

# **African Farmer**

**CORE Group Webinar**  
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# PRESENTATION

- Origins of the game.
- Simulation games and the *African Farmer* design.
- Living with uncertainty – rural livelihood trajectories.
- Game overview and run-through.
- Shifting the game focus to nutrition.
- The importance of debriefing.
- Final reflections.
- Questions and discussion.

# ANTECEDENTS

***African Farmer*** develops ideas from a number of pioneering educational board simulation games:

- ***Green Revolution***, developed in the 1970s by Graham Chapman and Liz Dowler simulated the experience of rice growers in Bihar.
- ***Exaction***, which extended Green Revolution to include international trade, was developed in the 1980s by Graham Chapman and Isabelle Tsakok.
- ***Africulture***, which explored intra-household dynamics and rural-urban interactions in Zambia, was developed in the 1990s by Graham Chapman, Janice Jiggins and Henk de Zeeuw.

# SIMULATION GAMES

- Engage us emotionally, bringing our hidden assumptions and attitudes into play (c.f. book learning)
- Experiential learning - making meaning from direct experience.
- Help participants see the lives of others *from the inside* – offer an opportunity to step into the shoes of another person.
- Encourage experimentation - players can try out alternative courses of action and experience a range of different outcomes.
- Create a safe environment where our values and attitudes can be tested.

# ANATOMY OF A SIMULATION

The diagram illustrates the anatomy of a simulation, organized into two rows. The top row contains two teal ovals: "Learner's Mental Model" on the left and "Gameplay" on the right. The bottom row contains two orange ovals: "Simulation Engine" on the left and "User Interface" on the right. A thick black horizontal line separates the top row from the bottom row. The background is a light yellow-green with faint silhouettes of a landscape, including hills, houses, and a tree.

**Learner's  
Mental Model**

**Gameplay**

**Simulation  
Engine**

**User Interface**

# ANATOMY OF A SIMULATION

What people  
learn from  
playing the  
game

Learner's  
Mental Model

How can it be  
used: learner  
goals; teacher  
goals

Gameplay

Simulation  
Engine

Database,  
calculations  
going on behind  
the scenes,  
outputs

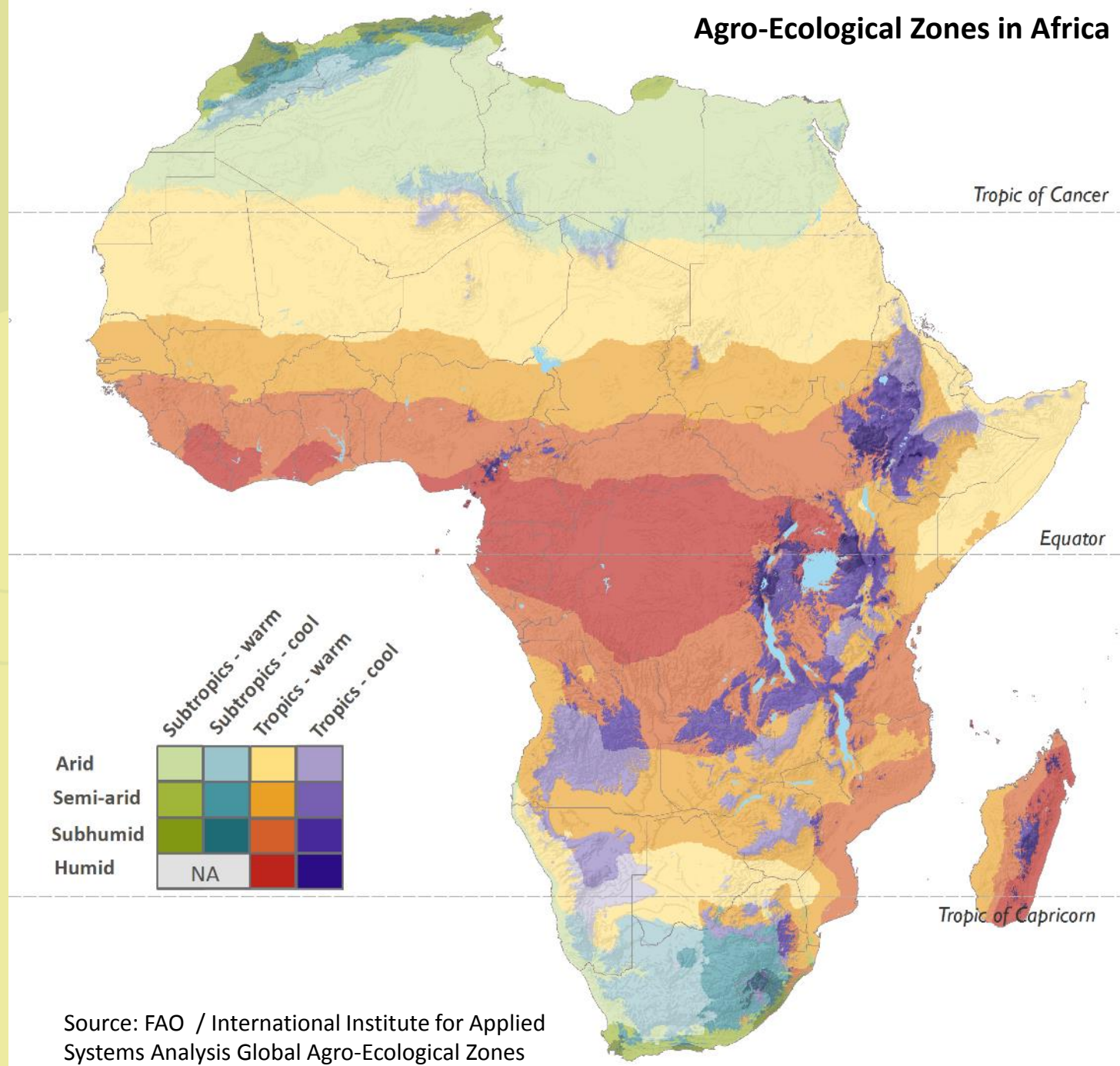
User Interface

What the  
learner sees,  
graphics,  
communication  
options, etc.

# LIVING WITH UNCERTAINTY

- The life of a small-scale farmer in Sub-Saharan Africa is characterised by *uncertainty*.
- The vagaries of weather, crop pests and diseases and other chance events, coupled with unpredictability in market supplies and prices, create an environment in which decision-making is *complex and challenging*.

# Agro-Ecological Zones in Africa



Source: FAO / International Institute for Applied Systems Analysis Global Agro-Ecological Zones





**Complex decisions about the allocation of land, labour, capital and technology must be made with limited information**



**Traditional Maize**



Photo: John Thompson

**Hybrid Maize**



Photo: Farmers Trend

**Drought Tolerant Maize**



Photo: Anne Wangalachi/CIMMYT

**Multiple varieties of maize (and other crops) for home consumption and market – each with its own set of benefits and costs**



**Input Markets** – for  
seeds, fertilizer,  
agrochemicals,  
agricultural implements...



Photo: Hannington Odame/CABE

**Output Markets** – from  
traditional 'wet markets'  
to vertically integrated  
'value chains'



Photo: Christoph-grant.com





**Postharvest storage –  
for consumption and  
market**





Photo: John Thompson



Photo: World Agroforestry Center

**Domestic Tasks –**  
fetching water and  
fuelwood, and cooking  
and cleaning are  
required daily



Photo: Practical Action



Photo: John Thompson



**Nutritional Security –**  
A crucial part of  
household decision-  
making



Photo: One Acre Fund

# RURAL LIVELIHOODS

Rural livelihood trajectories through agriculture:

- ***‘dropping out’*** - moving away or slipping into destitution
- ***‘hanging in’*** - maintaining ‘survival’ level
- ***‘stepping up’*** - investing in existing activities
- ***‘stepping out’*** - accumulating, diversifying and creating alternative, non-farm economic activity

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- *Environmental, economic and social shocks and stresses can undermine livelihood strategies*





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- *Improvements through intensification, commercialisation, diversification...*



# GOAL OF THE GAME

The **goal of the *African Farmer Game*** is to create a simulation that encourages players to experience and internalise the reality of what it means to be a small-scale farmer living in a complex, risk-prone environment.

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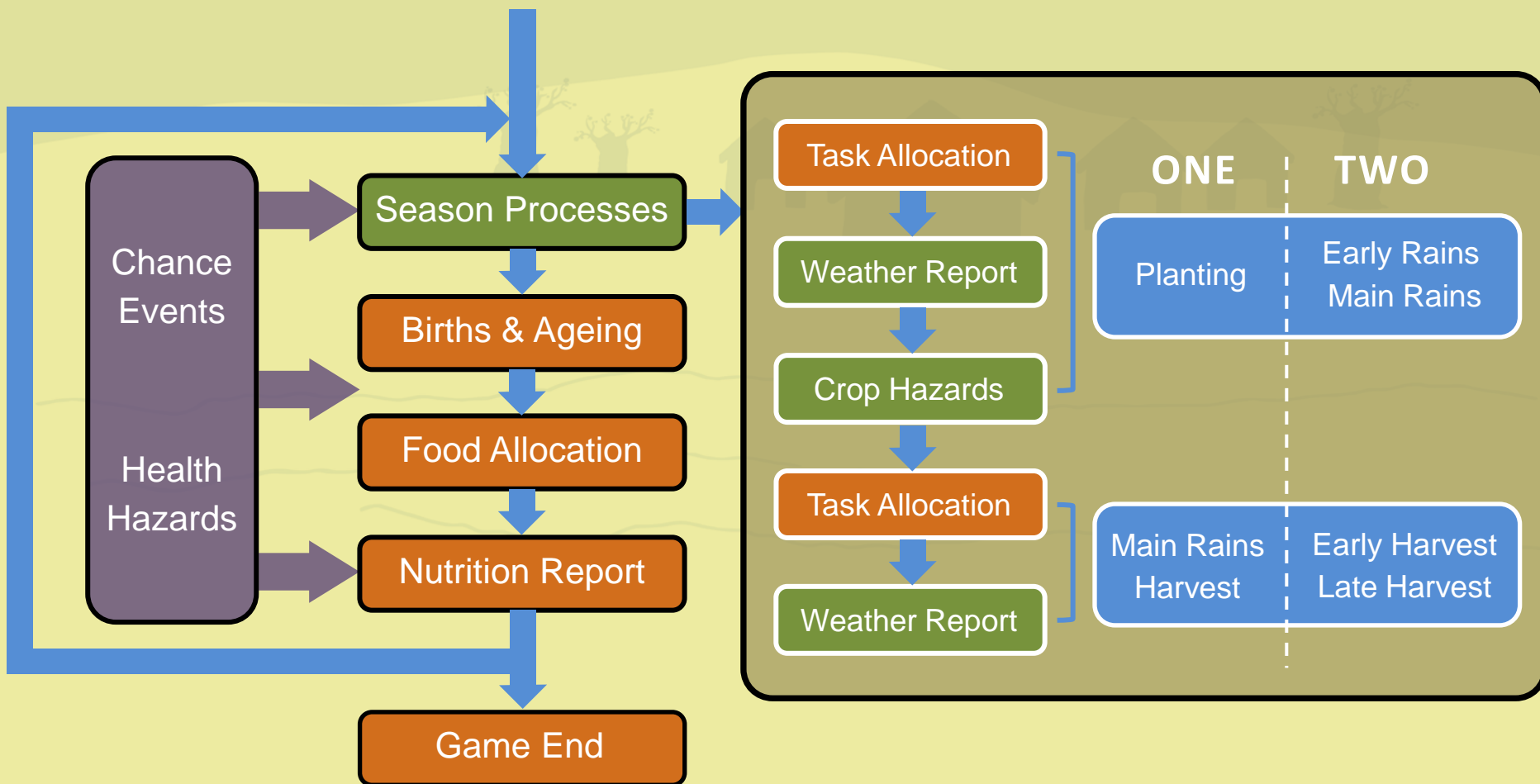
- **developing strategies for survival, investment and accumulation**
  - *learner level* → intellectual *and* emotional response (*‘the head and the heart’*)
- **understanding of risks and trade-offs**
  - *instructor level* → debriefing; integrating; including a reflective component

# GAME OVERVIEW

**You are responsible for an African smallholder farming household.** With limited resources you must care for your household and manage the farm. You must:

- Buy crops, other goods and services at the market.
- Choose crops, decide on weeding, fertilizers; respond to crop hazards.
- Manage labour; decide on children's education.
- Provide household members with balanced diets.


# GAME FLOW



# USER INTERFACE

Planting
Main Rains
Harvest
Post Harvest

YEAR  
1




HOUSEHOLD

TASKS

NUTRITION








ASSETS

CUSTOMIZE



CHARLES

**MATANGO HOUSEHOLD**  
3 adults: Eunice, Charles, Jeruto.  
2 children: Jackline, Sammy.  
1 baby: Mark.

ASSETS	DASHBOARD	ACTIVITY LOG
 176A Cash  3 x fields	<div>YEAR 1</div> <div>  </div> <div>Click to start Year 1.</div> <div>NEW YEAR   PLANTING   TASK ALL</div> <div>  1  2  2  0  0 </div>	

NEWS

# MARKET TRADING

Early Rains

Main Rains

Early Harvest

Late Harvest

YEAR

1

?

AFRICAN FARMER

MARKET

BUY

SELL

MARKET

ASSETS

CONFIRM

CANCEL

DISPLAY

☐ All
 ☒ Inputs
 ☐ Food
 ☐ Other

ITEM	UNIT	TOT
2 x Cassava Cuttings	12	24
1 x Cotton Seed	25	25
1 x Manure	8	8
1 x Herbicide	19	19
TOTAL COST		76

MARKET INPUTS

HY Maize	Sorghum
Fertilizer	Manure
Herbicide	Pesticide
Fungicide	Agriphage

FERTILIZER

Market sells at: 19A  
Current Stock: 1000 bags

NPK Component fertilizers supplement nutrient supply in the soil. They can help increase crop production.

ASSETS

150A Cash

4 x fields

DASHBOARD

SET EARLY RAINS TASKS

→

Click when tasks allocated.

EAR | EARLY RAINS | TASK ALLOCATION | TASK EXECUTIO

2 (4)

2 (4)

2 (2)

0 (0)

0

ACTIVITY LOG

YEAR 1: EARLY RAINS

NEWS

# TASKS & LABOUR

- Domestic chores are mandatory – if labour is not assigned it will be taken from farming tasks.
- Children can be assigned 1 domestic task or attend school.
- Adults can carry out any 2 tasks.
- Manual weeding requires 2 adult tasks.



# TASKS SCREEN

Early Rains

Main Rains

Early Harvest

Late Harvest

YEAR 1

?

AFRICAN FARMER

FARM TASKS

HOUSEHOLD

FARM

VILLAGE

TOWN

LIST

TASKS

Plant

Fertilize

Manure

Weed

Spray

Field 1

Field 2

Field 3

Field 4

FARMING TASKS

Here you can create, edit and delete farming tasks.

ASSETS

6A Cash

1.0 x Cotton Seed

2 x Fertilizer (0)

1 x Manure

2 x Herbicide (0)

1 x Pesticide

DASHBOARD

SET MAIN RAINS TASKS

Click when tasks allocated.

DP HAZARD CHECK | TASK ALLOCATION | TASK EXECUTIOI

2 (4)

2 (4)

2 (2)

0 (0)

0

ACTIVITY LOG

YEAR 1: EARLY RAINS

Season's tasks set

Running household tasks... COMPLETED.

Running optional tasks... COMPLETED.

Generating weather report... STORMS.

YEAR 1: MAIN RAINS

Checking Crop Hazards... NO HAZARDS.

NEWS

# FARMING

- Available crops: beans, cotton, mixed horticulture, local maize, high-yield maize, drought-tolerant maize.
- Other inputs: manure, NPK fertilizer, herbicide, pesticide, fungicide.
- Manure is applied to unplanted fields; fertilizer and sprays used only on planted fields.
- Spray kits are required for spraying.
- If fields are not weeded, crop yields are halved.

# FARM SCREEN

Early Rains  
STORMS

Main Rains

Early Harvest

Late Harvest

YEAR 1

1

?

AFRICAN FARMER

FARM

TASKS

Field 1

Field 2

Field 3

FUSARIUM WILT

Fusarium Wilt is a fungus that grows in the vascular system causing the plant to wilt. It begins as a yellowing and wilting of the lower leaves. The infection progresses up the plant until the entire plant turns yellow. Plants become stunted when infected at a younger age.

Loss: 30%  
Mitigated Loss: 10%  
Mitigation: Pesticide

ASSETS	DASHBOARD	ACTIVITY LOG
<div>41A Cash</div> <div>3 x fields</div>	<div>SET MAIN RAINS TASKS</div> <div> <div>→</div> <div>Click when tasks allocated.</div> </div> <div> <div>3P HAZARD CHECK   TASK ALLOCATION   TASK EXECUTION</div> <div> <div>2 (4)</div> <div>1 (2)</div> <div>1 (1)</div> <div>0 (0)</div> <div>+</div> <div>0</div> </div> </div>	<div>YEAR 1: EARLY RAINS</div> <div>Season's tasks set</div> <div>Running household tasks... COMPLETED.</div> <div>Running optional tasks... COMPLETED.</div> <div>Generating weather report... STORMS.</div> <div>YEAR 1: MAIN RAINS</div> <div>Checking Crop Hazards... HAZARDS.</div>

NEWS

# NUTRITION AND HEALTH

- Persons given poor diets are more likely to become ill and may die.
- An “A-level” diet fully protects against nutrition-related illness; persons given “X-level” diets will die from malnutrition.
- Persons who become ill cannot do any work and will remain in hospital until medical fees are paid.
- Persons who contract HIV incur medical expenses each year.
- When a person dies, funeral expenses must be paid, which increase with the age of the deceased.

# NUTRITION OPTIONS

- With the BASIC nutrition option, players choose a diet level for each household member and the cost is deducted from their saved cash.
- For the STANDARD and ADVANCED options, players must think about the food content of diets:
  - Diets are created by selecting food portions that provide carbohydrate, protein and vitamins.
  - Diets are then allocated to household members.
  - The household must grow or purchase sufficient food to cover the allocation.

# DIET SCREEN

Early Rains

Main Rains

Early Harvest

Late Harvest

YEAR 1

AFRICAN FARMER

DIET MANAGEMENT

NEW DIET

EDIT

DELETE

ALLOCATION

SAVE

CANCEL

DIET NAME

C-diet1

Contents

1 x Beans

1 x Cassava

2 x Horticulture

1 x Maize

C

Carb

Prot

Vita

MARKET FOOD

Beans

Cassava

Horticulture

Maize

Sorghum

EDITING DIET "NULL"

nContents:

1 x Beans

1 x Cassava

2 x Horticulture

1 x Maize

ASSETS

DASHBOARD

ACTIVITY LOG

140A Cash

4 x fields

ALLOCATE FOOD

→

Click when food allocated.

BIRTHS & AGEING

FOOD ALLOCATION

NUTRITION REPI

2

2

2

0

0

NEWS



# ALLOCATION SCREEN

**Early Rains** **Main Rains** **Early Harvest** **Late Harvest** **YEAR 1** **AFRICAN FARMER**

**FOOD ALLOCATION**

**DIETS** **VIEW** ☒ All ☐ Detail **A B C X**

**CREATING ALLOCATION**

This Diet: MBARAK  
 2 x Beans  
 1 x Cassava  
 1 x Maize

**ALLOCATION SUMMARY**  
 Persons: 5  
 56m x Maize - 11.2 bags  
 11m x Horticulture - 2.2 bags  
 3m x Cassava - 0.6 sacks  
 10m x Beans - 2 bags  
**\*\* INSUFFICIENT STOCKS \*\***

**REMAINING FOOD STOCKS**  
 Beans: 0.52 bags  
 Cassava: -0.60 bag **XX**  
 Horticulture: 1.88 bags  
 Maize: 3.76 bags

**ASSETS**

	28A Cash (16)
	2.5 x Beans (0.5)
	0 x Cassava (-0.6)
	4.1 x Horticulture (1.9)
	15.0 x Maize (3.8)
	1 x Spray Kit

**DASHBOARD**

**ALLOCATE FOOD**

Click when food allocated.

**BIRTHS & AGEING** | **FOOD ALLOCATION** | **NUTRITION REPI**

	2		1		1		0		0
--	---	--	---	--	---	--	---	--	---

**ACTIVITY LOG**

Running household tasks...	COMPLETED.
Running optional tasks...	COMPLETED.
Generating weather report...	HEAVY RAIN.
<b>YEAR 1: LATE HARVEST</b>	
Season's tasks set	
Running household tasks...	COMPLETED.
Running optional tasks...	COMPLETED.
Generating weather report...	SUN.

# FINANCE

- You start the game with a randomly allocated amount of cash.
- You can apply for loans at the bank – these will be granted on the basis of a credit check.
- If debts are not paid they will be recovered with penalties – if you have insufficient cash, assets will be seized.
- The game will end if you are declared bankrupt.



# BANK SCREEN

Early Rains

Main Rains

Early Harvest

Late Harvest

YEAR 3

AFRICAN FARMER

BANK

?

AFRICAN FARMER

PAY

LOAN

STATEMENT

PAY

CANCEL

NO	TYPE	DESCRIPTION	DUE DATE	AMT	STATUS
5	Loan Repayment	40 Afris, 4Season Loan	Main Rains, Year 2	11	PAID
6	Loan Repayment	40 Afris, 4Season Loan	Early Harvest, Year 2	11	PAID
7	Loan Repayment	40 Afris, 4Season Loan	Late Harvest, Year 2	11	PAID
8	Loan Repayment	40 Afris, 4Season Loan	Early Rains, Year 3	11	PAID
9	Loan Repayment	40 Afris, 4Season Loan	Early Rains, Year 3	11	PAID
10	Loan Repayment	40 Afris, 4Season Loan	Main Rains, Year 3	11	PAID
11	Loan Repayment	40 Afris, 4Season Loan	Early Harvest, Year 3	11	OVERDUE
12	Loan Repayment	40 Afris, 4Season Loan	Late Harvest, Year 3	11	DUE
13	Medical Expenses	Kennedy: Stomach Problem	N/A	25	PAID
14	Medical Expenses	Kennedy: Dysentery	N/A	25	PAID

PAYMENTS

Select unpaid debt and click "Confirm" to authorise payment.

ASSETS

DASHBOARD

ACTIVITY LOG

89A Cash

0.6 x Maize (0)

1 x School Voucher (0)

SET LATE HARVEST TASKS

Click when tasks allocated.

37 | LATE HARVEST | TASK ALLOCATION | TASK EXECUTION

1 (2)

1 (0)

3 (3)

0 (0)

0

Generating weather report... POOR RAINS.

YEAR 3: EARLY HARVEST

Checking Crop Hazards... NO HAZARDS.

Season's tasks set

Running household tasks... COMPLETED.

Running optional tasks... PROBLEMS!

Generating weather report... CLOUDY.

YEAR 3: LATE HARVEST

NEWS

# NUTRITION IN *AFRICAN FARMER*

- Nutritional messages:
  - Nutrition is important - poor nutrition has serious consequences for farming households.
  - Good nutrition is more than just calories.
- Within the game context, the impact of players' nutrition choices needed to be *specific* and *proximate*, which required simplifications:
  - Poor nutrition linked to specific diseases.
  - The effects of poor nutrition are seen almost immediately (in the following year).

# SHIFT FOCUS TO NUTRITION

- Dominant player activity is nutrition management, allowing for more sophisticated nutrition models.
- Broader selection of food crops.
- Chance events (local and global) affect food availability and prices.
- The farm is the arena where the impact of nutrition choices are seen:
  - Good household nutrition safeguards farm labour, securing food production and increasing income.
  - Poor household nutrition results in illness or death, reducing available farm labour, which in turn reduces food production and cash available to buy food.

# PLAYING *AFRICAN FARMER*





# PLAYING *AFRICAN FARMER*



# DEBRIEFING

- *African Farmer* is *one* element in a learning process.
- The debriefing, where players' experiences are explored and issues discussed, is an essential part of this learning process.
- The learning experience of the game can be further grounded and deepened in activities and study outside the game.
- Follow-on work can link the players' game experience with the actual lived reality of small-scale African farmers.

# PROJECT INFORMATION

**The *African Farmer Game* was developed by:**

- **John Thompson:** Project Coordinator – [j.thompson@ids.ac.uk](mailto:j.thompson@ids.ac.uk)
- **Jim Jackson:** Single Player Game – [jimjackson10@gmail.com](mailto:jimjackson10@gmail.com)
- **Judith Good:** Technical Advisor – [j.good@sussex.ac.uk](mailto:j.good@sussex.ac.uk)
- **Ellie Martin & Jim Jackson:** Multiplayer Game
- **Nathan Oxley:** Communications & Networking – [n.oxley@ids.ac.uk](mailto:n.oxley@ids.ac.uk)

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# THANK YOU



**African Farmer: Play the Game**  
**[www.africanfarmergame.org](http://www.africanfarmergame.org)**