African Farmer

A Farming Simulation

PLAYER GUIDE

Contents

1. Overview

In *African Farmer* players are responsible for managing a household and small farm in an African village. Players must feed their household and manage the plots of land which they own or rent. They can trade food, crops, inputs, land and other goods and services at the market. Players must manage labour to ensure that domestic and farming tasks are carried out and must decide whether to send children to school. They can send adults to town for work. On the farm players must choose which crops to plant, when to plant them and decide on weeding and the use of fertilizers. They must be prepared for adverse weather and be ready to respond to crop diseases and pests. Household members need balanced diets if they are to remain healthy - individuals given poor diets are more likely to become ill and may die. Chance Events* (e.g. a transport breakdown interrupting market supplies) may occur at any time in the game cycle, which may disrupt plans and confound strategies. The game incorporates various elements on which players must take a position, giving a range of goals that must be balanced:

- Agricultural - successfully manage and develop the farm.
- Health and education - provide household members with balanced diets and ensure children are educated.
- Financial – increase the net worth of your household by farming or trading.

The unpredictability of the weather, the capriciousness of crop hazards and other disruptive events conspire to create a complex environment of risk and uncertainty within which players must make both ethical and practical decisions.

2. Game Flow

Game flow is built around the farming year as shown in Fig 2.1.

Crop growth occurs over three seasons. For one planting season, the seasons are *Planting*, *Main Rains*, and *Harvest*: crops are planted in the *Planting* Season, tended (weeded, sprays and fertilizers applied) in *Main Rains*, and harvested in the *Harvest* Season.

For two planting seasons, the seasons are *Early Rains*, *Main Rains*, *Early Harvest* and *Late Harvest*: crops can be planted in *Early Rains* and *Main Rains,* tended in the following season, and harvested in the next.

After the year's farming work is completed, household members age one year and new births may occur. Food is then allocated for the year ahead.
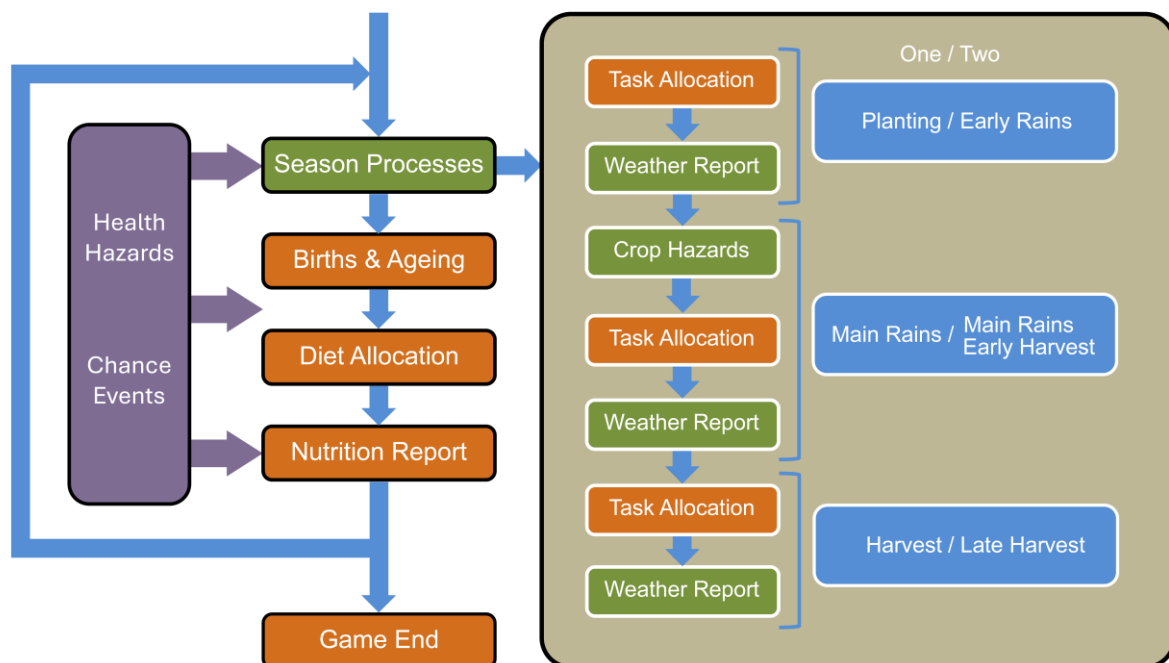

Fig. 2.1 Game Flow for One and Two Planting Seasons

From Year 2 onwards, health hazards may occur at any time in the game cycle, and post-harvest losses are calculated during Main Rains (if option selected in Game Settings). Chance events can occur from the starting year set in Game Settings.

The market is always open for the purchase and sale of crops and other inputs, food, spray-kits etc. Section 7 describes the market in detail.

2.1 Season Processes

Players must make farm management decisions, the outcome of which will shape the fortunes of the household for the coming year. Labour must be allocated to cover domestic chores and decisions made on whether to send children to school or adults to town to seek work.

2.1.1 Task Allocation

Task Allocation is a key element in the game. Here players must choose how to allocate the available labour and farming resources for the coming season. The season's weather will not be known until after these decisions have been made. Tables 2.1 and 2.2 list tasks by season.

Children can perform one domestic task each season or go to school; adults can complete two tasks or go to town for the year. All domestic and farming work equates to one task, except for manual field weeding which requires two tasks. Spraying a field with herbicide is an alternative to manual weeding which will free up an adult task for other work. If the *Traction* game option has been selected in the Game Settings screen, the task requirement for field clearing & crop planting is one task with animal or mechanised traction, or two tasks if the work is done unaided.

Mandatory household tasks (cooking, fetching fuel and water) are automatically created though labour must be assigned to these tasks. If labour is not assigned to mandatory tasks, it will be automatically re-assigned from farming tasks at task execution.

Each FULL year's attendance at school significantly improves the chances a child will earn money if sent to town as an adult.

Household members can be sent to town to look for work in *Planting/Early Rains*. Anyone sent to town will remain there for the rest of the year and will not be available for domestic or farm. Depending on their level of education and luck, they might send saved earnings home at the end of each season. Section 5 gives more detailed information.

Resource requirements are task dependent – domestic chores, manual weeding and crop harvesting do not require resources, but for all other tasks appropriate resources must be selected or task execution will fail.

Labour must be assigned for all tasks. Persons in hospital or allocated to other tasks that exhaust their work capacity are not available for selection. If necessary, additional labour can be hired at the market or by arrangement with other households.

Season	Task	Mandatory	Restrictions	Notes
Planting	Cook	YES	NONE	
	Fetch Fuel & Water	YES	NONE	2 tasks required if household has more than 8 members.
	Attend School	NO	Children only	School vouchers required.
	Sow Crop	NO	Adults only	1 task if traction game option is not selected; otherwise 2 tasks without traction, 1 task with traction.
	Manure Field	NO	Adults only	Field with crop sown cannot be manured.
	Town Work	NO	Adults only	Person remains in town until year end.
Main Rains	Cook	YES	NONE	
	Fetch Fuel & Water	YES	NONE	2 tasks required if household has more than 8 members.
	Attend School	NO	Children only	School vouchers required.
	Weed field	NO	Adults only	2 tasks if done manually, 1 task for herbicide spray.
	Fertilize crop	NO	Adults only	
	Spray crop	NO	Adults only	
Harvest	Cook	YES	NONE	
	Fetch Fuel & Water	YES	NONE	2 tasks required if household has more than 8 members.
	Attend School	NO	Children only	School vouchers required.
	Harvest crop	NO	Adults only	Crops not harvested in correct season are lost.

Table 2.1 Tasks by Season (one planting season)

Season	Task	Mandatory	Restrictions	Notes
Early Rains	Cook	YES	NONE	
	Fetch Fuel & Water	YES	NONE	2 tasks required if household has more than 8 members.
	Attend School	NO	Children only	School vouchers required.
	Sow Crop (early)	NO	Adults only	1 task if animal traction game option is not selected; otherwise 2 tasks without traction, 1 task with traction.
	Manure Field	NO	Adults only	Field with crop sown cannot be manured.
	Town Work	NO	Adults only	Person remains in town until year end.
Main Rains	Cook	YES	NONE	
	Fetch Fuel & Water	YES	NONE	2 tasks required if household has more than 8 members.
	Attend School	NO	Children only	School vouchers required.
	Weed field (early)	NO	Adults only	2 tasks if done manually, 1 task for herbicide spray.
	Fertilize crop (early)	NO	Adults only	
	Spray crop (early)	NO	Adults only	
	Sow Crop (late)	NO	Adults only	1 task if animal traction game option is not selected; otherwise 2 tasks without traction, 1 task with traction.
	Manure Field (late)	NO	Adults only	Field with crop sown cannot be manured.
Early Harvest	Cook	YES	NONE	
	Fetch Fuel & Water	YES	NONE	2 tasks required if household has more than 8 members.
	Attend School	NO	Children only	School vouchers required.
	Harvest crop (early)	NO	Adults only	Crops not harvested in correct season are lost.
	Weed field (late)	NO	Adults only	2 tasks if done manually, 1 task for herbicide spray.
	Fertilize crop (late)	NO	Adults only	
	Spray crop (late)	NO	Adults only	
Late Harvest	Domestic Chores	YES	NONE	
	Fetch Fuel & Water	YES	NONE	2 tasks required if household has more than 8 members.
	Attend School	NO	Children only	School vouchers required.
	Harvest crop (late)	NO	Adults only	Crops not harvested in correct season are lost.

Table 2.2 Tasks by Season (two planting seasons)

Task Management can be accessed by clicking the TASKS button in the Household, Farm or Town screens. See Section 3.8 for details of the task management screens.

2.1.2 Weather Report

After tasks have been allocated the weather is announced. The season's weather is indicated in the dashboard panel and by a weather icon in the calendar panel. Tasks are executed and crop losses for the season are calculated.

2.1.3 Crop Hazards

Crop hazards may occur in *Main Rains* for early planted crops (or when the *one planting season* option is selected) and *Early Harvest* for late planted crops. Crop hazards (e.g. Bean Rust, Bacterial Blight) are crop and planting time specific so there can be an advantage in diversifying crops or planting time to spread risk.

Some hazards can be mitigated to an extent by spraying with *pesticide, fungicide* or *Agriphage*, though for others there is no treatment. Information on the potential crop loss, any mitigation and mitigated loss is available in the Farm screen.

2.1.4 Post Harvest Losses

If the Post-harvest losses option is selected in the Game Settings screen, from Year 2, 25% of all household crops and food will be lost at the end of *Planting/Early Rains* if a granary store has not been purchased for the secure storage of these goods.

2.2 Births and Ageing

After the harvesting is completed, all household members age one year. Infants become children at age five and can take on domestic chores or go to school. Children become adults at 13 and can be allocated farm work. All healthy females from 13 to 45 years of age have the possibility of having a child. For the first year after a birth a woman will not become

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pregnant; in the second year the probability of a new birth is 50% lower than the normal rate. Fertility is reduced from the norm by 50% for women 35 years and older and by 67% for women 40 years and older.

The names and avatars of household members can be changed in the Customization screen, accessed via the CUSTOMIZE button in the Household screen.

2.3 Diet Allocation

Players must allocate food to all household members who are not in town. Persons returning from town will be set the diet level they had before leaving. The quality and quantity of food given to household members is important, as persons on poor diets are more likely to become ill or die. How food is allocated depends on the nutrition option selected in Game Settings. Details of the nutrition management screens are given in Section 3.9.

More information on nutrition and health can be found in Section 6 of this guide.

2.4 Nutrition Report

After food has been allocated, the created allocation is applied. If there are insufficient cash or food stocks (with the *Advanced* nutrition option) to cover the allocation, food will be allocated to adults before children and babies, until cash or food reserves are exhausted. A Nutrition Report is displayed showing the diet levels given to each household member. Any household member on an X-Level diet will die from malnutrition. Funeral costs for all deceased household members must be paid at the bank.

2.5 Health Hazards

Nutrition related health hazards can occur at any time in the game cycle from the start of Year 2. Household members who become ill are sent to hospital and will remain there until medical fees are paid at the bank. While in hospital they cannot do any work but must still be allocated food.

There is a possibility that an adult household member will contract HIV. If this happens, medical fees must be paid each year, or the person will remain in hospital and be unavailable for work. If a female character with HIV has a baby, the child will be born HIV positive. If a person contracts HIV while in town or a person with HIV goes to work in town, it is assumed that they will cover their own medical expenses from their wages. If contraception is purchased, household members are protected from contracting HIV for the year.

Death from natural causes becomes an increasing possibility for persons over 55 years of age.

2.6 Chance Events

If the option is selected in game settings, Chance Events that disrupt the normal seasonal rhythm may occur at any time in the game cycle from the set starting year onwards (year 2 by default) e.g.

- A traffic accident which seriously injures a household member.
- Receiving an unexpected money order from a relative working in town.
- A government subsidy reducing the market price of hybrid crop seeds.
- A transport breakdown causing supply problems at the market.
- A town worker arrested and put in prison.

2.7 Game End

The game will automatically end if all adult members of the player's household die or are hospitalized or if the player's household is declared bankrupt. Players can navigate to the Game Statistics screen to review their performance or click PLAY AGAIN to restart a new game. If a player wishes to play again with the same starting conditions (household composition, farm size and assets), the RANDOMZE H/H checkbox in the Game Settings screen should be deselected.

3. User Interface

The user interface (Fig 3.1) is built around the key locations in the farmers' lives – household, farm, village, market, and town (for access to the bank and other income sources). There is also a Game Statistics screen where game data can be reviewed during or after the game has been completed. Function buttons in each screen give the player access to relevant functionality and information.
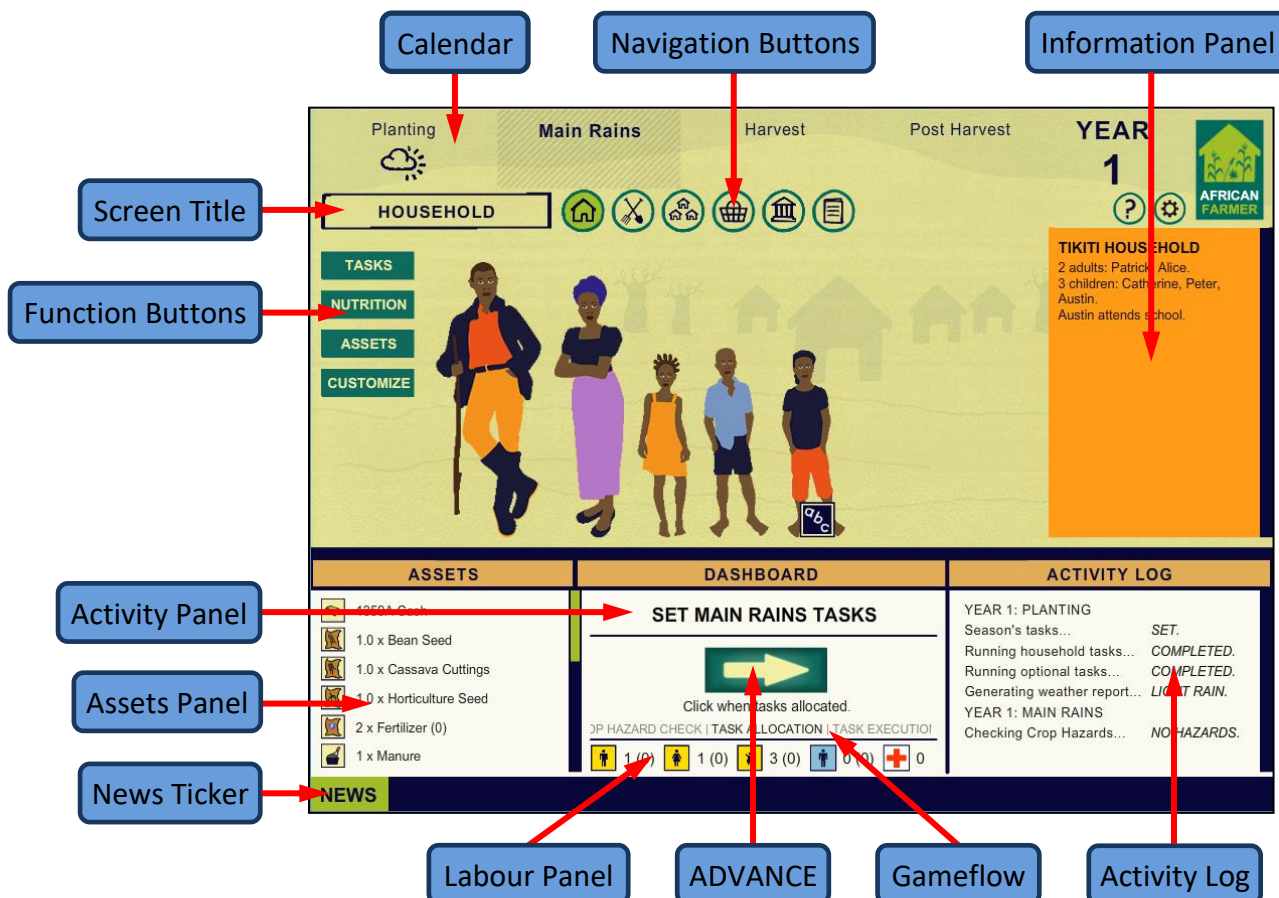

Fig. 3.1 Household screen showing UI elements

The **Calendar**, positioned across the top of the screen, indicates the year, season, and weather. The game stage bar shows the current stage in the game cycle.

The **Screen Title** displays the screen name.

The **Navigation Buttons** move the player between the top-level screens:

- Household - view information on household; manage tasks and household nutrition.

- Farm – view crop and field status; manage tasks.

- Village – view information on other village households.

- Market – buy and sell goods and services; buy, sell, or rent land, hire labour.

- Town – access bank screen; manage tasks.

- Game Statistics – explore statistical data for all households

The **Function Buttons** enable you to complete screen-specific functions. Table 3.1 lists the functions and information accessible from the various game screens.

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The buttons above the information panel give access to the in-game help system and allow the UI and Help Settings to be changed:

Access in-game help. See Section 3.10.

Change UI and Help Settings. See Section 3.12.

The **Information Panel** displays data relevant to the current screen and activity.

The lower part of the screen is a dashboard with elements that enable players to manage gameflow and track assets, human resources, and events:

Assets Panel - lists household assets. During task allocation unallocated asset quantities are shown in brackets.

Labour Panel - displays all household labour including labour hired at the market. During task allocation unallocated labour is shown in brackets. Household members in hospital are also indicated.

Activity Panel - indicates the current game activity.

Gameflow Ticker - displays the current stage in the game cycle.

Activity Log - lists game activity history.

News Ticker - displays market and other community news.

Clicking the button below the Activity Panel moves the game forward to the next stage.

Screen	Functions	Notes
Household	General	Display information on household members (click avatars)
	TASKS	Create, edit, delete, and monitor tasks
	NUTRITION	Create diets and food allocations for household
	ASSETS	List household assets
	CUSTOMIZE	Name and select avatars for household members
Farm	General	Monitor fields and crops, check hazards and yields
	TASKS	Create, edit, delete, and monitor tasks
Village	General	View information on village and households (click huts)
Market	BUY	Buy Goods and Services
	SELL	Sell Goods
	MARKET	List Market Stocks
	ASSETS	List household assets
	BANK	Arrange loans, pay medical fees, funeral costs; make loan repayments
Statistics	FARM	Field usage data (crops, hazards, fertilizer and spray use, harvest yields) by year
	NON-FARM	Child education and town work income by year
	HEALTH	Household composition, diet levels and health, statistical data on illness by diet level
	FINANCE	Cash, fields, total & net assets, assets/person, debts, loans & repayments by year
	TRANS	Financial transactions covering all income and expenditure by year
	MKT PRICES	Farm produce prices by year
	HAZARDS	Occurrence of crop hazards in the village by planting time
	WEATHER	Annual and cumulative statistical weather information by season
	SETTINGS	Game options set for the current game
	SAVE	Save statistical data to file

Table 3.1 Top Level Game screen functions

3.1 Household Screen

This screen (Fig. 3.2) represents the household where players can view household information, allocate tasks manage household nutrition and set first names and avatars for household members.

Fig 3.2 Household screen

When the screen is opened, the Information Panel displays summary information on the household – household composition and the names of any deceased members. Clicking on an avatar will display information on the household member: age, sex, education, diet, health, education, and current location. Location icons are displayed at the base of the avatars of characters in school, town or hospital.

Click the TASKS button to open the *Household Tasks* screen (Section 3.8).

Click the NUTRITION button to open the *Nutrition Management* screen (Section 3.9).

Click the ASSETS button to list household assets in the Information Panel.

Click the CUSTOMIZE button and select an avatar to open the *Customization* screen.

3.2 Customization Screen

In this screen (Fig 3.3) the names and avatars of household members can be changed. To change a name, type the new name in the NAME text box. To change the avatar, click on an avatar from the displayed selection. When finished, click SAVE or CANCEL to discard your changes.
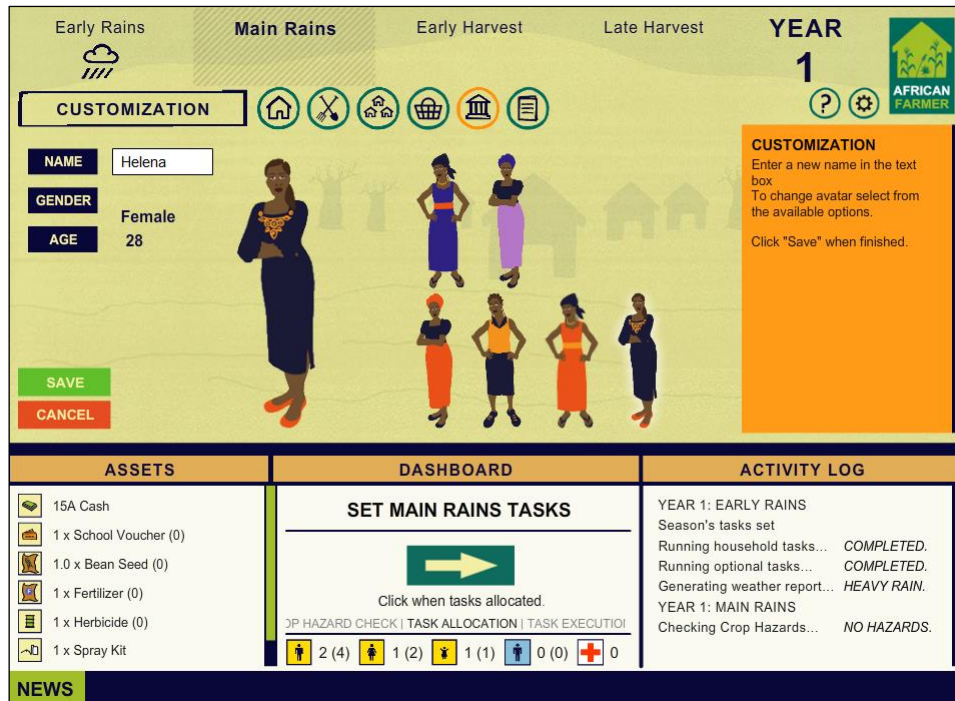

Fig 3.3 Customization screen

3.3 Farm Screen

This screen (Fig. 3.4) represents the farm and gives access to the task management screens.
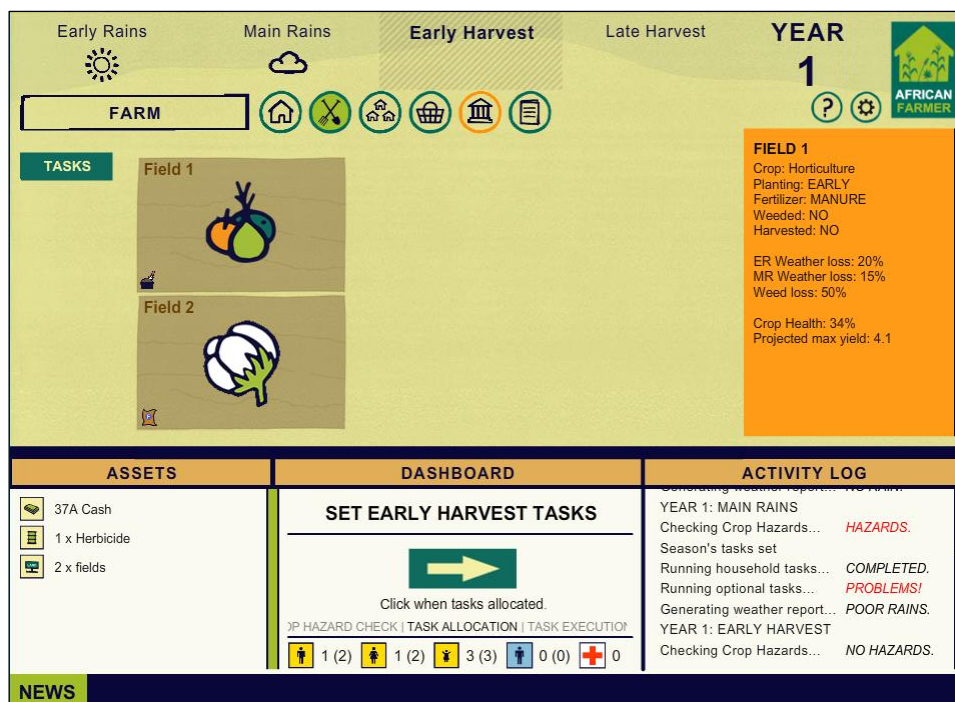

Fig 3.4 Farm screen

The field grid shows all fields available for use by the household (owned or rented) with field status icons giving information on planted crops, applied inputs and crop hazards. Mouseover text on the icons gives additional information. Click the field graphic and field icons to display additional data on crop health, inputs, weeding, weather, and hazard losses in the Information Panel. Fig 3.5 shows the Farm Screen displaying a crop hazard alert.

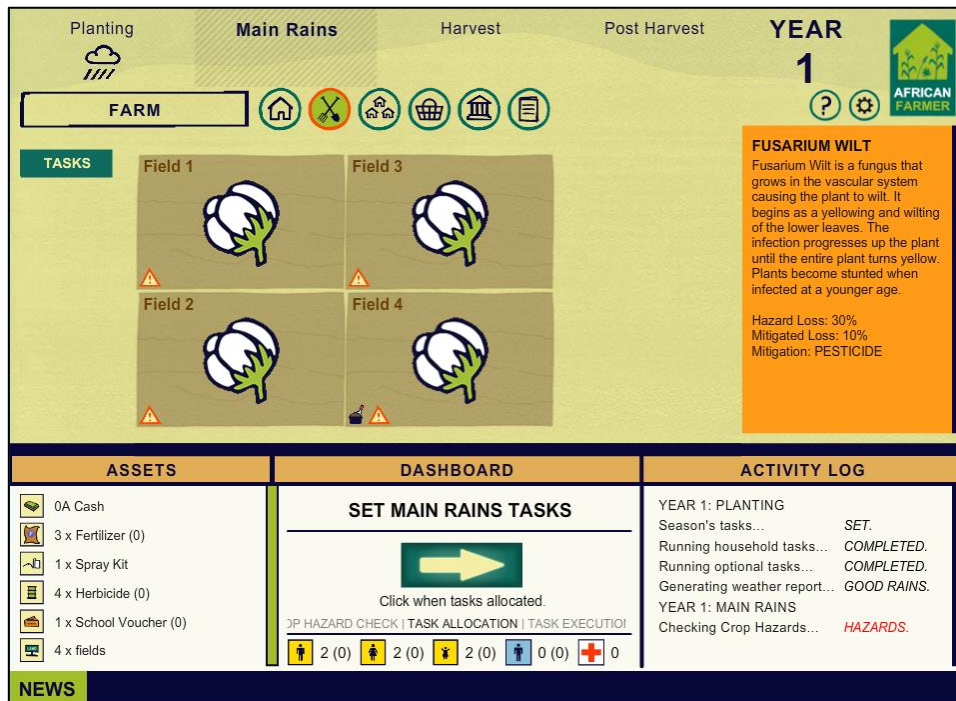

Fig. 3.5 Farm screen (crop hazard)

3.4 Village Screen

This screen (Fig. 3.6) shows all households in the village. Household names are displayed below each hut - the player's household name is coloured yellow and the homes of any relative mauve.
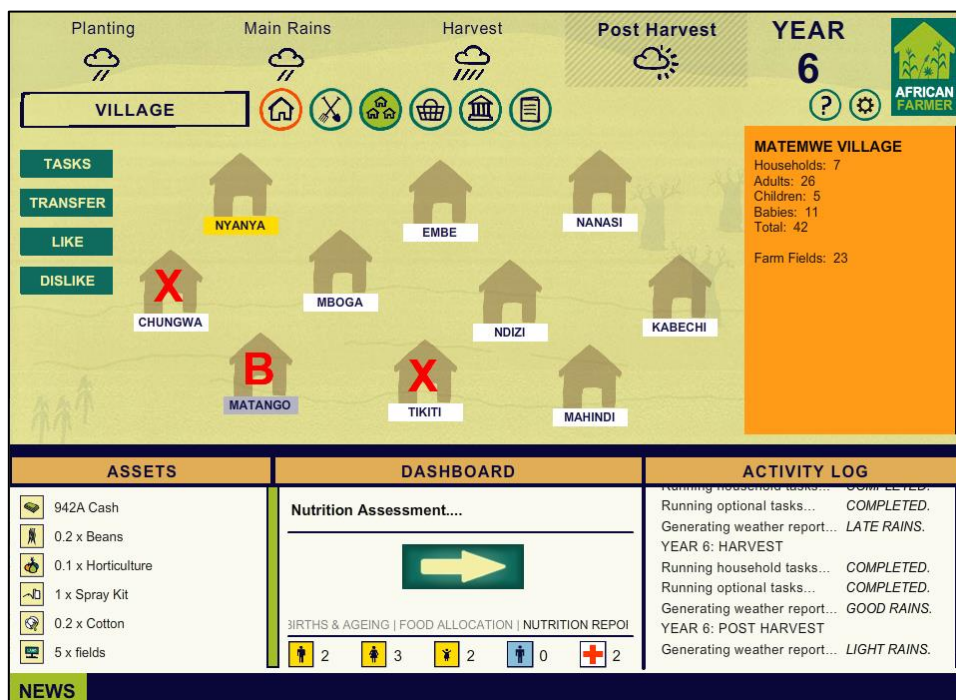

Fig 3.6 Village screen

Households which have closed are overlaid with a red letter indicating the reason for closure: 'B'= bankruptcy, 'N' = non-viable (no healthy adults) or 'X' = all have died due to illness or malnutrition. Clicking on a hut will open the Village Household screen (Fig 3.7) which displays public information on the household, including household composition, names, and size of farm. If a relative's household is selected, additional information on individual household members is displayed.
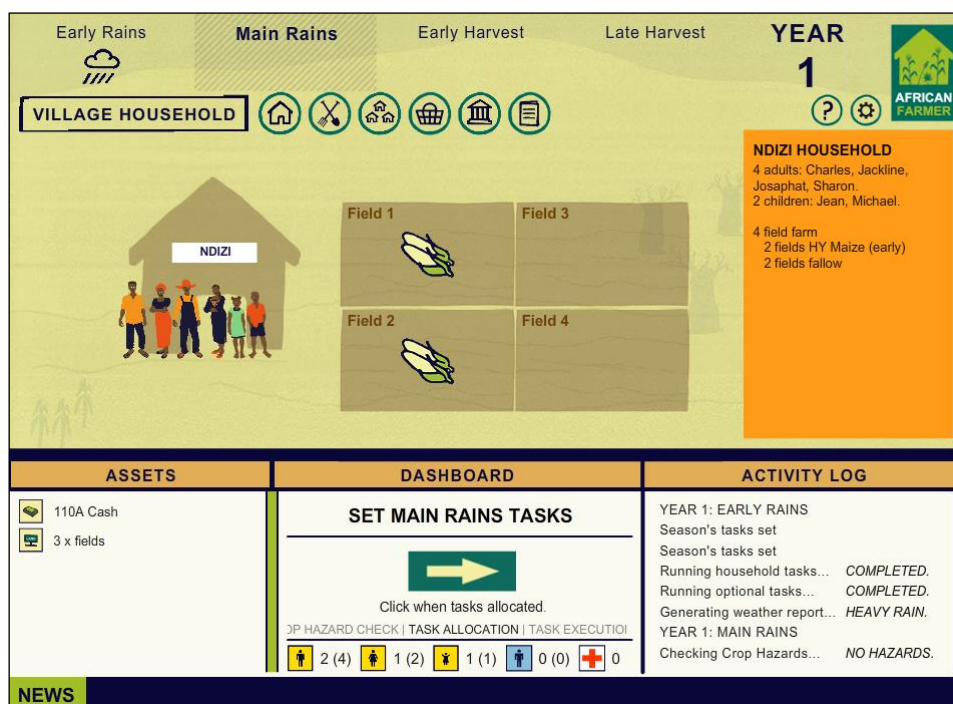

Fig 3.7 Village screen (household detail)

3.5 Market Screen

The Market screen (Fig. 3.8) displays the Market Stocks Panel containing icons of goods available for trade.

Fig 3.8 Market screen

Clicking an icon in the Selection Panel will show the current market selling and buying prices, available stocks and give basic information on the product. Yield Information will be given for crops.

The *Display* radio buttons select which market stocks are displayed – *All*, *Inputs* (crops, fertilizers sprays, spray kits and hired labour), *Food* and *Other* (land, school vouchers, bus tickets and contraception). Be careful not to confuse *food* and *crops* – crop icons show sacks containing the seeds or cuttings; food icons show an image of the plant. Click an item in the selection panel to display information on the item, including market buy and sell prices and the current stocks. For crops, yield data is also displayed.

3.5.1 Buying Goods

The BUY button is used when purchasing goods from the market.

If 'Click Select' enabled[1] (the default): Click to select the required item in the panel and then click the counter to add. To remove items hold down the CTRL key and click on the item entry. Holding down a number on the keyboard (1-9) sets the number of items added or removed on each counter click.

If 'Drag and Drop' selected: Drag the required items to the counter. To remove an item drag its icon off the counter. Hold down a number on the keyboard (1-9) to set the number of items dragged.

When all required items have been added to the counter, press CONFIRM to complete the purchase or CANCEL to terminate the transaction.

3.5.2 Selling Assets

To sell assets to the market, click the SELL button. The selection panel will display household assets available for sale. Add or remove assets for sale as described in the above section. Click CONFIRM to complete the sale or CANCEL to terminate the transaction. Household land can be sold to the market but cannot be rented.

Note that the rental period for land is one year.

Click MARKET to display all market goods and current stock levels.

Click ASSETS to list all household assets.

3.6 Town Screen

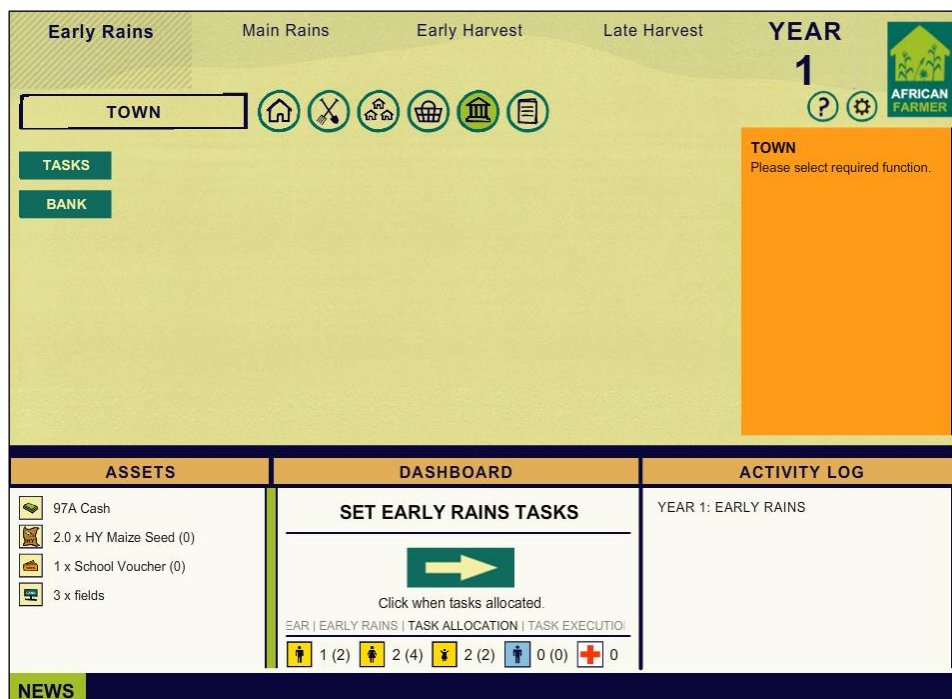The Town screen (Fig 3.9) gives access to the bank and the task management screens.

Fig 3.9 Town screen

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[1] The selection method can be changed in Game Settings. See Section 3.12

3.7 Bank Screen

At the bank screen (Fig 3.10) players can arrange loans, make loan repayments, and pay medical fees and funeral costs.
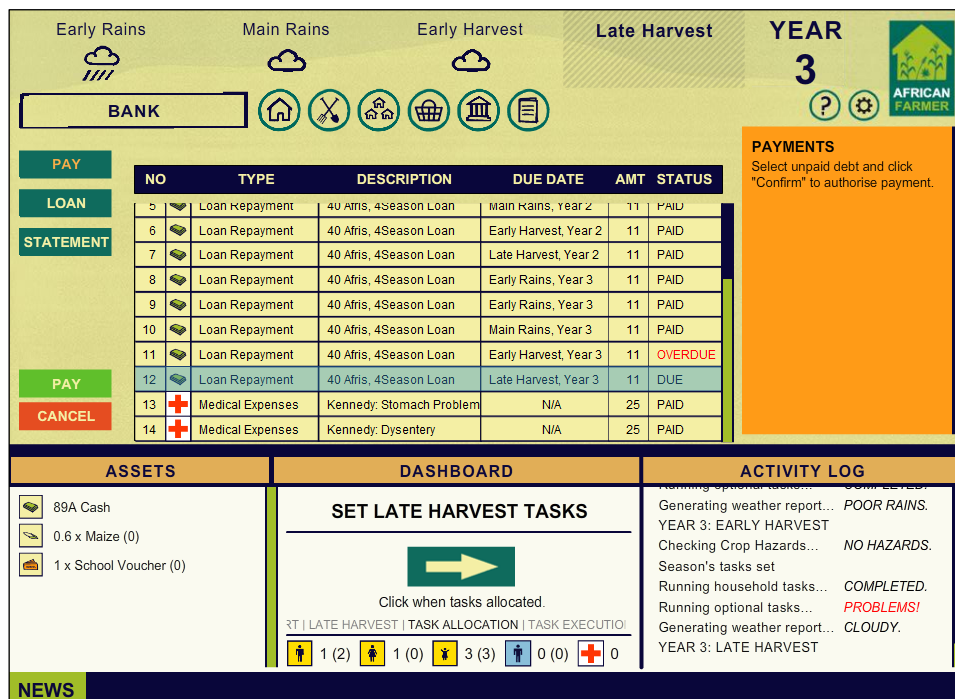
Fig 3.10 Bank screen (payments list)

Select the PAY button to display a list of payments (Fig 3.10); radio buttons switch between *All* payments and *Unpaid* bills. To make a payment select the bill from the list and click CONFIRM**.**

Select LOAN to open the *Loan* screen which displays radio buttons to select the amount and term of the loan. Details of the loan, including the repayment schedule, are displayed in the information panel.

Click APPLY to apply for the loan; the outcome of your application will be shown in the information panel. Section 8 gives more information on the handling of financial issues in the game.

3.8 Task Management Screens

The task management screens can be accessed from the Household, Farm and Town screens.

The function buttons allow the player to switch between the various task management screens.
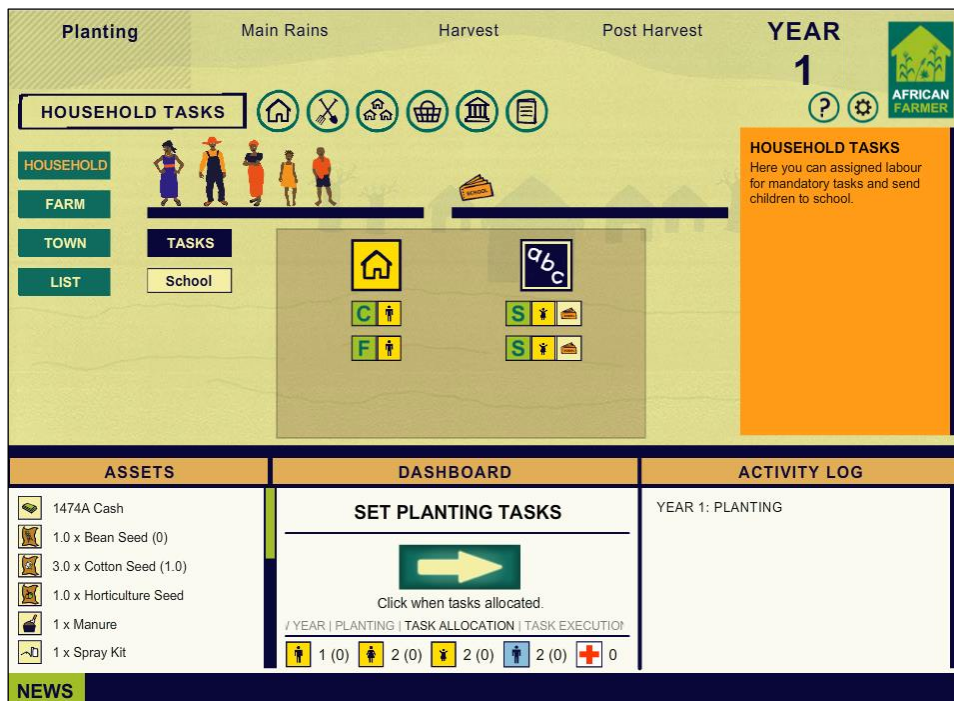

Fig. 3.11 Household Tasks screen

The Household Tasks screen (Fig 3.11) is where labour is allocated for mandatory tasks and children are sent to school. Labour and resources are allocated for farm tasks in the Farm Tasks screen (Fig 3.12) and adult household members are sent to town in the Town Tasks screen (Fig 3.13).
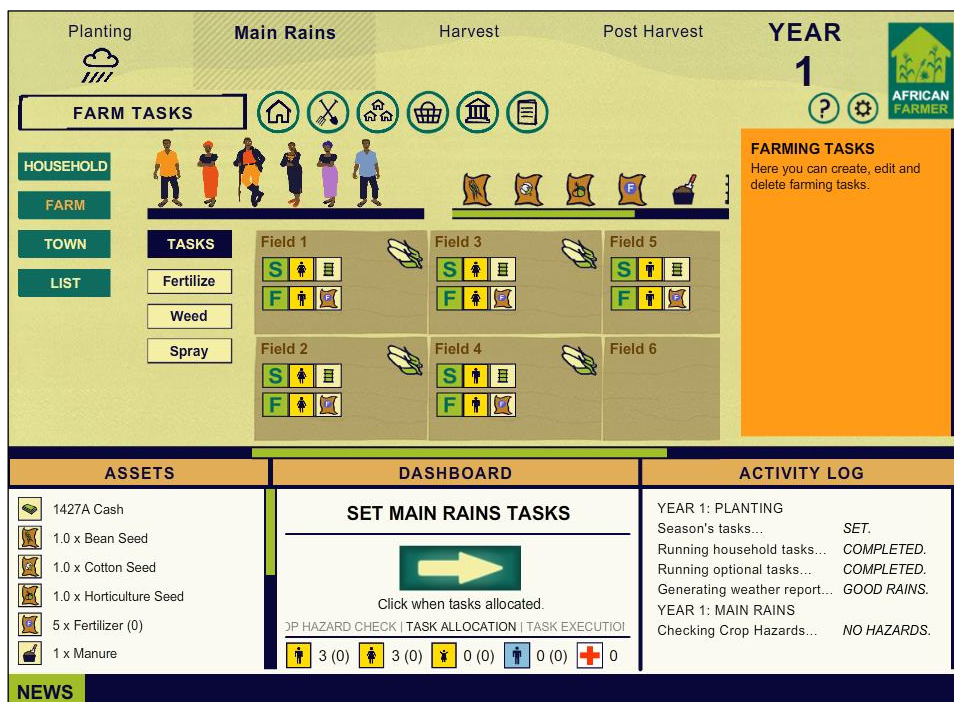
Fig. 3.12 Farm Tasks screen
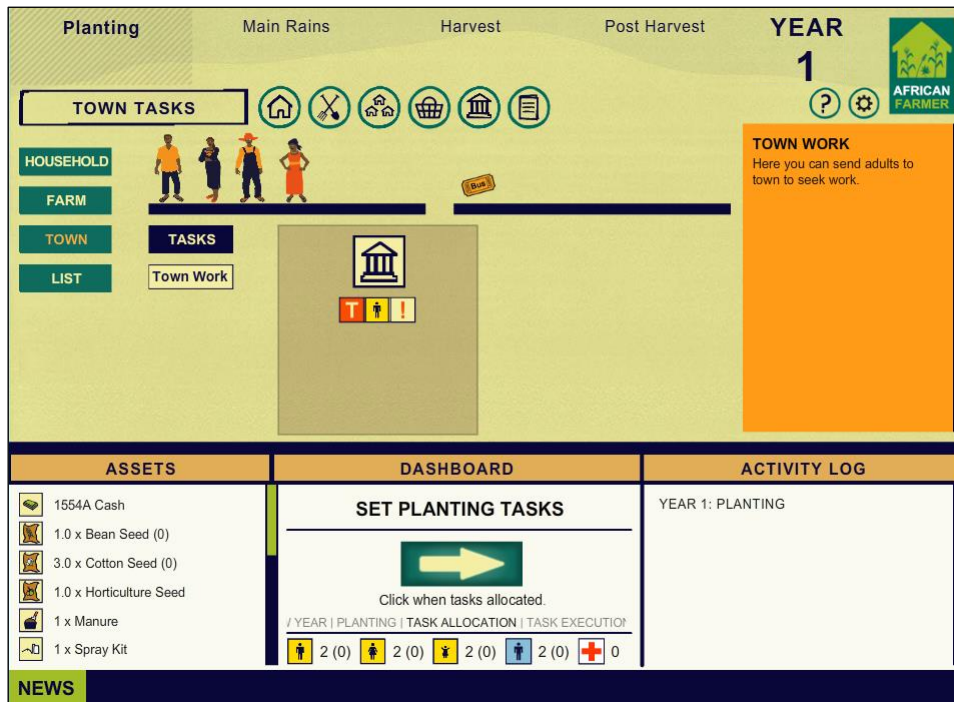
Fig. 3.13 Town Tasks screen

Click LIST to open the *Tasks List* screen (Fig 3.14) which displays all household tasks. Double-clicking a task will navigate to the appropriate task management screen. Selecting the *Archive* radio button will display tasks from previous years; selecting *Current* will show tasks for the current year only.

Tasks will be available for selection only during the Task Allocation stages of the game and only tasks that are appropriate for the season will be displayed e.g. *Fertilize Field* tasks will be available for selection only during Main Rains and Early Harvest.

Fig. 3.14 Tasks List screen

3.8.1 Creating Tasks: *Click Select*

To add a new task, select a task from the list on the left and then click on the panel or field. To remove a task hold down the CTRL key and click on the task. Mandatory tasks are automatically created in the Household Tasks screen and cannot be deleted.

Labour and other resources can be added to a task by selecting them from the Labour and Resource Panels and clicking the appropriate square in the task icon. The task icon will accept only appropriate resources for the task. Labour or resource assignments can be overwritten by selecting a new labour or resource icon and clicking on the task icon. To remove labour or resources simply hold down the CTRL key and click the icon.

The task label will turn green when all required resources have been allocated.

Note that you can save tasks without completing all fields and finish the task setup later. Incomplete tasks will be displayed in the task list with a status *Action Req,* and the unset fields marked *TBA* and highlighted in red.

3.8.2 Creating Tasks: *Drag and Drop*

To create a task, drag a task box to the panel or field. To remove a task drag it off the panel or field. Mandatory tasks are automatically created in the Household Tasks screen and cannot be deleted.

Labour and other resources can be added to a task by dragging them from the Labour and Resource Panels to the task icon. The task icon will accept only appropriate resources for the task. Labour or resource assignments can be overwritten by dropping a new labour or resource icon on the task icon. To remove labour or resources simply drag them away from the task icon.

Farm tasks can be transferred to another field by dragging the icon to the desired location (click on the label box on the left-hand side). To delete a task drag it off the panel or field**.**

The task label will turn green when all required resources have been allocated.

Note that you can save tasks without completing all fields and finish the task setup later. Incomplete tasks will be displayed in the task list with a status *Action Req,* and the unset fields marked *TBA* and highlighted in red.

Tasks are executed when the button is clicked to move on to the next game stage. It is good practice to check all tasks are properly set in the *Tasks List* screen, before clicking the *Advance* button.

3.9 Nutrition Management Screens

The nutrition management screens are used to create diets and food allocations for your household.

3.9.1 Basic Nutrition

If the *Basic* nutrition option is selected, clicking the NUTRITION button in the Household screen opens the Food Allocation screen (Fig 3.15). Each household member requiring food has a plate on the table.
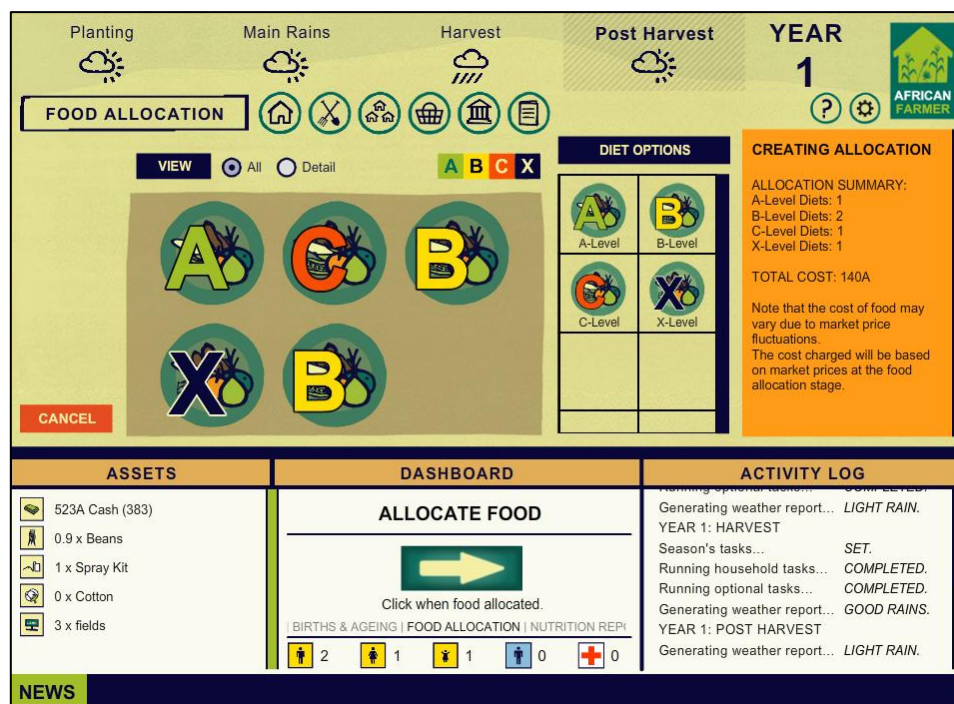

Fig 3.15 Food Allocation screen (Basic Nutrition)

To allocate a diet with *click select* enabled, select the desired diet from the selection panel and click on a plate. To change a diet, simply click on the plate with a new diet selected.

To allocate a diet with *drag and drop* enabled, drag the desired diet from the panel to a plate. To change a diet, simply drag and a new diet to the plate. Diets can be dragged between plates or removed by dragging them off the plate.

Diet costs are calculated on the assumption that the proportion of food grown by the household is equal to the proportion of available fields planted with food crops. The cost of home-grown food is set at the market buy price (i.e. the loss of the income from not selling the food). The cost of food not grown by the household is set at the market sell price

The total cost of the allocation is shown on the information panel. If you have insufficient cash to cover the cost, the allocation will not be fully applied.

3.9.2 Standard and Advanced Nutrition

For *Standard* and *Advanced* nutrition, clicking the NUTRITION button in the Household screen will open the Diet Management screen (Fig. 3.16).

To create a diet with *click select* enabled, click NEW DIET and then select food items from the panel and click the plate to add to the diet. To remove a selected food item from the diet simply hold down the CTRL key and click the food item to be removed. Holding down a number on the keyboard (1-9) sets the number of food items added or removed on each click.

To create a diet with *drag and drop* enabled, click NEW DIET and then drag food items from the selection panel to the plate. To remove food items simply drag them off the plate. Holding down a number on the keyboard (1-9) sets the number of food items dragged.
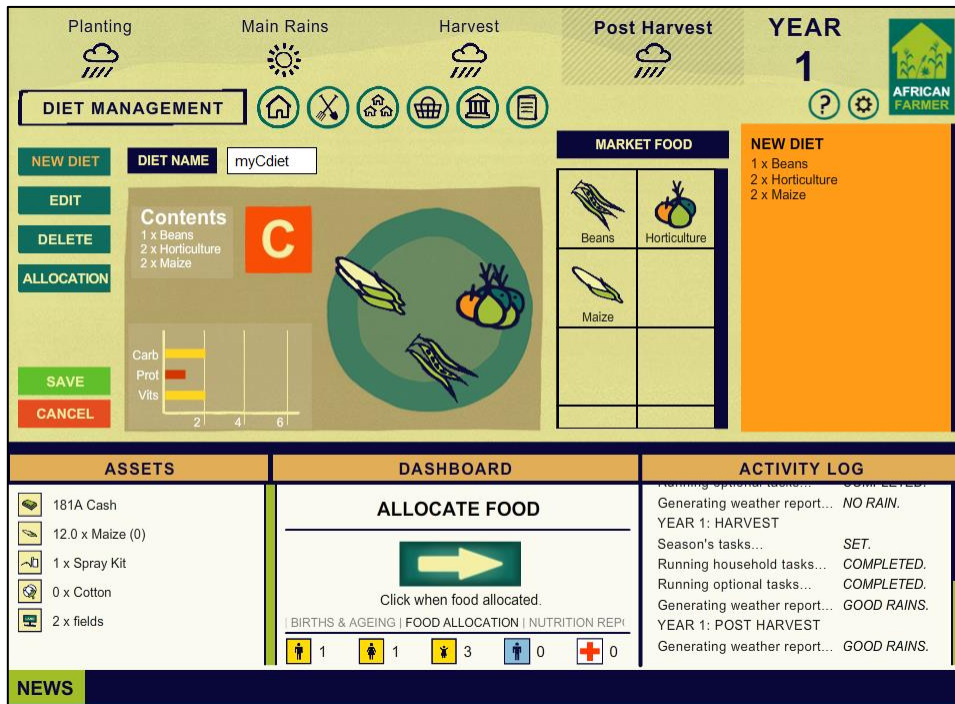
Fig 3.16 Diet Management screen (Diet Creation)

The diet contents and diet level are updated as food items are added to the plate and the carbohydrate, protein and vitamin content of the diet shown on the graph. Note that diet contents are measured in *portions* which vary in size between men, women/children, and babies. The portion sizes are automatically calculated when the diet is allocated to a specific person. The food portions required for a given diet level depends on the nutrition model selected in the Game Settings screen.

When the diet is complete, give it a name and click SAVE. Diets can be edited or deleted by selecting the appropriate function button. To discard changes select the CANCEL button. Selecting EDIT will automatically open the diet for editing if you have only one saved diet.
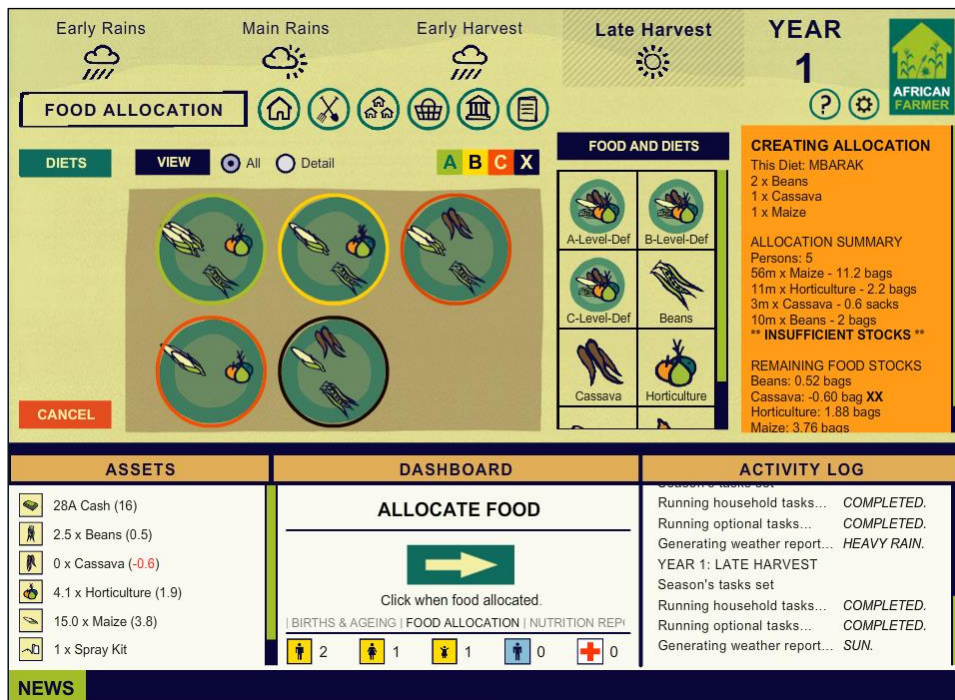
Fig 3.17 Food Allocation screen (overview)

To create an allocation select the ALLOCATION button which will open the Food Allocation screen (Fig 3.17). In this screen players allocate diets for each household member. Players can switch between an overview (Fig 3.17) which shows plates and current diet levels for all household members and a detailed view (Fig 3.18) which provides additional information on the carbohydrate, protein, and vitamin levels of each diet. Double clicking a particular plate in the overview screen will open the detail view at that specific plate.
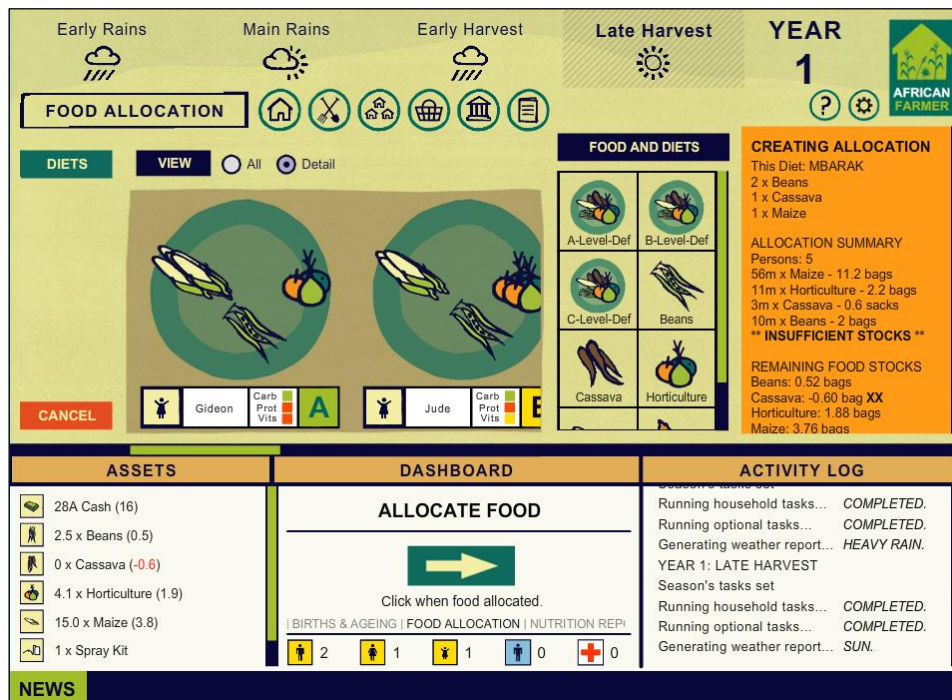
Fig 3.18 Food Allocation screen (detail)

With *click select* enabled, saved diets or food portions are added to the allocation by selecting them in the panel and clicking an individual's plate. Selected food portions or diets are removed by holding down the CTRL key when clicking on a food item. Holding down a number on the keyboard (1-9) sets the number of food items or diets added or removed on each click.

With *drag and drop* enabled, saved diets or food portions are dragged to individual plates to create the allocation. Food portions are removed from the allocation by dragging them away from the plates. Food portions can also be dragged between plates. Holding down a number on the keyboard (1-9) sets the number of food items dragged.

As changes are made to the allocation, information on the updated diet, an allocation summary and a tally of the remaining food stocks is displayed in the Information Panel. The updated diet information displays the diet contents in *portions*; the allocation summary shows the total number of *portions* and the corresponding amount in *bags* of food; remaining food stocks shows the household stocks (or deficit) that will remain after the allocation has been applied. When the allocation is complete click SAVE or CANCEL to discard changes if editing an allocation.

An allocation will be saved even if there are insufficient food stocks to cover it. Players can buy additional food at the market to make up the shortfall before continuing to the next stage of the game. If a shortfall in food stocks remains, the allocation will be applied using the existing food stock, starting with the adult members of the household.

3.10 Game Help

A set of short video tutorials covering various aspects of the game can be accessed from the opening screen by clicking TUTORIALS. If the installation that includes the tutorials has been installed, the tutorials can be viewed directly in the game; otherwise a link will take you to the game website where the tutorials can be viewed online.

During gameplay, help can be obtained by clicking 🅿️ to displays a pop-up window where help on the current game stage or screen can be accessed. An overview of the UI and a game flow diagram is also available.

Button mouseovers display help text when the cursor hovers over navigation and function buttons.

A *Stage Alert* window will pop up if you attempt to proceed to the next game stage without completing important tasks or allocating food (note that the alert can be ignored by clicking the ➡️ button once again).

The Help Settings can be configured in the Game Settings Screen.

3.11 Game Statistics Screen

The *Game Statistics* screen (Fig 3.19) enables players to review various elements of historical game data during gameplay or after the game is completed.
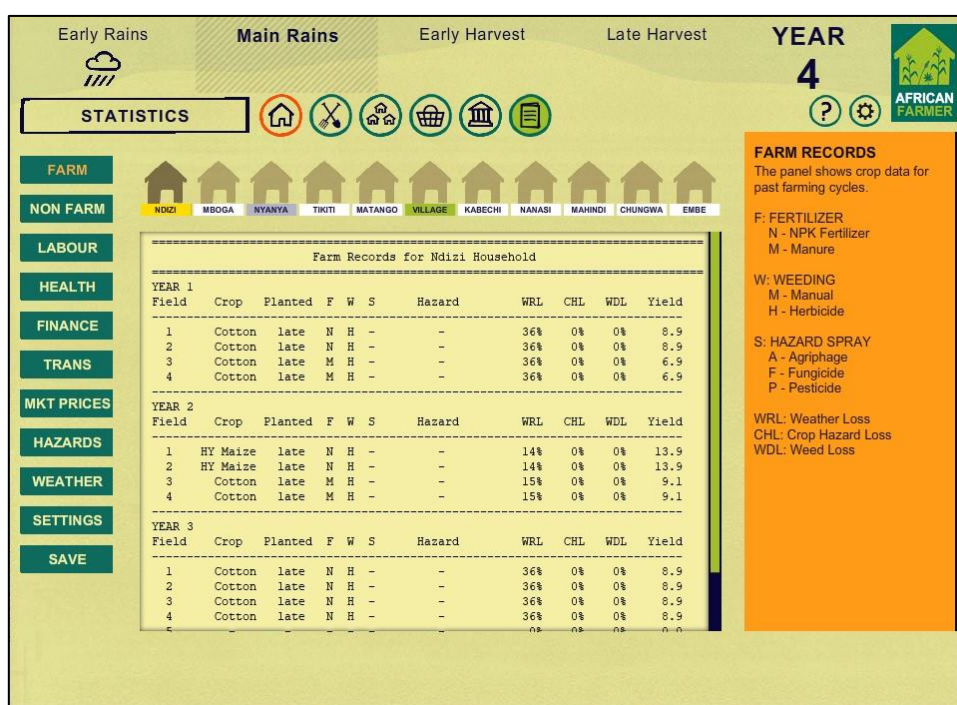
Fig 3.19 Game Statistics screen (farm data)

Data for the entire village or individual households is selected by clicking the huts arranged across the top of the screen. The following data is available to view:

- FARM: yearly data on field usage (crops, hazards, fertilizer and spray use, harvest yields).
- NON-FARM: yearly data on education and town work income.
- LABOUR: seasonal labour allocation (adult, child, hired) by category (household, school, farm, town), labour lost through illness, and unused labour.
- HEALTH: yearly data on household composition, diet levels and health plus statistical data on illness by diet level.
- FINANCE: yearly summary financial data including cash, fields owned and rented, total and net assets, assets/person, debts, loans, and repayments (loan, medical fees and funeral costs).
- TRANS: Financial transaction data covering all income and expenditure (with total yearly profit/loss)
- MKT PRICES: yearly data on farm produce prices.
- HAZARDS: statistical village crop hazards data by planting.
- WEATHER: yearly and cumulative statistical weather data by season.
- SETTINGS: the game options set for the current gameplay session.

The game statistics data (for the player's household or the entire village) can be saved to file by clicking the SAVE button.

3.12 Game Settings Screen

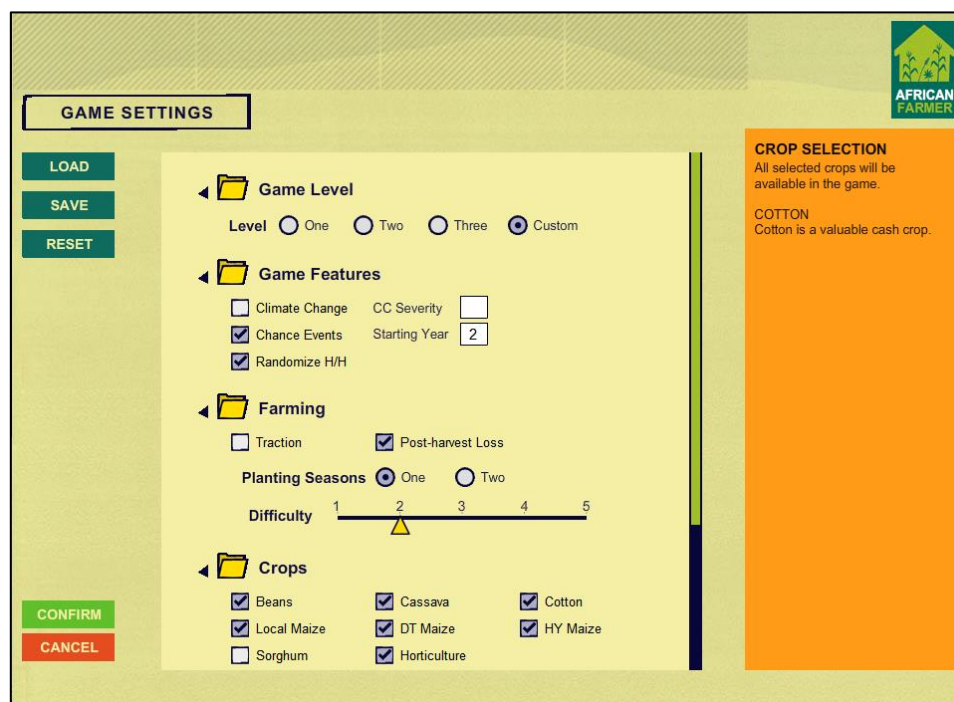The Game Settings screen (Fig 3.19) is accessed by clicking SETTINGS in the opening screen.

Fig 3.19 Game Settings screen

In the Game Settings screen the following options can be set:

Game Level

Three game level settings are also available which select a range of game options described above and a *Difficulty* setting. These pre-sets can be used to quickly adjust the settings to match the learning context and players' experience. All settings can also be modified individually after a game level has been selected.

- ONE: this mode selects the single planting season farming, the *Basic* nutrition model, a reduced set of supported crops and no other game features. The level of challenge is set to the lowest setting. A good introduction for players new to the game
- TWO: this selects two planting seasons, adds *drought tolerant maize* as a supported crop and increases the challenge level.
- THREE: this mode selects the *Standard* nutrition model, adds the *Traction* and *Post-harvest Losses* farming options, selects all crops and disables several game help options.
- CUSTOM: this box is checked when a level setting has been modified.

Game Features

- CLIMATE CHANGE: if selected, the probability of prolonged periods of drought and the occurrence of extreme weather increases with each passing year. The *severity setting* adjusts the magnitude of the annual increase (1 = low, 5 = high).
- CHANCE EVENTS: if selected chance events may occur from the set starting year (1-5) onwards – see Section 2.6.
- RANDOMIZE H/H: if selected, the player's household composition and assets are randomly assigned at the start of each game, with the proviso that they will be different from those set in the previously played game.
  If unselected, the starting household composition and assets will remain the same for each game.

Farming

- TRACTION: if selected, animal or mechanised traction can be hired at the market to help in clearing fields for planting. Crop planting requires one adult task if traction is used or two without traction.
- POST-HARVEST LOSS: if selected, starting in Year 2, 25% of all household crops and food will be lost at the end of *Planting/Early Rains* if a granary has not been purchased for the secure storage of these goods.
- PLANTING SEASONS: if set to *one*, crops are planted in the *Planting* season, tended in *Main Rains,* and harvested in the *Harvest* season. If set to *two*, crops can be planted in both the first and second seasons and then harvested two seasons later (seasons renamed to *Early Rains, Main Rains, Early Harvest* and *Late Harvest*).
- DIFFICULTY: sets the level of difficulty between 1 (low) and 5 (high). This setting modifies the player's starting cash and the achievable crop yields.

Crops

Select the available crops for the game. Supported crops include beans, cassava, cotton, mixed horticulture, local maize, drought tolerant maize, high yield maize, and sorghum.

Market

Sets the number of fields available for purchase and rent.

Nutrition

- BASIC: the player selects a fixed A-, B-, C- or X-level diet for each household member. The cost of diets will vary with market prices.
- STANDARD: players create diets from food grown or purchased at the market. Balanced diets require a mix of food sources that provide carbohydrates, protein, and vitamins.
- ADVANCED: similar to the STANDARD option, except that the minimum quantity of each food source for a given diet level is higher.

See Section 6 for more details.

User Interface

Select between 'Click Select' and 'Drag and Drop' as the selection method for items in the market, task, and nutrition screens. Also set the keyboard key to be pressed when removing items with the 'Click Select' method.

Help

- GAME INTRODUCTION: an overview of the game is displayed at game start.
- BUTTON MOUSEOVERS: when selected, help text is displayed when the cursor hovers over navigation and function buttons.
- STAGE ALERT: when selected, alert is displayed if the player attempts to proceed to the next game stage without completing essential tasks (the alert can be ignored).
- PAYMENT ALERT: when selected, alert is displayed when a debt is due for payment at the bank.
- AUTO-DISMISS: when selected alert windows are automatically removed at the next game stage.
- MUTE SOUND: mutes the soundtrack music on video tutorials (can be overridden in the video player screen).

When game configuration is completed, click CONFIRM to load the settings changes or CANCEL to discard changes and return to the opening screen. Your game settings will be loaded automatically when you next play the game.

Click SAVE to save the settings to a file; the LOAD button loads game settings previously saved to a file.

Check for African Farmer Updates

If selected, a check is made for updates to *African Farmer*. If an update is available, a dialog window will offer to open the *African Farmer* download page in a browser window.

During gameplay, the UI and Help Settings can be modified by clicking the ⚙ button to open a cut-down version of the Game Settings screen.

4. Farming

Seeds or cuttings for all available crops (selected in the Game Settings screen) can be purchased at the market. Drought tolerant and high yield maize varieties will produce a "local maize" harvest. Maize, beans, cassava and sorghum food stocks and harvest outputs can be used for planting if you have no stock of the required seed.

When the *One Planting Season* option is selected, crops can be planted only in the Planting Season. With the *Two Planting Seasons* option, crops can be planted in both *Early Rains* (early planting) and *Main Rains* (late planting). This can help spread the risks of adverse weather and crop hazards and may enable players to better manage labour resources.

Note that if the *Post-harvest Loss* option is selected, from Year 2 25% of all household crops and food will be lost at the end of *Planting/Early Rains* if a granary store has not been purchased for the secure storage of these goods.

4.1 Crop hazards

Crop hazards may occur in *Main Rains* or *Early Harvest* (for late planted crops with *Two Planting Seasons*). Some hazards can be mitigated to an extent by spraying with pesticide, fungicide or Agriphage, though for others there is no treatment. Clicking on the field hazard icon in the Farm screen will display data on the potential crop loss, any mitigation, and mitigated loss in the information panel.

Crop hazards (e.g. bean rust, bacterial blight) are crop and planting specific and if they occur will apply to all fields planted with the target crops. Therefore there can be an advantage in diversifying crops to spread the risk of crop hazards.

4.2 Crop Yields

With the *Two planting Seasons* option, for most crops late planting (i.e. in *Main Rains*) will typically produce yields 20-25% higher than early planting. The exceptions are *mixed horticulture* which produces broadly similar yields with either planting option and *drought tolerant maize* which tends to do better when planted early.

If a field is manured (this cannot be done after the crop is planted) yields will be increased; Applying NPK Fertilizer in the middle growth season will give a greater improvement than using manure. When treated with fertilizers, hybrid crop varieties, can give the highest yields.

Poor rains or drought will significantly reduce yields.

Failure to weed fields (manually or by spraying with herbicide) will reduce yields by 50%.

Crop hazards (as described above) also reduce yields.

4.3 Farming Inputs

Various inputs can be purchased at the market to promote crop growth and treat crop hazards:

Manure and NPK component fertilizers can be purchased.

Pesticide, fungicide and Agriphage can be used to treat crop hazards.

Herbicides can be used as an alternative to weeding.

In the Farm screen, clicking and double-clicking on the field icons will display additional information on crops and hazards.

4.4 Weather

The season's weather is announced after tasks have been allocated. The weather can be *Good Rains, Light Rains, Late Rains, No Rains, Flash Flood* and *Heat Wave*. *Flash Flood* will occur very rarely and *Heat Wave* only if the *Climate Change* option is selected. All weather conditions, with the exception of *Good Rains*, will have an adverse effect on crop yields.

5. Education and Town Work

All adult and child household members start the game with a randomly assigned level of education. Education makes a substantial difference to an adult's earnings potential should they be sent to town.

5.1 Education

Children can be sent to school as an alternative to domestic chores. A school voucher is required for each term's attendance. An additional year's attendance will be added to child's education record for a year's FULL attendance at school. Partial attendance is not counted or carried forward to the next year.

5.2 Town Work

At the start of each year adult household members can be sent to town to look for work. However you cannot send all adults to town – at least one healthy adult must remain in the village to manage the household. Anyone sent to town will remain there for the rest of the year and will not be available for domestic or farm work. While in town the household will not need to allocate them food or pay any medical expenses. A bus ticket must be purchased for each adult going to town.

There is no guarantee that town workers will be able to send money home unless they have a good education. An adult with no education has about 20% chance of sending money home and the maximum amount will be around 50A. With six years' education a person working in town is certain to send money home to a maximum of about 160A. Any money saved is sent home by M-Pesa at the start of the second, third and fourth seasons. When town workers return at the end of the year, they may bring back additional cash. If the *Chance Events* game option is selected, there is a possibility of two town work specific events occurring: getting a new job through contact with a relative (which guarantees the person work and a better salary) and imprisonment (which guarantees the person will no longer send money home).

If a woman gives birth in town, the baby will return home with her at the end of the year and need not be included in the food allocation for the current year. The baby's diet level will be the same as the mother's for the first year.

6. Nutrition and Health

Household members require a balanced diet of protein, carbohydrate, and vitamins to remain healthy and individuals given poor diets are more likely to become ill and may die. Illnesses are nutrition-related except for HIV, which can be contracted by anyone, and death by natural causes which becomes an increasing possibility for characters above 55 years of age.

Susceptibility to illness and disease various with diet levels:

- Persons on an A-level diet are not susceptible to nutrition-related illness.
- Persons on a B-level diet have some risk of nutrition-related illness.
- Persons on a C-level diet are at significant risk of succumbing to nutrition-related illness.
- Persons on an X-level diet will die from malnutrition.

Persons given an X-level diet will die from malnutrition shortly after the Food Allocation stage, though nutrition related illnesses may occur for characters on B & C level diets at any point during the game cycle. Household members who are ill cannot work and will remain in hospital until medical fees are paid at the bank.

Adult characters have a small possibility of contracting HIV. Persons with HIV hospitalized every year until medical fees are paid to cover HIV drugs. Babies of characters with HIV are born HIV positive.

There are three nutrition models available for selection in Game Settings:

- BASIC: the player does not need to consider the details of diet creation but simply selects a fixed A-, B-, C- or X-level diet for each household member. The total cost of the allocation, which will vary with market prices, is deducted from household cash.
- STANDARD: each food source is considered to provide a single nutrition type (carbohydrate, protein, or vitamins). Higher level diets require more food portions covering a wider range of nutrition types e.g. a B-level diet requires 7 portions of food from 2 nutrition types.
- ADVANCED: similar to the STANDARD model except that the minimum quantity of each nutrition type for a given diet level is higher e.g. a B-level diet requires 7 portions from 2 nutrition types, with at least 2 portions of each nutrition type.

The following information applies only to the Standard and Advanced nutrition options.

Level	Portions	Nutrition Types	Minimum Portions per Nutrition Type	
			STANDARD	ADVANCED
A	9	3	1	3
B	7	2	1	2
C	5	1	1	1
X	<5	-	-	

Fig 6.1 Diet Levels and Food Portions

Cassava, Maize and Sorghum provide carbohydrate; beans protein; and horticulture vitamins. Portion sizes (baby = 1; woman/child = 2; man = 3) are automatically calculated when a diet or food item is given to a person in an allocation. Therefore the amount of food required to cover a given diet will vary between men, women/children, and babies. One bag of food provides five baby-sized portions.

7. The Market

The market remains open throughout the game. At the market food, seeds or cuttings for all supported crops and other inputs (*manure, NPK fertilizers, herbicide, pesticide, fungicide* and *Agriphage*) can be purchased. Spray kits - required for applying sprays - are also available. Land can be bought, sold, or rented. Labour can be hired, as can both animal and mechanised traction*. Bus tickets for town workers and school vouchers - required for children attending school - can be purchased. Contraception, which will prevent any household births in the current year, is also available. If the *Post-harvest Loss* game option has been selected, granaries for secure food and crop storage will be included in the market inventory. Market prices will fluctuate during the game. Land purchase and rental prices will increase if available land becomes scarce. Seed and food prices vary with the size of harvest yields. Section 3.5 describes the market screen in detail.

8. Finance

Each household begins the game with some starting cash which can be supplemented by applying for a bank loan. If a household is unable to pay its debts, it is declared bankrupt and, in the case of the player's household, the game is ended.

8.1 Bank Loans

Decisions on loan applications are based on the net liquid assets of the household. A household can take out more than one loan, provided it continues to pass the bank's credit worthiness test. Repayments on loans begin two seasons after the loan is taken out.

8.2 Medical Expenses and Funeral Costs

If a character becomes ill, they will remain in hospital until medical expenses are paid. Persons with HIV will incur annual expenses for HIV drugs. Players can choose not to pay medical expenses, though characters in hospital cannot work but must still be allocated food.

Funeral costs are incurred when a household member dies. The cost of a funeral is dependent on the age of the deceased, costs rising with increasing age. Funeral costs must be paid within 3 seasons.

8.3 Collection of Unpaid Debts

When a bill becomes due for payment, the bank navigation button will change to amber, and the debts list will show the payment status as "DUE." If the bill is not paid in the current season, the bank navigation button will change to red, and the payment marked "OVERDUE." If the bill remains unpaid, the debt *plus a surcharge of 25%* will be recovered by the bank at the end of the season. First household cash will be seized to the value of the debt. If this does not cover the full amount, household assets (in the order - inputs, crops, food, and then other goods) will be sold to the market to cover the debt. Any remaining cash in excess of the amount owed after an asset has been sold will not be returned. Finally, household land will be sold to recover the debt.

If the sale of all household assets does not cover outstanding debts, the household is declared bankrupt and the game ends.

9. System Requirements

The single player game can be installed or on any Windows or Apple computer with the latest version of Adobe AIR installed. Adobe AIR can be downloaded from the [Harman website](#).