

**NARANPUR EXPRESS<sup>1</sup>**

**A SIMULATION GAME BASED ON THE FIELD  
RESEARCH CONDUCTED BY THE INSTITUTE OF  
RURAL MANAGEMENT ANAND IN THE  
NARANPUR VILLAGE OF SABARKANTHA  
DISTRICT, GUJARAT**

**Designed and produced by**

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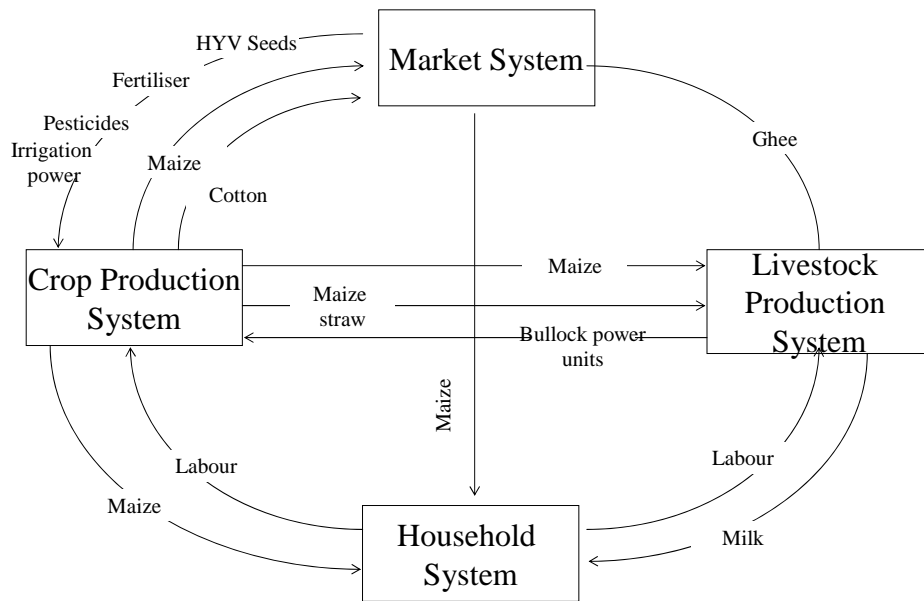
<sup>1</sup> This is an edited and adapted version prepared for internal use by Rakesh Saxena, IRMA. October, 2004.

## **NARANPUR EXPRESS: BRIEF FOR THE PARTICIPANTS**

1. Naranpur express is a simulation game developed on the basis of the fieldwork conducted by the faculty of IRMA in Naranpur village of Sabarkantha district (Gujarat).

The game focuses attention on decision making process of farmers, especially the small and marginal. It also seeks to simulate, under some simplifying assumptions, how decisions taken by large farmers influence the fortunes of small farmers and landless labourers. The game can also simulate the effects of interventions such as those implied by IRDP, NREP, etc. on the rural poor and help to develop better understanding of conditions under which such interventions would produce best results.

2. Naranpur Express simulates economic relationships underlying four major subsystems of the village economy, namely, (i) crop production system, (ii) livestock production system, (iii) household system, and (iv) market system. These basic interrelationships are shown in Figure 1.
3. At the beginning of the game, members will form into pairs and the Game Manager (GM) will randomly assign them a card which will have details regarding the family members and assets of the village household of which you will act as the head throughout the game. You will take decisions for this household as well as accept the consequences of these decisions.
4. The objective of each family during the game is to manage such assets as it has in such a manner that.
  - a. it can at least meet subsistence requirements of maize and milk for all family members,
  - b. it can feed appropriately its young and adult animals, and
  - c. it can maximize its financial surplus/wealth meeting all these requirements.
5. The main data set that you will need in order to take your decisions is presented in Appendices I to V provided at the end. Do spend time to understand these appendices before you come to play the game involves quite a bit of computations. Do get a calculator; it will stand you in good stead.
6. The details about family size, livestock, crops, transactions, etc. Will have to be filled by each household in a Players Recording Statement (PRS; see Appendix VI) on an annual basis. Each Household will receive as many copies of PRS for as many years the game is to be played.
7. A final statement (see Appendix VII) about the change in the net worth will have to be filled by each household.
8. The rest of the game will be explained to you by your Game Manager.



**Economic relationships underlying Naranpur Express**

**Appendix 1**

**Crop Production States**

	No drought, no pest attack	No drought, but pest attack	Drought, but no pest attack	Drought and pest attack
No Irrigation, No Pesticide	A	C	B	D
Irrigation only	A+	C+	A	C
Pesticide only	A	A	B	B
Irrigation and Pesticide	A+	A+	A	A

**Appendix II**  
**Crop yields (kg/acre) corresponding to different crop states and production technologies**

Crop production states	Maize Grain				Maize Straw				C
	Ordinary		HYV		Ordinary		HYV		
	No Fert	with fert	No Fert	with Fert	No Fert	with fert	No Fert	with Fert	
<b>D</b>	430	480	140	160	1700	2000	2700	3000	170
<b>C</b>	650	820	500	600	1800	2100	3100	3300	210
<b>C+</b>	780	984	600	720	2160	2520	3720	3960	252
<b>B</b>	600	750	350	480	2100	2400	3700	4100	250
<b>A</b>	900	1300	1000	1800	2200	2600	3900	4500	400
<b>A+</b>	1080	1560	1200	2160	2640	3120	4680	5400	480

**Appendix III**  
**Inputs Requirements (per acre) for Different Crops**

Table A

Input reqts	Maize (ord)	Maize (HYV)	Cotton (ord)	Cotton (HYV)
<b>Essential</b>				
1. Seed (kg)	30	30	10	10
2. Labour (FLU/Season)	1	1.5	1.5	2.5
3. Bullocks Power (BPU/Season)	3	5	3	5
<b>Optional</b>				

<b>4. Irrigation Power Hours</b>	50	60	60	90
<b>5. Fertiliser (kg)</b>	50	100	50	80
<b>6. Pesticide (kg)</b>	5	10	50	50

1. FLU (Full Labour Unit) = Labour put in for one year by one male or female in the age group of 17-55 years. Labour put in by a male or female in the age group of 12-16 years is equal to ½ FLU (or HLU: Half Labour Unit). Labour can be used and hired in terms of FLUs or HLUs.
2. A pair of bullocks is entitled to 40 BPLs (Bullock Power Units) per year and a single bullock is entitled to 20 BPLs. BPU requirements refer to the bullock power needed for land preparation, tilling and such operations other than irrigation.
3. In order to be able to irrigate your land, you should be able to buy water (irrigation hours) from some other farmer who has a well, a pump and surplus water. Since the water table is low, digging a well and mounting a pumpset on it costs more than Rs.10,000. If you have the money, you can buy the well and pumpset from the Trader. The owner of a well and pumpset will be entitled to receive a maximum of 600 irrigation hours per year at a price to be announced by Trader every year. If he has surplus irrigation hours, he can sell it to other farmers at a price which is mutually agreeable.
4. Prices of fertilizers and pesticides as well as prices of maize (grain) and cotton will be announced by the GM from year to year.

#### Appendix IV

##### Food Requirement for Subsistence

Maize (kg/yr/person)	Milk (kg/yr/person)
300	50

Note: The total food requirement of the family are to be computed on the basis of the per head requirement given above. If the food availability with the family falls short of the total requirements for survival so computed, starvation deaths occur with youngest members of the family dying first. Any surplus generated can be used up for investment only after subsistence maize and milk requirements of the entire family are ensured.

#### Appendix V

(A)

##### Feed Input- Milk Output Relations in Cows and Buffaloes

Table B

Feed Combinations	Feeding rates (kg/year)		Milk output with 5% fat (kg/year)	
	Maize straw	Maize		

1	2000	0	150	
2	1800	100	220	
3	1700	200	340	
4	1500	400	585	
5	1300	600	850	
6	1200	750	950	

Note: In case of milking animals, you can choose amongst the six feeding rates presented here; the milk output from your cow or buffalo will correspond to the feeding rate chosen by you.

(B)  
Feeding Rates for Other Animals  
(Kg/Year)

Animal type	Feeding rates (kg/yr/animal)	
	Maize straw	Maize
Dry female and young animals	2400	300

Notes:

1. A young cow or female buffalo calves for the first time and begins to produce milk at the beginning of the fourth year of her age.
2. From then on it calves every alternate year; that is a female animal produces milk in the 4<sup>th</sup>, 6<sup>th</sup>, 8<sup>th</sup>, 10<sup>th</sup> and 12<sup>th</sup> year of her life and remains unproductive in 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 5<sup>th</sup>, 7<sup>th</sup>, 9<sup>th</sup>, and 11<sup>th</sup> year of its life.
3. The normal life of any animals is limited to 12 years.
4. A young bullock becomes available for draft purposes becomes available for draft purposes at the beginning of 4<sup>th</sup> year of his age.
5. In addition to agricultural operations, human labour is also needed for tending and grazing the livestock. Four animals need one FLU per year, Here also, the minimum labour use would be in terms of ½ FLU and for larger holdings of animals labour allotted to livestock would increase in multiples of ½ FLU.
6. Milk can be used for family consumption, sold to other households in need of it or can be converted into ghee for sale to the Trader. Milk is perishable and hence, cannot be carried forward from one year to the next unlike ghee which can either be stored or sold to the Trader at prices announced by GM from year to year. Conversion of milk into ghee can be carried out at the following rate.

Milk (Kg.)	Ghee (Kg.)
20	1

**Appendix VI**

**Rains / Drought**

**NARANPUR EXPRESS  
PLYERS RECORDING STATEMENT (PRS)**

Particulars	Brought forward	In	Out	Balance
<b>1.1 Number of family members</b>				
A < 12 yrs				
B 12-16 yrs				
C > 16 yrs				
<b>1.2 Number of Animals</b>				
A In-milk				
B Bullocks				
C Others				
1.3 Land (Acres)				
1.4 Well+Pumpset (number)				
1.5 Cash(Rs)				
1.6 Pesticide (kg)				
1.7 Fertiliser (kg)				
1.8 HYV Cotton seed (kg)				
1.9 HYV Maize seed				
1.10 Ord. Cotton (kg)				
1.11 Ord Maize (kg)				
1.12 Ghee (kg)				

1. Demography, Resource Base & Inventory.

1. Brought forward entries are from the end of the last year.
2. Only the sums of different “In” and “Out” entries to be entered for each item.
3. Family: “In” entries due to new births and change in age; “Out” entries due to death.
4. Animals: “In” entries due to new births, change in age; “Out” entries due to death.
5. Land & Well + Pumpset: “In” entries due to purchase and “Out” entries due to sale.
6. Cash: “In” entries due to net cash inflows in transactions with trader and households; “Out” entries due to net cash outflows in transactions with trader and households.
7. Pesticide, Fertiliser, HYV Seeds: “In” entries due to purchase and only: “Out” entries due to own use and sale.
8. Ordinary Cotton & Maize: “In” entries due to purchase and surplus production: “Out” entries due to sale, use as seed and deficit production.

9. Ghee: “In” entries due to conversion of surplus milk and purchase: “Out” due to sale only.
10. “Balance” shows situation during the year of family, animals, land, and well + Pumpset. For other items, it shows the situation at the end of the year.

## **HOW TO PLAY NARANPUR EXPRESS GAME: A NOTE FOR THE PARTICIPANTS**

**-Rakesh Saxena\***

1. There are four main actors in the game: (1) the Game Manager who represents the God and the Government, (2) the Trader who represents the market and the implementing arm of the Government, (3) the households of the village represented by you – the participants, and (4) the game Inspectors to supervise the game and to convey the messages of the God to the households regarding Rains, Pest Attacks, Deaths and Births.

The first thing you have therefore to do is to form teams from among yourselves to represent individual households of the Naranpur village. All teams will be of the same size. The size of the team will be decided by the Game Manager.

2. One person from each team will draw a card randomly from a given stack. The number written on the drawn card will be the number of the family your team will represent in the game.
3. You can enter with your family card into the hall (place of the game) that represents the village. You should locate your house according to your family number.
4. You will find an envelope in your house. Inside the envelope you will find two things, namely, (1) a piece of paper bearing the family number, name of the household head, details of family members with their sex and age, size of the land holding, cash with the family, and details of its animals with their type and age, and (2) the dummy currency notes and the models that represent the family members, animals and land, in accordance with the above written details.

Example: Let us use an example and carry it through this note for understanding the process of the game. For this purpose assume that the details of the family you are representing are as given in Table 1.

5. You should check the cash and the type and number of models given to you according to the written details. If there is any discrepancy, bring it to the notice of your Game Inspector and get it corrected.
6. To start the game for the first year, each household will be given two forms to fill in: (1) the Players' Recording Statement (PRS; see Appendix VI) for the year, and (2) the Net Worth Statement (NWS; see Appendix VII). A new PRS has to be used for each year of the game as it records the activities of a particular year. The NWS will be given only once at the beginning of the game. The first part of the NWS which shows the initial asset base of the family is to be filled at the beginning of the first year and the second part which shows the final asset position of the family and the change in assets during the game is to be filled at the end of the game.

Table 1: Family Details

Family number: 1  
 Family head: Patel Ummedbhai  
 Land (acres): 2  
 Cash (Rs) :1000

Family Members:	S.No.	Sex	Age (years)
	1 (head)	M	52
	2	M	34
	3	F	30
	4	M	13
	5	F	12
	6	M	11

Animals	S.No.	Type	Age (years)
	1	Bullock	4
	2	Buffalo (in milk)	4
	3	Buffalo (dry)	5

- Let us start filling the PRS for the year. Fill in the family number and game year at the top, and details of family members, livestock, land and land-based assets and case in Section-1, i.e., Demography, Resource Base & Inventory.

Example: You are representing number 1 which is headed by Mr Ummedbhai Patel. This is your first year of the game. There are total six members in the family. One member of the family is in the age group of 'below 12 years', two members in the age group of '12-16 years' and three members in the age group of 'above 16 years'. Regarding animals, the family owns one 'animal in milk', one bullock and one 'other animal' (dry buffalo). The family has 2 acres of land and Rs 1000 in cash. Fill in this information in column 2, Section-1 of your PRS.

- Now fill in part-A of your NWS showing the present asset base of the family.  
 Example: At the prices mentioned in Part-A of the NWS, your total assets at the beginning of the game are worth Rs. 14,200. The land-man ratio works out to about 0.33 with 2 acres of land and 6 family members.
- Having filled the part of PRS and NWS as suggested above, contact your Game Inspector and get the filled details checked on both your PRS and NWS. The Game Inspector will provide you coupons for labour units (Full Labour Units – FLU and Half Labour Units – HLU) and bullock power units (BPU) for the year according to age structure of the family members and bullocks owned, respectively (see Appendix III).

Example: On the basis of your family details, you should receive coupons for 3 FLU, 2 HLU and 20 BPU.

10. The remaining part of Section-1 will be filled as the game progresses during the year.
11. If you have land, you should now decide about how much land you are going to put under which crop and according arrange for the quantities of the three essential inputs – seed, labour and bullock power (see Appendix III). You should also arrange essential labour for your animals at this stage (see Appendix IV).

The unit of the land is acre. The land under any crop is to be used in full units only, not in fractions.

If you do not have any cash to start with, listen carefully to the announcements made by the Game Manager about the arrangement of seeds. If you have cash then you can buy seed from the trader. The Trader will display a list that will show the prices and the items he would sell and buy.

12. For making the land allocation decision, you may take into account your family requirement of food; labour and feed requirements of your animals; input requirement of the crops; crop yields; market prices, expected incomes, etc.

If you are falling short or having surplus of FLU and BPU, you can accordingly make arrangement for sale, hire or purchase of these. You can also give or take land for sharecropping. All such intentions may be communicated to the Game Manager so that he can make them known to other households by writing on a board for display.

Example: Your family of six members requires 1800 Kg of maize and 300 Kg of milk for survival (see Appendix V). You need minimum 6,400 Kg of maize straw (2,000 Kg for one buffalo in milk + 2,000 Kg for one dry buffalo + 2,400 Kg for one bullock) and 300 Kg of maize (one Bullock) for survival of your animals. However, you should note that at survival ration your buffalo in milk will provide only 150 Kg of milk which is not sufficient to meet survival requirement of your family. Therefore, you would either have to choose a different feed mix for your buffalo in milk or have to buy milk from outside to meet the family requirement of milk. Assume that you would choose a feed mix of 1700 Kg of maize straw and 200 Kg of maize for your buffalo in milk to produce 340 Kg of milk. The total requirement of the family would therefore be 6,100 Kg of maize straw and 2,300 Kg of maize.

Assume that you finally decide to put both the acres of land under HYV maize. For this you require 60 Kg of seed, 3 FLU and 10 BPU (Appendix III). You also require 1 FLU for the upkeep of your three animals (Appendix IV). The family

labour is just sufficient to meet the labour requirement. You have a surplus of 10 BPU that you can hire out. You have to buy only HYV maize seed.

13. You can make transactions with other households and the trader for buying and selling different items. Each transaction made with another household has to be entered in Section-5 of your PRS. The transactions in cash and kind should be entered appropriately under inflows and outflows. An exactly opposite transaction will appear in Section-5 of the PRS of the household with which you are transacting. Each inter household transaction made by you has to be signed by your Game Inspector who will also that an opposite transaction has been entered by the other household. Otherwise the transaction will be considered invalid.

In case you want to make a transaction with the trader enter it in the appropriate portion of Section-6 of your PRS and contact the trader. The trader will sign against the entry and make the transaction. A transaction entered in Section-6 without signature of the trader will be considered invalid.

Example: Assume that you have entered into an arrangement with household number 5 to hire out your surplus BPU in exchange for 200 Kg of maize. After making this entry in Section-5 of the PRS, you and family number 5 should contact a Game Inspector for his signature. Give coupons for 10 BPU to the household number 5 and take its signature. The maize in exchange you may receive only later as the other household may not have it at this point of time. You should put your signature against the entry in the PRS of the other household only when receive the maize

Assume that you want to buy the required amount of HYV maize seed from the trader who is selling it at a price of Rs 3 per Kg. You are required to pay him Rs 180 to buy 60 Kg of seed. You should enter this transaction in Section-6 of your PRS and approach the trader. Pay Rs 180 to the trader and receive tokens for 60 Kg of seed. Take his signature against the noted transaction.

14. Once you have decided the land allocation under different crops and have arranged essential seed, labour and bullock power for your crops on one hand and essential labour for your animals on the other, enter this information in Section-2 (A to D) and Section-3 (Labour). After filling all this contact your Game Inspector for a check. The Game Inspector will collect the applied coupons of seed, FLU and BPU. He will then put his signature against these entries. Any animal or portion of land not provided requisite amount of these inputs will produce zero output. Any such entry without the signature of a Game Inspector will be considered invalid.

The Game Inspector will also collect surplus FLU and BPU from you. You can store seed for future use but not BPU and FLU. You must therefore dispose off surplus of these units before you go to the Inspector for checking of the essential inputs.

Example: You have got all the essential inputs in required quantities for putting your 2 acres of land under HYV maize. Enter the quantities in Section-2 of your PRS against Acres, Seed, FLU and BPU in HYV Maize column and contact your Game Inspector. You do not have any surplus of FLU and BPU to submit to the Inspector.

15. After PRS of all households have been certified for availability of essential inputs, the Game Manager will make announcements about Rains/Drought and Pest/No Pest situations. While the Rains/Drought announcement will be common to all households, Pest/No Pest announcement may be particular to household, crop and variety.

Example: Assume that the rain has been announced for the year and there is no pest attack in your HYV maize crop.

16. Tick the state of Rains or Drought at the top of your PRS as per the announcement. Mention (yes/no) about occurrence of pest in Section-2 (2.2 A) of your PRS according to the crop.

Example: Tick the 'Rains' or strike out 'Drought' at the top and write 'N' against 2.2-A under HYV maize.

17. Now make arrangement of optional inputs – pesticide, irrigation and fertilizer, for your crops (see Appendix III). You need pesticide only if a pest attack has been announced for your crops. One can arrange for irrigation even if there is rain to get further higher yields (Appendix I & II). Similarly, application of fertilizer increases crop yields (see Appendix II).

Irrigation can be available to the household only if someone buys well and pumpset from the Trader. Whosoever buys well and pumpset for irrigation from the Trader will have to make two types of payment – one for buying the well and pumpset and the other for buying the required power on per hour basis. Anybody buying the well and pumpset can at the maximum buy 600 hours of irrigation after making due payments. The owner can sell the irrigation hours, represents by plastic coins, to other households at mutually decided prices.

Anyone left with unused irrigation hours cannot use them next year. What is saved by an unused irrigation hour is only the cost of power. The time of the facility is wasted.

Pesticide and fertilizer, also represented by plastic coins, can be bought from the Trader. Unused quantities of these two inputs can be stored for future.

Example: You do not need any pesticide. Assume that you decide to apply only fertilizer to your crop, no irrigation. You therefore need to buy only 200 Kg of

fertilizer (Appendix III). Assume that you buy it from the trader at a price of Rs. 3 per Kg. Enter the transaction in Section-6, pay Rs 600 to the trader, receive token for 200 Kg of fertilizer from him and obtains his signature.

18. Once you have decide and arranged for the use of the three optional inputs, you can fill in the remaining part of Section-2 of your PRS. On the basis of what you have filled in 2.1-A to 2.2-C, you can determine the status of your crop (A+, A, B, C+, C & D) from Appendix-1 and fill it in 2.2-D. On the basis of your crop status and use of fertilizer (2.2-E), you can determine crop yields per acre from Appendix-II. You can now fill in total outputs of main and byproducts of your crops in 2.3-A and 2.3-B, respectively by using crop yields and acreage under respective crops.

Example: Your HYV maize crop will get an 'A' status as this is a 'no draught-no pest-no irrigation-no pesticide' situation. Since you have applied fertilizer, your HYV maize will provide you (see Appendix II) 3600 Kg of main product (grain) and 9000 Kg of by-product (straw). Make the relevant entries in 2.3-A and 2.3-B against HYV maize in Section-2 of your PRS.

19. Now go to your Game Inspector and let him check the arrangement of the optional inputs and according calculation of your crop outputs. He will collect the applied quantities of the optional inputs. He will also collect the unused hours of irrigation by returning to you price of the irrigation power. If you want to sell your surplus irrigation hours, you should do it before you go to the inspector for checking.

Example: You have only to submit tokens for 200 Kg of fertilizer to the Game Inspector to obtain his signature.

20. You can now fill in the remaining part of Section-3 of your PRS as per your earlier planning. You have to fill in the feed requirements of maize and maize straw of your animals and milk output by using Appendix IV. While feeding rates are fixed for bullocks, dry females and young animals (calves), a suitable combination of maize and maize straw can be chosen for animals in milk. The output of milk will vary according to the combination you choose.

Example: You had decided to use the feed combination of 200 Kg of maize and 1700 Kg of maize straw for your one animal in milk to obtain a milk yield of 340 Kg. You need 300 Kg of maize and 2400 /kg of maize straw for your one bullock. You need another 2000 Kg of maize straw for your one dry buffalo under the category of 'other animals'. That is, in total, you need 500 Kg. of maize and 6100 Kg of maize straw for your animals. You obtain a milk output of 340 Kg. Enter al this in Section-3.

21. You can now fill Section-4 of your PRS. Enter the crop output from Section-2 and milk output from Section-3 in 4-A, consumption requirement of maize and milk

for your family from Appendix V in 4-B and consumption requirement of maize and maize straw for your animals from Section-3 in 4-C. fill in the balance of production and consumption in the last row.

Example: You have produced 3600 Kg of maize, 9000 Kg of maize straw and 340 Kg of milk. Your family requires 1800 Kg of maize and 300 Kg of milk. Your animals require 500 Kg of maize and 6100 Kg of maize straw. You therefore require a total of 2300 Kg maize, 6100 Kg maize straw and 300 Kg milk. That leaves a positive balance of 1300 Kg of maize, 2900 Kg of maize straw and 40 Kg of milk with you.

22. After completing Section-4, take your PRS to the Game Manager for checking. The Game Manager will check your balance in Section-4 and write it against your family number on the board so that other people can make transactions with you accordingly. The Game Manager will give you coupons for your positive balance of maize, maize straw, cotton and milk. You can use these coupons to honour your agreements with other households, you can sell them to the Trader, you can make new transactions with other households and/or you can store them for future. Note that the surplus milk cannot be stored as such. It has to be converted into Ghee. Similarly, the maize straw cannot be stored for future, i.e., next year.

If you have any deficits, you must make immediate arrangement to clear them. You will normally not be allowed to enter into second year of the game with deficits. You may be forced to sell your assets or let your family members or animals die of starvation and so on.

In case you made an agreement with some other households for receiving milk, maize, etc. to deal with your deficits, you should take coupons for the same and submit them to the Game Manager to meet your deficits. The Game Manager will not accept just the agreements.

Example: After checking Section-4 of your PRS, the Game Manager should give you coupons for 1300 Kg of maize, 2900 Kg of maize straw and 40 Kg of milk. He would sign against 'surplus coupons given'. You should also collect 200 Kg of maize from Family No. 5 to whom you had sold 10 BPU.

You have to decide about the use of these surpluses. Suppose that you sell 800 Kg of maize to the trader at a price of Rs. 2 per Kg. You get the milk coupons of 40 Kg converted into 2 Kg of ghee from the Game Manager as you find this to be more rewarding compared to selling liquid milk. You sell this ghee to the trader at a price of Rs 30 per Kg. You thus receive Rs 1660 from the trader. These two transactions with the trader should be entered under 'Cash Inflows' in Section-6 of your PRS with his signature.

Out of a Surplus of 2900 Kg of maize straw, suppose that you are able to sell only 2400 Kg of it to a family, namely, No.10, at the rate of the 0.50 per Kg. You

should collect Rs. 1200 from family No. 10 and enter this transaction in Section-5 of your PRS.

Suppose that you decide to extend a loan of Rs 500 at an annual interest of 20 per cent to family No.2. This transaction should be entered under 'outflows' in Section-5 (5.2) of your PRS.

23. Irrespective of your positive or negative balances in Section-4, you will not be allowed (cleared) to enter the next year of the game until you complete Section-1. The balance (total) of Section-1 shows the availability of labour, animals, land and irrigation for own use, and the cash balance at the end of the year. It also shows the inventories (pesticide, fertilizer, etc.) to be carried over to the next year.

Example: Start completing Section-1 of your PRS now. The rows for pesticide, HYV cottonseed and cotton are to be left blank as you did not deal with these in the year.

You had bought and used 200 Kg of fertiliser. You therefore need to enter 200 under both 'In' and 'Out' columns of the fertilizer row. It leaves a zero balance in the last column.

You had bought and used 60 Kg of HYV maize seed leaving no balance of the same with you. Enter this in the row for HYV maize seed. You have received 200 Kg of maize in exchange for your 10 BPU. You have surplus of 1300 Kg of maize as a balance from production and consumption of maize during the year. You have sold 800 Kg. of maize. You therefore need to enter 1500 Kg (i.e., 200 + 1300) under 'In', 800 Kg under 'Out' and 700 Kg under 'Balance' in the maize row.

You have obtained a surplus of 2900 Kg of maize straw from your consumption and production activity for the year. Out of this, you have sold 2400 Kg. It leaves 500 /kg of maize straw as balance with you which goes as waste as you cannot carry it to the next year.

You have obtained a surplus of 40 kg milk from your production-consumption balance for the year. You have converted this surplus into 2 Kg of ghee and sold it. Therefore, in case of ghee, you should enter 2 Kg in both 'In' and 'Out' columns, and zero in 'Balance' column.

Considering all the entries of Section-1, you will enter into the second year of the game with an inventory of only 700 Kg of maize.

In Section-1 your PRS, the entries from 1.1-A to 1.1-C in the last column will be the same as those in the second column.

You have received Rs. 2860 and given Rs 1280 through your transactions with other households and the trader. Enter these sums in 'Cash' row under 'In' and 'Out', respectively. Considering this with Rs. 1000 with which you started the game, you have a cash balance of Rs. 2580 at the end of the year. Now go to your Game Manager, show your completed PRS, submit coupons for 500 Kg of unused maize straw and get his clearance. He will sign against 'Cleared' after checking Section-1 of your PRS.

24. After all households have got clearance, the game will enter into the second year. A new PRS will be used for the second year. You should enter the details of demography, resource base and inventories into your PRS for the second year as it stands at the end of your first year. The age structure of your family members and animals will advance by one year. Your animals in milk will become dry and vice versa. Your calves may attain productive age of 3 years. Your animals attaining the age of 12 years will die. You have to keep track of such changes from year to year.
25. Also transfer the information, if any, about the pending transactions and loans from the PRS of the first year to the PRS of the second year.
26. Now submit your PRS for the first year to your Game Inspector. He will check Section-1 of your PRS for both the years to ensure consistency. He will then give you FLU, HLU and BPU for the second year accordingly.
27. Decide again the land allocation under different crops and arrange for essential inputs, namely, sees, FLU and BPU. From here on, the same steps will be repeated as in the first year. Each year you want to sow high yielding varieties (HYV) of maize and cotton, you have to use new seed. The Output of an HYV crop cannot be used to grow an HYV crop.

The game can be continued for as many years as time permits. Each year, a new PRS will be issued and the old PRS will be taken back. Part B of your NWS will be filled at the end of the game.