

Forest game

We would like to thank you for accepting this invitation. We will spend about two hours explaining the activity, playing and answering a short survey at the end. Let's start.

The following exercise is a different and entertaining way to actively participate in a project about individual decisions and natural resources. Besides participating in this exercise and earning money, you will participate in a workshop in the coming days in order to jointly discuss the exercise as well other topics about natural resources. The funds to cover these expenses have been donated by a scientific body.

In this exercise it is intended to recreate a situation in which a group or family must make decisions about the use of a forest. You have been selected to participate in a five person group recruited from a group of people who have been subscribed to be willing to participate.

This exercise is different than experiments in which other persons in this community have played already. Therefore, comments you have heard from other persons do not apply necessarily to this exercise.

You will play several rounds equivalent, for example, to years or wood harvest seasons. Let's pretend this group has an area of forest with 100 initial resource units. Each round you have to make a decision about how many resource units you want to harvest. You can harvest a maximum of 5 units and minimum of 0 units of the resource.

[Visual explanation; we have a number of magnets on the board which represent the forest units. The instructor shows what happens if a number of units are harvested]

Between the rounds the resource is regrowing. For each ten units of the existing resource, one new unit is added for the next round. [visual explanation; the monitor shows with the magnets that for each row of 10 magnets one new magnet is added to the forest, use rows of 10 magnets on the board]. The forest can not grow to more than 100 units.

Each participant makes a harvest decision. Each harvest unit is equivalent to \$200 pesos. For example, if you harvest 100 units during 20 rounds you will receive \$20.000 pesos.

When the size of the resource is less than 25 units, the maximum harvest is less than 5 units.

In the MAXIMUM HARVEST LEVEL TABLE, that is green, which will be distributed now [MONITOR distributes the MAXIMUM HARVEST LEVEL TABLE at the same time he shows a poster on the wall of the same table]. I will announce the maximum quantity of units you can harvest according to the size of the resource at the beginning of the round and post it on the wall.

In order to make decisions in each round you must write down your decision on your **YELLOW DECISION SHEET**, a number between 0 and the **MAXIMUM HARVEST LEVEL** depending on the current resource level. [MONITOR shows the yellow decision sheet at the same time that shows a poster on the wall with the same card]. Please check your player number on the yellow decision sheet. This will be your player number from now on.

Observe that the sheet has a row with the round number. Next there is a row marked with “my harvest decision”, in this space you will write down the harvest level you decided in this round.

It is very important to know that you must make your decisions privately. Therefore, you need to write down the numbers on the decision sheet in private and you can not show them to the rest of the group members. The MONITOR will collect the **YELLOW DECISION SHEETS** from all of you and she or he will sum the total of units the group decided to harvest. When the monitor announces the group harvest total I will write on the board the new resource level. You will then get the decision sheets back for the next round.

Let us explain this with an example (Use visual explanation).

Suppose the current size of the resource is 68. Each of you decided to harvest 3 units, and thus a total of 15 units. The resource size reduces to 53 ($68 - 15$) and then 10% of 53, which is 5 units, is added, which leads to 58 units. Thus 15 units are harvested, and the size of the resource, after regrowth, is reduced with 10 units. And each participant earned 3 points during this round.

For each 10 units of resource 1 unit is added. If there are no 10 units of resource we do not increase the resource, it means if there are less than 10 units we do not add 1 unit more. If the resource is less than 5 units, no units can be harvested any more. Now let's continue with the next round. Now the current size of the resource is 58 units. It means that the maximum harvest allowed remains 10 units according to the **MAXIMUM HARVEST LEVEL TABLE**.

Again, each player decides how many units to harvest and again we calculate the resource decreasing and its increase in a 10% for new level of the resource.

Now we are going to explain the **PLAYER CALCULATION SHEET**, the white sheet the MONITOR has handed in to you.

[Before we start the monitor will announce one additional rule for this group.]

To start the first round of the game we will organize the seats and desks in a circle where each of you face outwards. The monitor will collect in each round your **YELLOW DECISION SHEET**. Finally, to get ready to play the game, please let us know if you have difficulties reading or writing numbers and one of the monitors will seat next to you

to assist you with these. Also keep in mind that from now on no conversation or statements should be made by you during the game unless you are allowed to.

We will have first a few rounds of practice that will NOT count for the real earnings, just for practicing of the game.

[up to three practice rounds are performed and questions are addressed during the practice]

The initial size of the resource is 100 units

[After the practice rounds announce that the initial size of the resource is again 100 units and that the decisions are now real and affect the earnings]

INSTRUCTIONS FOR THE FOREST GAME SECOND STAGE

[After 10 real rounds we let the participants vote for one of three rules.]

We give you the opportunity to start over the game with a different rule. I will describe three rules and you write down on your VOTING CARD your favorite rule. The monitor will collect the votes and count them. [If two rules get 2 votes, we do a new voting round with only these two rules]

The rule which derives the most votes will be implemented.

Rule 1. With this rule only two participants can harvest each round. Who is allowed to harvest is determined by drawing two cards with players numbers. The instructor writes down the player numbers who are allowed on the board.

When someone harvest, but is not allowed to, this participant may get a penalty. Every round we throw a dice after the decisions are made and the yellow sheets are turned in. If we throw a six an inspector is in the forest and will catch the rule breakers, the participants who harvested in a turn it was not allowed to. In that case the participant has to payback the harvest plus an extra 3 units. If the dice shows any other number everybody keeps its earnings and we pass to the next round.

Rule 2. With this rule each participant will have its turn to extract forest unit. Only two participants can harvest each round. In this way it will be a rotation scheme to extract forest units. Each participant will be assigned randomly a turn card to extract forest units: The extraction order is:

Round 1: extracts wood the player **A, B**

Round 2 extracts wood the player **C, D**

Round 3: extracts wood the player **E, A**

Round 4: extracts wood the player **B, C**

Round 5: extracts wood the player **D, E**

Round 6: extracts wood the player **A, B**

Round 7: extracts wood the player **C, D**

Round 8 extracts wood the player **E, A**

Round 9: extracts wood the player **B, C**

Round 10: extracts wood the player **D, E**

(explain explicitly that after this rule is chosen, players get randomly a character A, B, C, D or E. player 1 may for example get turn D)

When someone harvest, but is not allowed to, this participant may get a penalty. Every round we throw a dice after the decisions are made and the yellow sheets are turned in. If we throw a six an inspector is in the forest and will catch the rule breakers, the participants who harvested in a turn it was not allowed to. In that case the participant has to payback the harvest plus an extra 3 units. So, if participant whose turn is A is writing down on the decision sheet to harvest 3 units when only the player with turn C is allowed to harvest, we throw a dice, and when we throw a six, participant with turn A do not get the points on its decision sheet, and we subtract an extra 3 from the total collected points of player with turn A. If the dice shows any other number everybody keeps its earnings and we pass to the next round.

Rule 3. Each of you can harvest legally 0, 1 or 2 units per round. If a participant writes a higher amount than 2 on its game card, he or she can be caught by the inspector and has to pay a penalty. In every round we throw a dice. And when we throw a six, and the participants who harvest more than 2 units in that round, do not get the points it wrote down on its game card, and we subtract an extra 3 points from it's total so far.

Rule 1: only 2 persons, randomly determined, allowed to harvest in each round.

Rule 2: only 2 persons, predetermined sequence, allowed to harvest in each round

Rule 3; a maximum of 2 units can be harvested in each round by any person

Do you have any questions about the rules?

Write down your favorite rule on the VOTING CARD, by writing a 1, a 2 or a 3. And turn it in to the monitor

[When we determine the results of the voting the participants fill in the survey on the rules;

When we are determining the voting results, we ask you to fill in this survey about the rules we just described].

Maximum collection level table	
Current resource level	Individual Maximum collection level
25-100	5
20-24	4
15-19	3
10-14	2
5-9	1
0-4	0