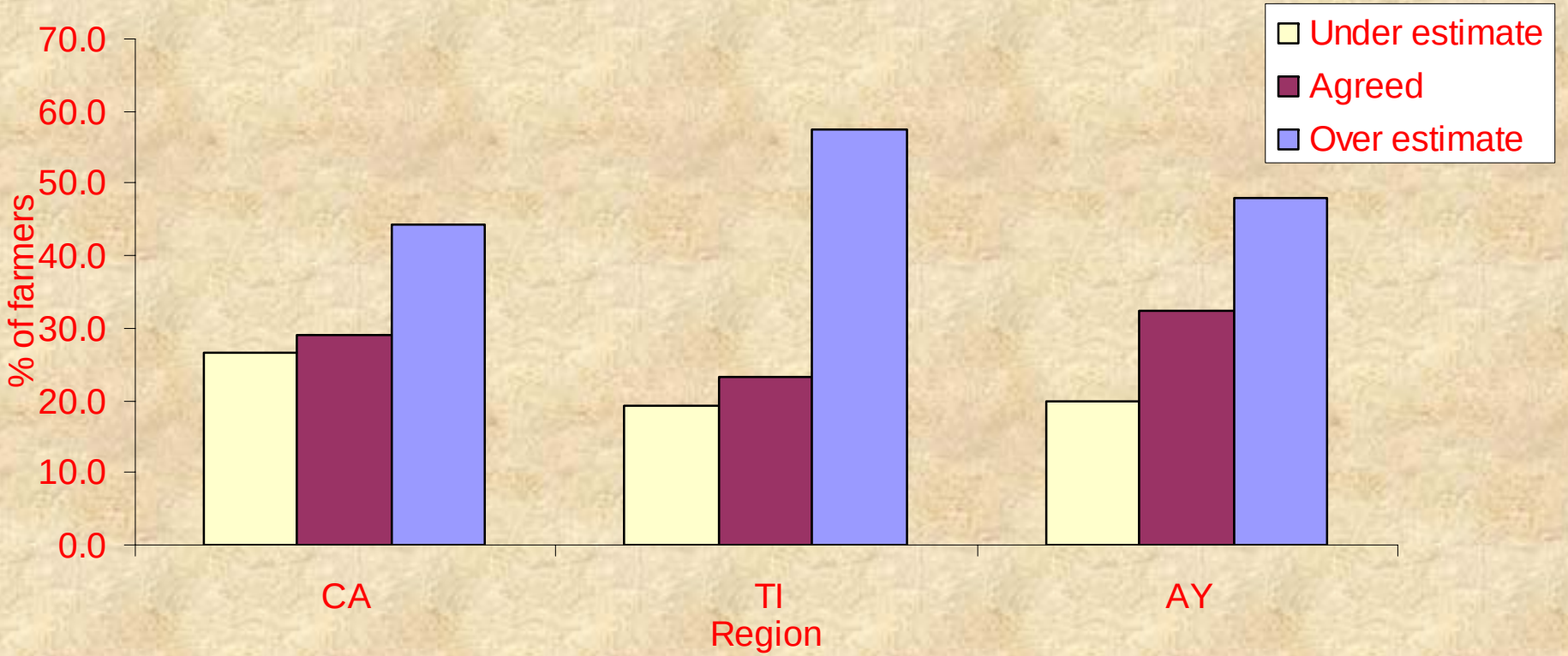
Farmers who were able to estimate the live weight of their oxen

# Estimation of live weight

Relationship between measured live weight of oxen and their live weight estimated by their owners

# Estimation of live weight

Percent of farmers whose estimation of the direction of weight change of their oxen under-estimated, agreed or over-estimated the measured direction of weight change



# Estimation of live weight
## Conclusion

Farmers require accurate methods of estimating live weight of their animals

# Developing a weighing tape for farmers

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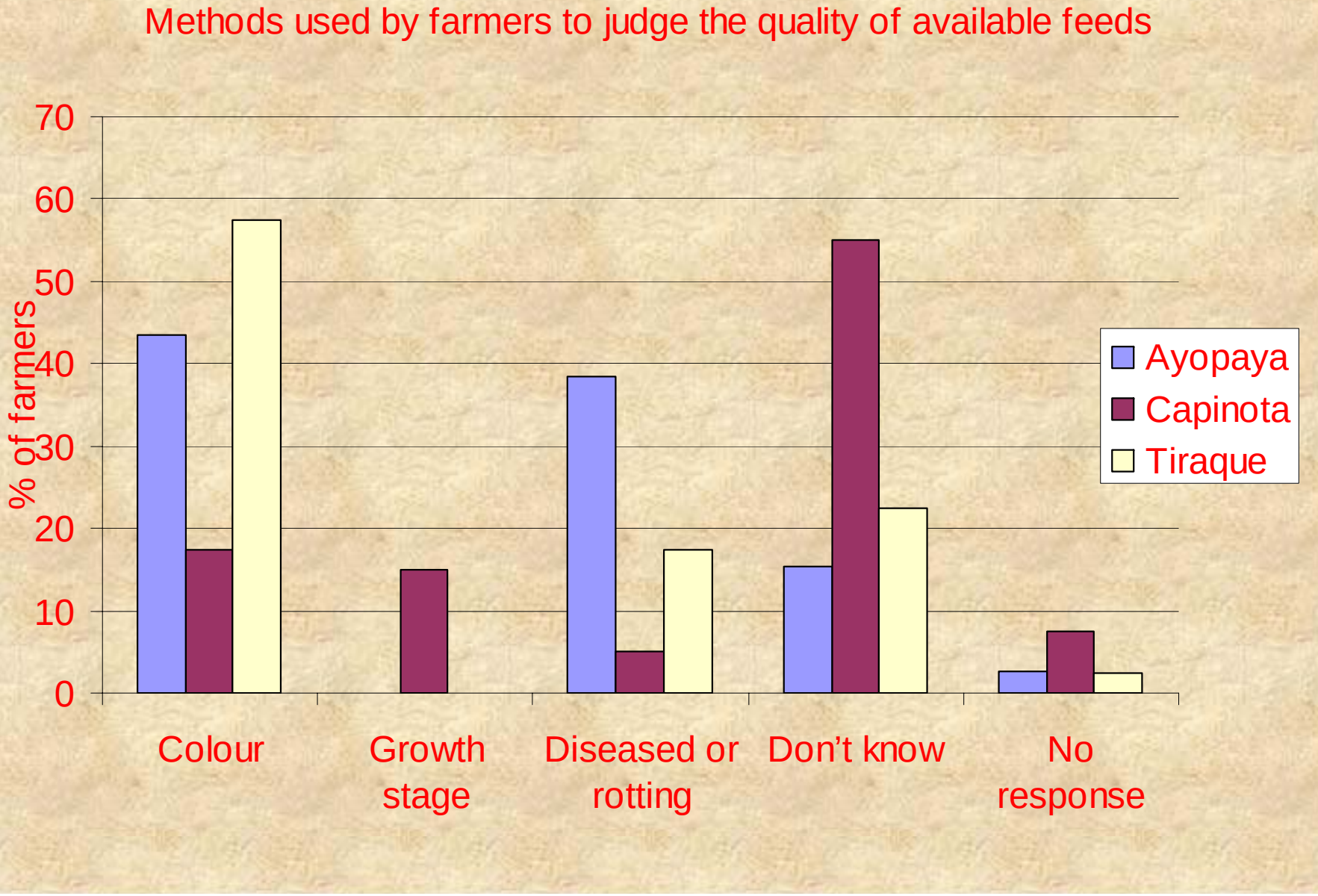
# Relationship between heart girth, body length and live weight

Estimated Live weight =

$36.8 + 1.74 \cdot [\text{Body Length}] + 0.0041 \cdot [\text{Heart Girth}]^2$

Estimated live weight in kg, body length and heart girth in cm.

# Quality of available feeds

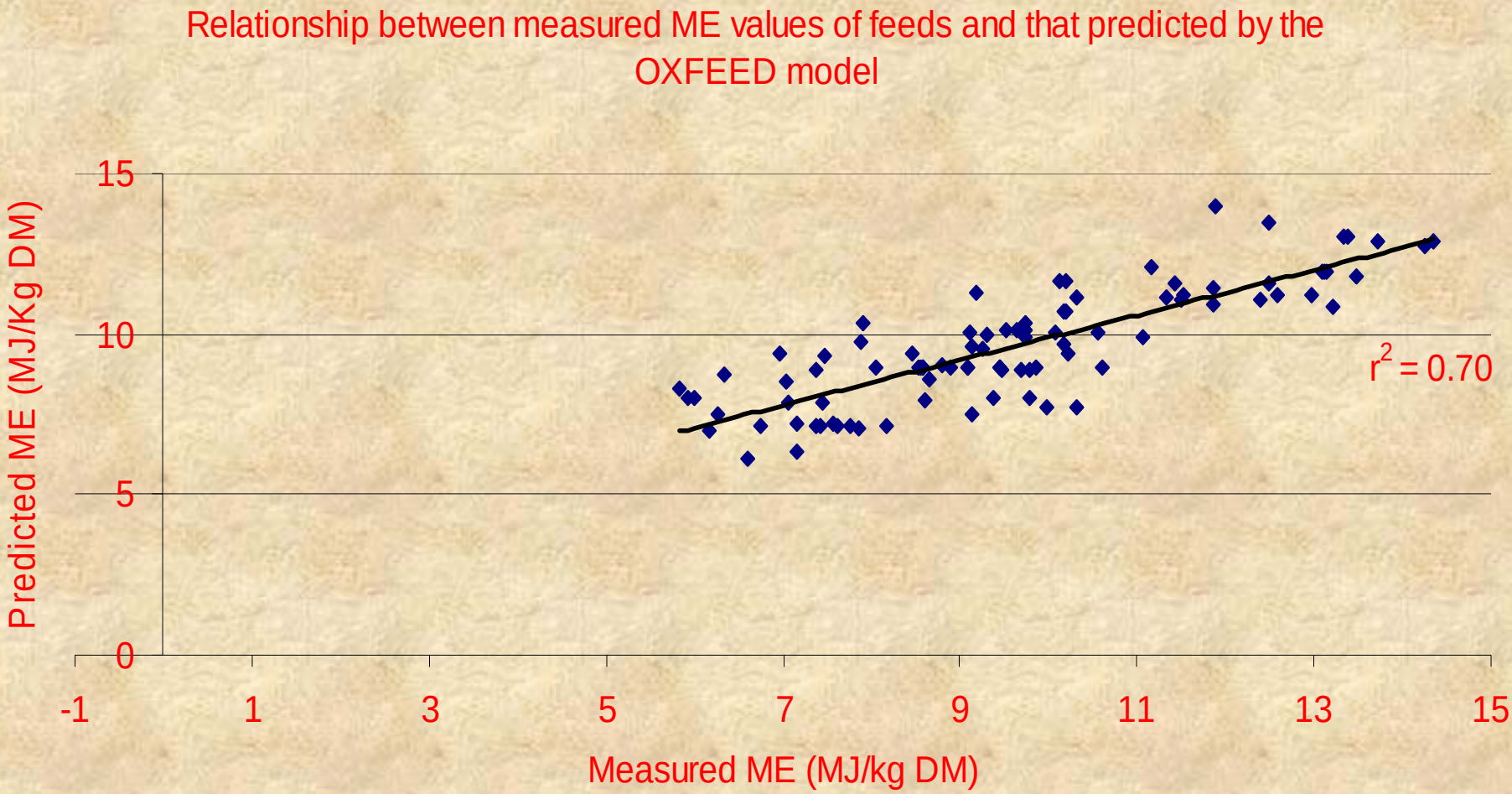


# Qualitative Indicators

OXFEED provides qualitative indicators that allow extension agent to judge the quality of the available feeds. These are:

- Type of feed
- Colour of forage
- Stem : Leaf ratio
- Perceived feeding value (farmer evaluation)
- General appearance

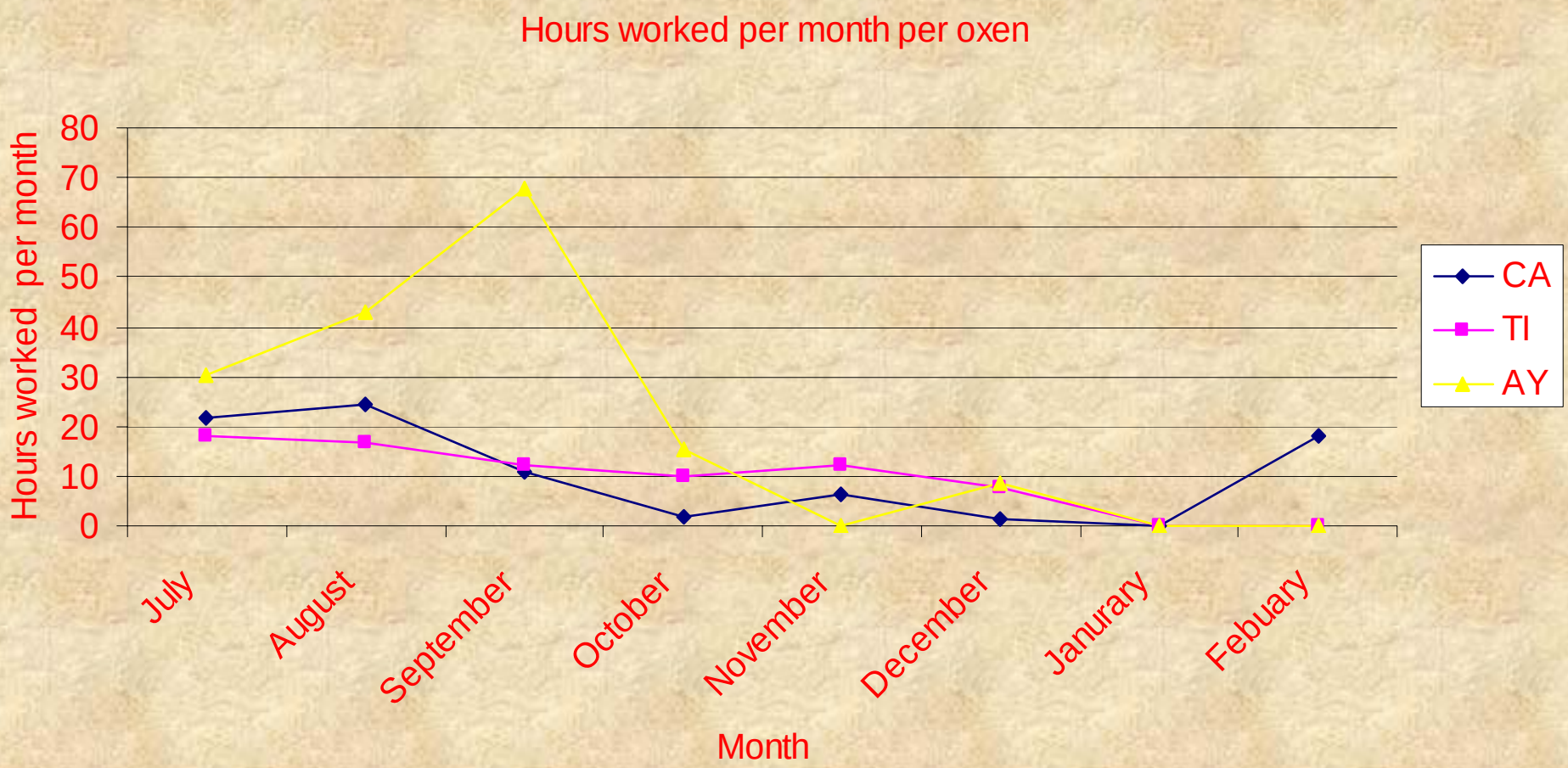
# The effectiveness of feed qualitative indicators



# Feed intake and work output

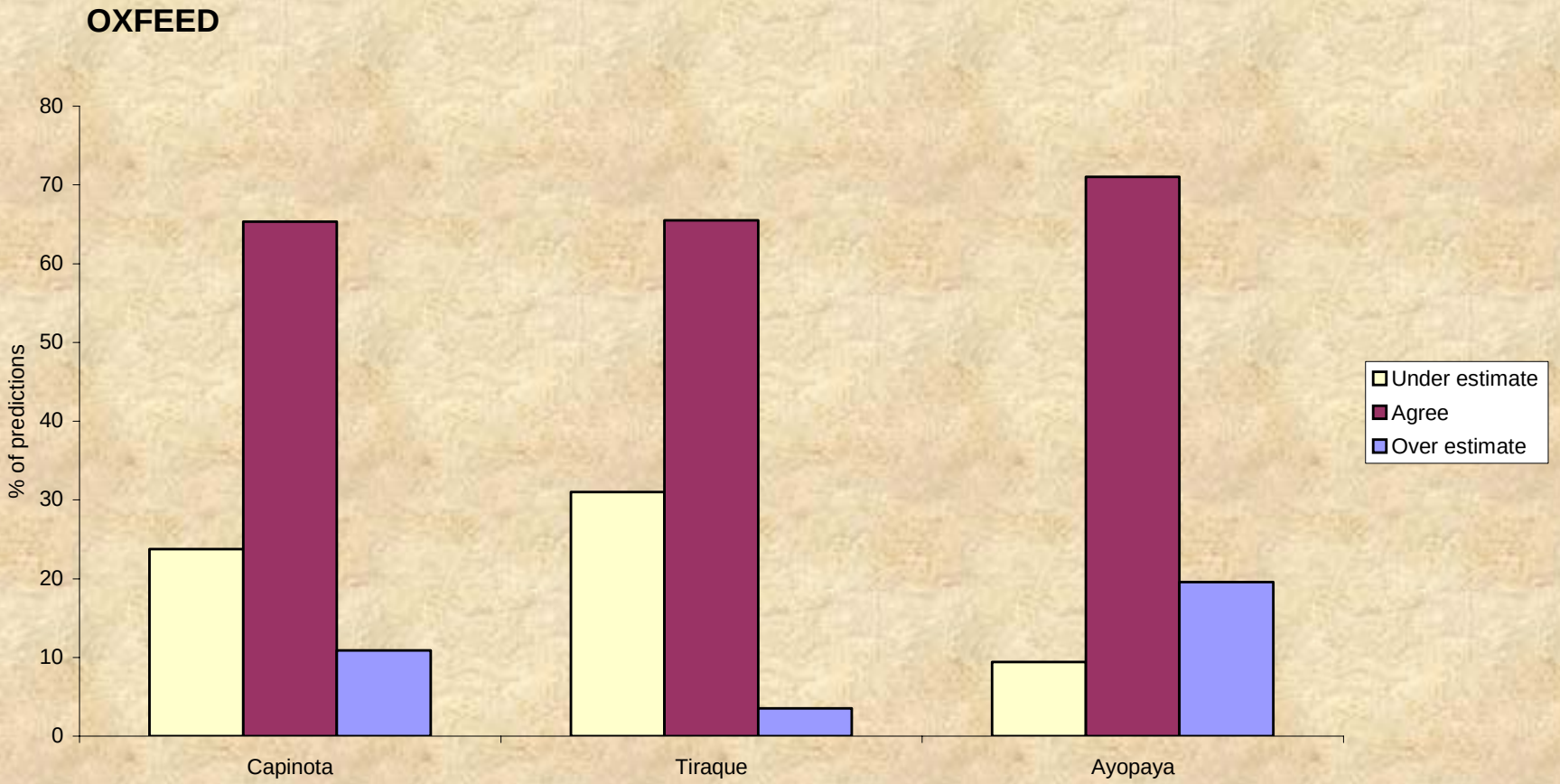
- Accurate estimation of live weight and feed quality allow daily voluntary food intake to be calculated.
- Work output can be estimated from diaries of work kept by farmers

# Work output

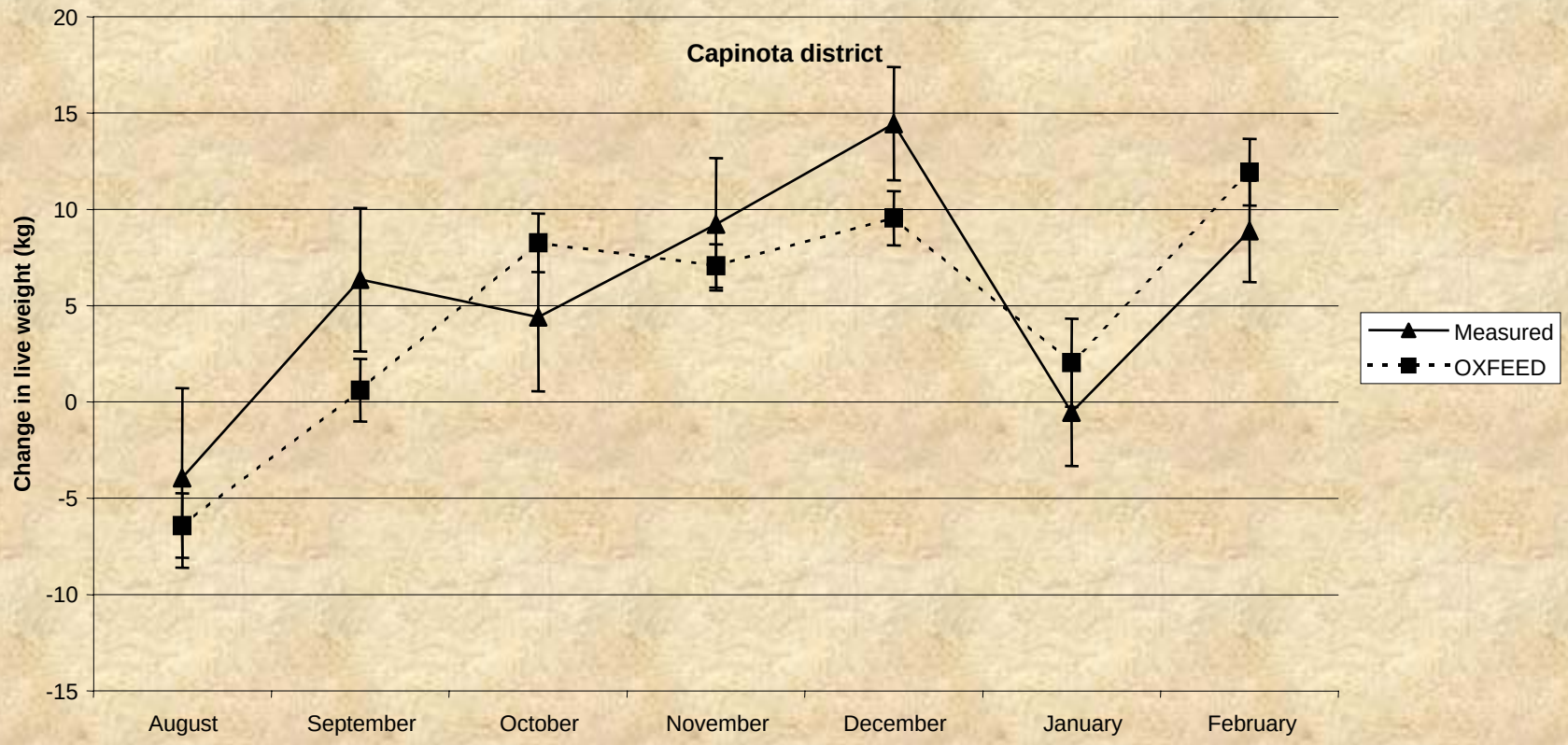

Hours worked per month per oxen
Hours worked per month
80
70
60
50
40
30
20
10
0
July
August
September
October
November
December
Janurary
Febuary
Month
CA
TI
AY

# Evaluation of OXFEED's Performance under field conditions

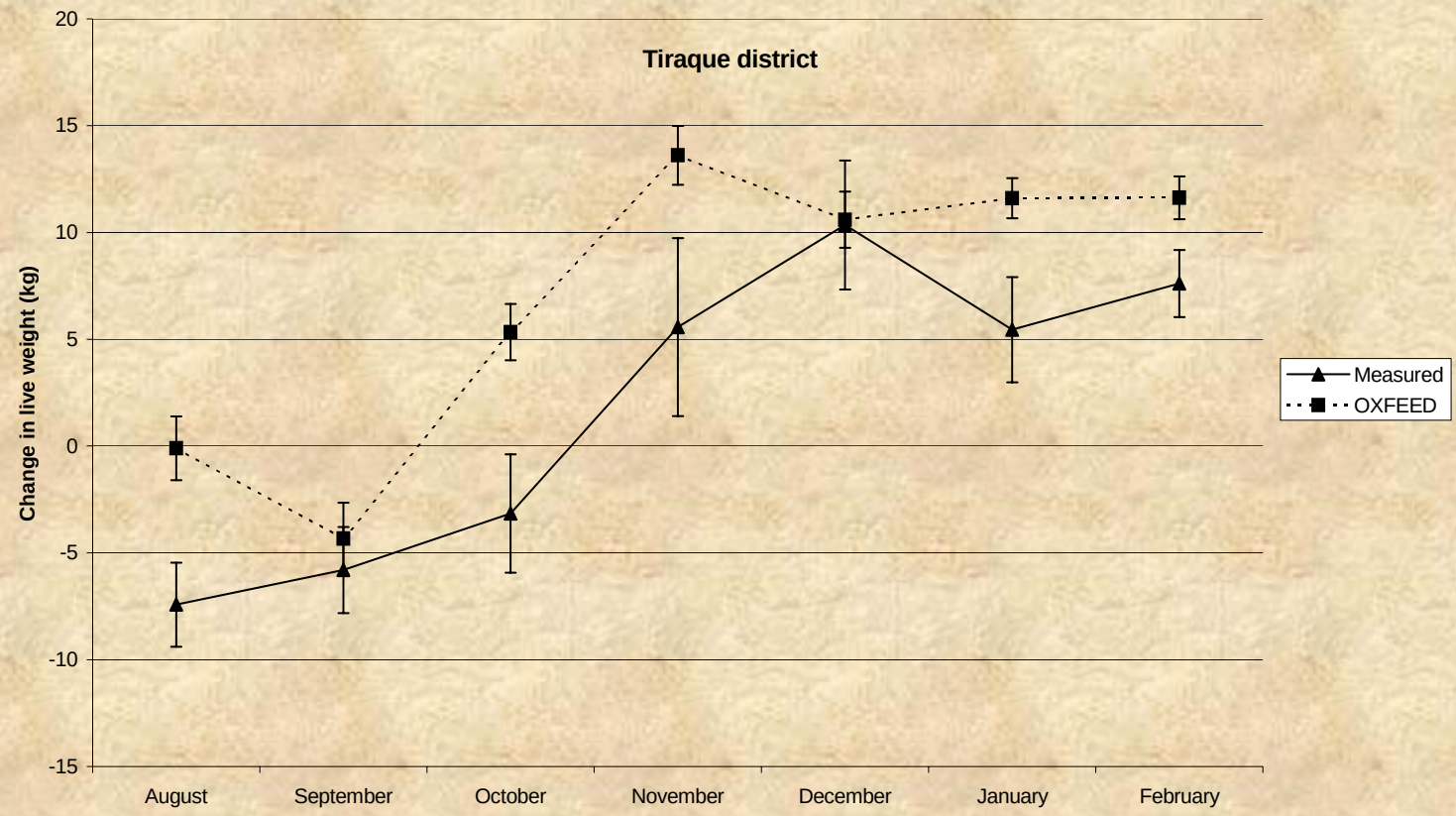
# OXFEED's prediction of live weight change



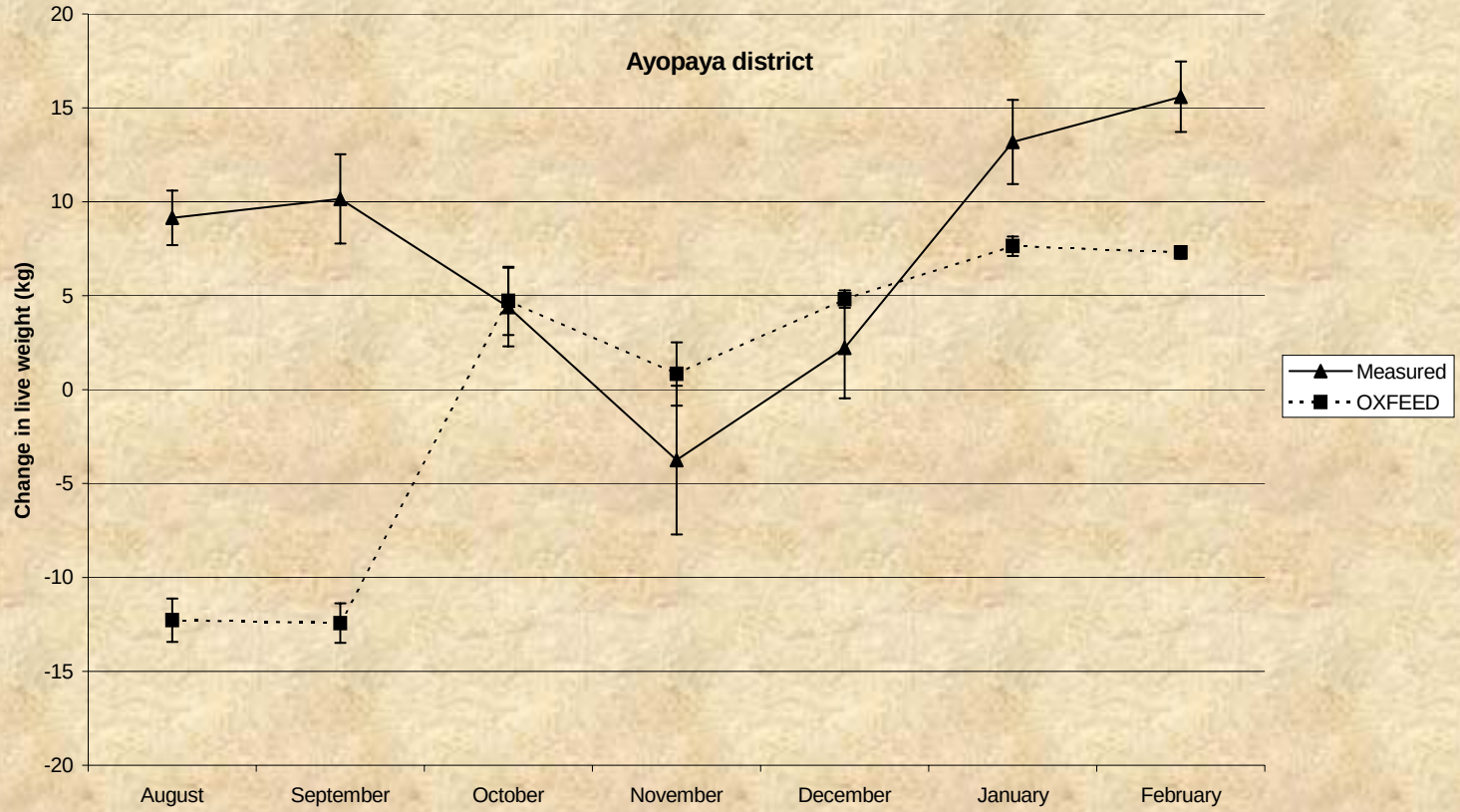
# OXFEED's performance: Capinota District



# OXFEED's performance: Tiraque District



# OXFEED's performance: Ayopaya District



# OXFEED's performance could be improved by:

- More baseline data about the feeding value of available forages
- Better estimations of dry matter intake

# Training extension agents to use OXFEED

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# *What next?*

- Dissemination on CD-ROM through local distribution centres
- Distribution via the Internet (http://www.stirlingthorne.co.uk)
- Training of local trainers