

# What our fridge is hiding

This *Global Express* explains how our food system works, a system which results in a billion people starving whilst more than half the population of the industrialised world is overweight. It puts forward proposals for classroom activities on how to tackle this injustice through our consumption habits and practices.

## Its objectives are to:

- Learn that the food system is based on unfair relationships and to understand the causes.
- Be aware of our role as consumers in this food system.
- Take action to bring about change.
- Motivate an interest in research.
- Offer suggestions to ensure the classroom activities are a learning opportunity and an exercise in citizenship.

The methodology used is based on research-action activities, using working groups and analysing the conclusions reached together.

## The contents of the proposal can be summarised as follows:

- The inequalities produced by the current food system
  - The main players in this system
  - Producers
  - Governments and businesses
  - Consumption
- Our consumption model and its role in the food system

This educational proposal is aimed at students at secondary education level. The objectives and contents of this edition of *Global Express* fit perfectly with the **Social Science** curriculum of ESO levels 2, 3 and 4, but could also be used as material in the **Citizenship (Human Rights)** unit.

**ESO Level 2**, is related to the following themes:

- The city and the urban world (urban growth, urban space, the problems of modern-day cities).
- The world population (the world population and its distribution, demographic imbalances, migratory movements).

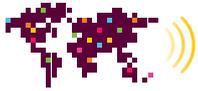
**ESO Level 3**, is related to the following themes:

- The economic organisation of societies (the working of economic activities, economic players, etc.).
- Primary sector: agriculture, livestock farming and fishing.
- Trade: imports, exports, international trade.
- Globalisation and inequality.

Some of the themes could also be used in the **Natural Sciences** unit. In ESO Level 3 food-related themes are covered (the theme about meat would be ideal). The theme about genetics would also be appropriate, as it deals with genetic modification. Some research, on bread for example, could also be used in the optional unit on **Economics**.

## summary

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The theme about the loss of **biodiversity** could also be tackled using the research into corn and perch.

**ESO Level 4**, is related to the following themes:

- Decolonisation (within the theme of The Cold War).
- The modern world (the consequences of a globalised economy, inequality and social conflict, current world conflicts).

This proposal falls within the remit of the 'Food for thought' project (<http://www.classforchange.org/>), an educational social network where you will find students who are participating in educational initiatives set up by GROW/Oxfam, and who are also working on this theme. It is a social network which allows the mutual sharing of learning experiences with other people working on the same themes as our students, as well as providing a blog so we can share the results of our work with families, the rest of the school and the general public. So it is important to register the group/class with the social network before starting to implement the proposal, because it will suggest specific moments to the students for sharing the conclusions they have drawn from their work. You can do this on: [www.classforchange.org](http://www.classforchange.org). This forum will allow us to see that we are not alone in our fight against inequality and for a better world, and will make us feel part of a global movement.

## Initial activity and Let's get the magnifying glass out

The objective of this activity is to establish a first contact with the theme we are going to research, and to create an awareness of the importance of research into our consumption model.

The cartoons at the beginning will allow us to get into the theme and to see what the students understand and any concerns they have about it.

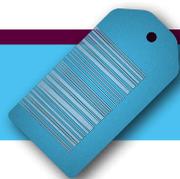
The research into the food that we have in our homes and that we see in the supermarkets has a double objective. On the one side, starting to understand the various elements at play in the food system and, on the other, having a preliminary introduction to the methodology used in the research.

On the basis of this research, themes such as the distance travelled by food should come up, which could then put other themes on the table, such as the ecological footprint.

## On the food trail

There is a very wide variety of elements at play in the food system. In order to be able to tackle the largest number of themes possible, the working methodology we suggest using to research into them is to divide the class into five groups of researchers. We will obtain different information from each line of research, which we will later share to ensure an overall view of the food system.

The five lines of research each follow distinct methodologies, so it is important to know what these are in order to be able to distribute them around our students to match their interests, skills and abilities.



## PERCH



### Objectives:

- To develop research skills.
- To process and understand the information.
- To establish cause and effect relationships between overexploitation, industrial fishing practices and the impoverishment of traditional fishing communities.
- To know about the origins of the food we eat, to assess the environmental impact of its production, and to promote responsible consumption.

### Contents:

- Overexploitation of fish stocks and the consumption of fish.
- The role of industrial fishing companies and industrial fishing practices.
- Environmental problems associated with overexploitation and with the introduction of invasive species.
- Impoverishment of traditional producers and the communities which depend on these methods.

### Methodology and type of exercises:

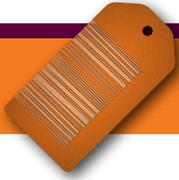
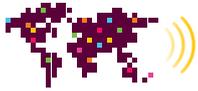
In the first part of the activity, press notices are used to present different problems related to fishing. Firstly, there should be an individual reading activity so we can find out what we already know and think about what we do not. We can then share this information with the rest of our group, which will give us the opportunity to explain the nature of the problem and its context. The role of the teacher should be secondary, clarifying any problems of vocabulary or understanding, if the students cannot do it themselves.

This is followed by a related activity (although some centres may choose not to do this): the creation for the school's cultural week of information posters on the theme of fishing. These posters should reflect the various problem situations put forward in the press notices, and provide a response to questions about the theme. We would like to use this activity to work on one of the problem-based learning objectives: the development of research skills. To make this work easier, given that we could be working at different educational levels, we have provided some links which could help you find the information you need.

We will need to assess the students' ability to decide what information they have found most relevant. At higher educational levels, we can delete the links and let the students find the information themselves.

The group will need to organise itself and share out the different tasks. Each of the groups (this depends on the number of people, it might have to be pair-work) will need to divide up the themes to be worked on and decide what steps to follow and the materials needed to create the poster. We must not forget that this is group work and that, even if they have different areas of responsibility, collaboration is always important, not only between the students but also with the teachers. The teachers' role should be to guide those students less capable of independent work, giving them a framework or guidelines within which to work.

This way of organising the work means that all the group members will have to present their work to the rest of their classmates later, and the posters will help them do this.



# BREAD



## Objectives:

- To think about food speculation and prices.
- To investigate the different elements which go to make up the price of basic commodity prices (as applied to corn).
- To establish what the relationship is between commodities and the Stock Exchange.

## Contents:

- The importance of bread in the diet of human societies.
- The elements that go to make up the price of basic products.
- Inflation in food products and its consequences in the context of the current economic crisis (risk of starvation).
- Speculation with food products. The monopolistic role that big business corporations have established.

## Methodology and type of exercises:

These research exercises are intended to familiarise the group gradually with the problems raised. Even if each student has his/her own work folder, all of the exercises should be discussed in a group session and the final conclusions shared before they are written up. The first block (e.g. introductions) is sufficiently simple for the group to progress in its research without too much difficulty. Perhaps it will be the second part (e.g. in the main body of the research) where the teacher may need to monitor them, answer any queries or guide conclusions. Even so, the answers are by no means closed and could turn out to be easier or more difficult, depending on the age and level of the group.

### A. Introductions

The first five questions, which follow an initial text intended to illustrate the importance of bread in the majority of human societies, are meant to familiarise the group with the research outputs. The first three are very basic, while the last two will act as a link to the second part of the research. The possible answers to the questions could be as follows:

- 1 Water, wheat (or other cereal) and salt (we could also include yeast in some cases).
- 2 Wheat (flour, cereal).
- 3 They can look for the information or just contrast the different prices to those they are used to.

The next two questions are intended to make the group think about how food prices can affect living standards (and even threaten people's survival). The possible answers to the questions could be as follows:

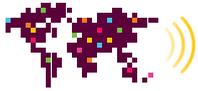
- 4 In the current context, there has been a significant loss of buying power for a large part of the population. In this situation, the prices of products keep on rising at a rate much greater than salaries (which, in most cases, have been cut).

To end this first block and to introduce the theme of the price of bread, we have set an open question to get the group thinking about the elements which contribute to the final establishment of the price of bread.

- 5 Depending on the group's level, they could point to an increase in demand or to bad harvests. These would be the basic elements (supply and demand) of a classic capitalist perspective.

### B. Research

Once these first activities have been carried out, the group will need to do the main part of the research, which will lead them to see how the final price of a product is not just a response to supply and demand, but that other factors exist (natural and human) which substantially modify the final price of a product. Here are two options:



- 1 The first option would be to promote the research through three readings. This is a longer and more demanding option, but perhaps a little more in depth.
- 2 The second option is more intuitive but simpler.
  - In both cases, some of the more relevant options which should appear in their conclusions are as follows:
    - *Political*: state tariffs can make a product cheaper/more expensive.
    - *Climate conditions*: droughts reduce harvests; the lower the supply, the higher the prices.
    - *Demand*: an increase in population means an increase in demand and, consequently, a higher end price.
    - *Technology*: nowadays the mechanisation of the countryside and the introduction of fertilisers have meant that production has increased; a factor which should mean an increase in supply and therefore price reductions.
    - *Financial markets*: the big stocks of cereals are bought in advance by profiteers who are looking to speculate on the market. At first, they will find this factor the most difficult to understand. That is why it will be dealt with in Exercise 5.
    - *Oil*: an increase in fuel prices leads to price rises in commodities.
- 3 To end this research, we suggest reading a text which deals with food speculation on the stock markets. The intention is to bring the group to the end of their research, highlighting the fact that the prices of basic products such as bread are subject to high levels of volatility as a consequence of the purchase of future stocks on the stock market. The four questions will allow the group to reach this conclusion and to think about their effects.

### C. Conclusion

Finally, as in the other research lines, the group will have to provide answers to any final questions, which will help us pool the results.

### Suggestions:

- We recommend the first research option for students on the second cycle of Secondary/Upper Secondary School and/or for groups who are used to reading economics texts. However, the second level is recommended for all levels.
- In addition, both research options can be followed together, as they will allow the group to reach similar conclusions.



## MEAT

### Objectives:

- To learn about the environmental impact of certain products (in this case, beef).
- To think about the importance of the choices we make as consumers: not everything we eat has the same impact on the planet, and we can make choices.

### Contents:

- An analysis of world meat consumption.
- A study of the environmental impact of meat production (and, therefore, consumption) from different perspectives (consumption of water, energy and cereal by livestock).
- A comparison with other product categories of its environmental impact.
- An analysis of the possible impact that the high meat consumption in the countries of the South with the most developed economies could have.

### Methodology and type of exercises:

In this research, which focuses on meat, we will learn about the ecological impact of beef consumption. Our intention is to use a series of activities to demonstrate how the consumption of a particular product (in this case meat, but it could be another product) brings with it a series of implications which are often difficult to imagine. We will also use what we find out to familiarise ourselves with the lives of people in other countries, in this case cereal producers, whose lifestyles are affected by our eating habits. The activity revolves around a series of simple calculations, supported by information in tables and graphs and from websites. There is also some map analysis work and a small text.

The first research activity is very short and its aim is to get the students to focus. It revolves around a map which represents world meat consumption. By looking at the map it is easy to see that world meat consumption is not uniform. The students are probably aware that we eat a lot of meat in Spain but, are they aware that it is not the same in other parts of the world? Before beginning the research, it is useful to be conscious of the fact that, in comparison with other places, our diet is much more carnivorous. It would also be interesting to check out what the students' usual consumption of meat is, to see if the map reflects the local situation.

The central thread of the second exercise is a meal in a hamburger restaurant. To do the exercise you will need to collect some information about hamburgers. So, once the activity has been read and a list made of the information required, we suggest some of the students go to a local hamburger restaurant to collect the information. As an alternative, you can find the information on the Internet (for example, [www.burgerking.es](http://www.burgerking.es) or [www.mcdonalds.com](http://www.mcdonalds.com)). Once the information has been collected, the activity revolves around the water needed to produce the beef. The idea is that the children will be surprised by the large amount of water needed to produce a hamburger. We suggest that they compare this amount with the amount required for human consumption, but other comparisons can be used. We have also added a chart so that they can make the same comparison with other products and learn that not everything we eat is the same.

In the third exercise we do another calculation, this time comparing meat consumption with energy production. In the first part of the exercise we suggest calculating the energy required to produce a hamburger in order to compare it to a car's fuel consumption. It is usually easier for students to relate environmental impact to energy consumption, so this exercise could be particularly useful to achieve the objectives set out for this activity.

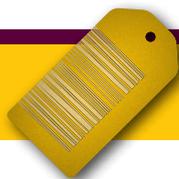
The students need to understand that a significant part of this energy consumption is due to the transport of meat products. To study this phenomenon, we suggest using a graph to analyse the way the import and export of beef has evolved. The aim of this activity is to show the students that one of the problems caused by the production of meat is that it is not eaten where it is produced. In fact, Spain exports as much beef as it imports!

Finally, we suggest a fourth exercise focusing on the fact that cattle eat too and so their production also involves the production of cereal. In this case,



we propose an analysis of a text adapted from the magazine *Opciones* in which the use of cultivated land is compared to what is grown or raised on it. In this exercise it is important to look back at the map analysis exercise which we did in the first exercise to establish the relationships; this will allow us to answer any questions raised in the exercise.

The activity ends with a concluding exercise to bring all the research lines together and which will be an opportunity to amalgamate all the work done by the different groups of students.



## CORN



### Objectives:

- To understand and research into what genetically modified products are; the reasons why some people argue in favour of them and some against; what their impact is on society, on the economy – particularly agriculture – and on people's health.
- To be aware of the consequences the decisions we make have on food production and consumption.
- To develop an ability to engage in dialogue and to learn that agreement and consensus is the best way to make decisions, to solve problems and to find collaborative actions to include everyone.
- To promote responsible consumption and learn about the composition of the food we eat.

### Contents:

- The composition of basic products.
- Genetically modified products and their consequences for health and the environment.
- The production of basic products and their sustainability: agroindustry and its alternatives.
- The importance of having arguments to defend our ideas and of checking their suitability.
- The democratic political system and the pressures different lobbies exert.

### Methodology and type of exercises:

This is a role play which simulates a town hall meeting which has to decide if genetically modified plants can be grown in the district. To begin, the activity and its objectives are presented to the group selected. Then the different roles are assigned to each student, carefully selecting those students with the appropriate profile required by the roles they are going to play.

Once the roles have been assigned, each student should prepare themselves, paying particular attention to analysing the position they will take and to researching the arguments and reasoning to defend it. For this last task the students will each be given a couple of arguments as a reference, and some ideas they will need to develop and about which they will need to look for information and possible consequences. Some of these can be seen in the Annexe.

This preparation and research task can be done in class, or can be given as homework. Whatever the case, it is an individual job whose conclusions and preparations should be kept secret from the rest of the class to maintain the element of surprise.

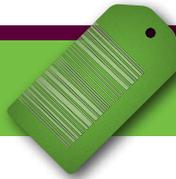
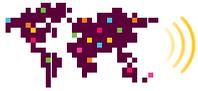
Once the research and preparation stage has been concluded for each of the characters, the process can move on to the meeting, in which they can start to put their arguments forward in a preliminary round, with all the characters giving their points of view on the appropriateness or not of the planting of genetically modified products. After this first round, there will be a chance to present counterarguments and to convince the undecided in a dialogue moderated by one of the characters, the mayor or an external person, for example. This dialogue will take place in one session, with the aim of reaching consensus on the best quality or well-reasoned arguments, to put these to the group/class.

Finally, each character must respond to questions and come to a consensus on which questions will be put to the group/class.

### Suggestions:

- If the number of people in the group is lower than the number of characters, the last one, Juan, can be omitted. And if there are more than five people in the group, more than one student can be allocated to a character. If this is the case, they must come to an agreement on how to do the research and how to share the role-play.

There is a more detailed guide on the role-play in the Annexe to this teachers' guide.



# PINEAPPLE



## Objectives:

- To think about the origins of certain common horticultural products, particularly pineapple.
- To analyse the 'real price' of the competitive prices of imported fruit in our markets: dire employment conditions, environmental degradation, unfair division of profits, gender differences, etc.
- To know and use alternative information sources critical of the horticultural production model.

## Contents:

- The pineapple business: where and how it is produced, the profits generated, etc.
- The environmental impact of pineapple production and the workers' wretched employment conditions.
- The particularly harsh and unequal employment conditions of women in the fruit business.
- The role certain mass media and the Internet can play in condemning unfair production practices.

## Methodology and type of exercises:

With the research into the pineapple business, we will learn about the price workers in the agro-food industry pay for this fruit to gain access to the Spanish market at such a competitive price, despite the enormous profits it generates for the industry. It is an activity which requires an important reading exercise of web pages and online articles, in this case from the British newspaper *The Guardian*. We intend to use all this to emphasise the need to be well informed, to not let appearances and the fruit industry's marketing campaigns deceive us, and to know how to choose information sources well. The activity also has a creative part, in which they will need to draw or design a web site.

The research begins with a text in which we invite the students to put themselves 'into context'. It could be useful to use this text to raise their curiosity about where Costa Rica is, what they know about pineapples, if they like them, how often they eat them, etc.

The aim of Exercise 1 is to get them to think about the pineapple as a consumer product which someone markets. It involves thinking about the pineapple as something we eat and which someone profits from. And so, to increase their sales, the companies try to emphasise the friendliest and healthiest aspects of this fruit. As a supplementary activity, we suggest thinking as well about the '5 fruits a day' campaign and the interests which lie behind it, apart from the obvious public health interests.

Exercise 2 gets straight to the point. The aim is to create uncertainty and surprise about something which certainly few people would have thought of: the health costs of pineapple cultivation for the farmworkers. That is why the activity has been designed to surprise and create an impact on the students.

In Exercise 3, accessing the information on the pineapple business needs to be done independently, so we give a short proposal for active searching for information on the web. It is important to stress the fact that the students should know where they are getting the information from: it is all about encouraging active learning. A question which this activity could raise is: 'Why do the mass media not talk about this?'

Exercise 4 is designed as a continuation of this proposal: giving a voice to those people who suffer the most but who are not listened to. So we suggest that the teacher does not just play the video but also reinforces the idea that the silence about the enormous inequalities in the production and sale of pineapple should be publicly broken.

Exercise 5 introduces the theme of gender inequality, which makes the working conditions of women even harsher and more difficult. It would perhaps be useful to clarify certain concepts before starting this exercise, such as *insecure contracts*, *subsidiary company*, or, *agrochemicals*. It might also be useful to give the girls in the class the opportunity to think about this together, or even to extrapolate this situation to Spain and to share any experiences.



The last exercise is certainly the research's most mobilising proposal. It involves implying or suggesting one of the many ways which we as consumers of these products can use to demonstrate our indignation about and rejection of these injustices. If the creation of the web page is not appropriate, or the intention is to go into more depth, we suggest writing a letter to a company, explaining what has been learned in the exercise. You could even send it.

**Articles in *The Guardian* on the pineapple in Costa Rica**

<http://www.guardian.co.uk/business/2010/oct/02/truth-about-pineapple-production>

<http://www.guardian.co.uk/global-development/datablog/2010/oct/19/costa-rican-pineapple-investigation-industry-profits>

***The Guardian* video**

<http://www.guardian.co.uk/environment/video/2010/nov/10/pinas-coast-rica>

**Bananalink**

<http://www.bananalink.org.uk/es/respeto-y-dignidad-para-las-trabajadoras-agr%C3%ADcolas>

**Consumers International (CI)**

<http://www.consumersinternational.org/>

**CI report on bananas in Costa Rica**

<http://www.consumersinternational.org/media/485589/the%20story%20behind%20the%20pineapples%20sold%20on%20our%20supermarket%20shelves%20final.pdf>

**Make fruit fair**

<http://www.frutasjustas.org/>  
[www.makefruitfair.org](http://www.makefruitfair.org)



# Sharing conclusions

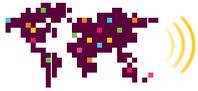
To bring together all the conclusions, all the research activities pose the same three questions. These are:

- Could you summarise in a phrase what you have learned from your research?
- Who are the main characters who play a role in your research? What is their role?
- Have you been able to identify any situations of inequality or violation of rights (human, social, employment or environmental) in the cultivation, processing or marketing of the product?

The aim of this exercise is to share the results of our research and to give the students a global view of the different elements at play in the food system. It is important to set aside enough time for each group to explain its conclusions and the arguments that lie behind these.

Depending on the student profile, the following table could be used:

	Could you summarise in a phrase what you have learned from your research?	Who are the main characters who play a role in your research? What is their role?	Have you been able to identify any situations of inequality or violation of rights (human, social, employment or environmental) in the cultivation, processing or marketing of the product?
Research on <b>pineapple</b>			
Research on <b>corn</b> and <b>soya</b>			
<b>Research on bread</b>			
Research on <b>fishing</b>			
Research on <b>meat</b>			



## Alternatives: the decisions you make when you eat can change the world

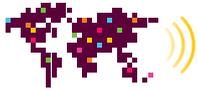
The final aim of this educational proposal is to analyse our consumption model and suggest what we can do to change the system. This exercise will allow us to work on alternative consumption models and advocacy actions.

We are going to analyse them and give our opinions. If we have time, we can invite an expert to present them to us, or we can visit some of the alternatives which might be close by.

It is important the students understand that they can help reduce global injustice through both personal and group action, as this will be the link with the final exercise. So we will be suggesting actions which can be done at personal, group and school level, or even with their families.

## Now it's time for action

Deciding, planning and organising the actions we are going to carry out are all part of the final exercise we have proposed to bring the work we have done to a close. We have to plan at which moment we intend to share the results of the actions we have carried out and should remember that we can use the Food For Thought blog to share all this with our families, school and with other students across the world who are doing actions along the same lines. <http://www.classforchange.org/es/globalblog>



## Corn (Annexe)

### Annexe:

In this research activity we are going to do a role play or, in other words, we are going to play at being various characters who must act to deal with the situation described below.

### Introduction and guidelines:

This research is different because it consists of a simulated exercise, in which the students have to take on the roles of members of a community who have to take a decision which will have far-reaching effects on their lives. Each of the characters is an attempt to reflect the most important players in the subject of GMOs, people who have very different ideologies and interests, with the aim of bringing together all the people involved and their points of view on the subject.

A very important point to take into account when giving the research to this group is to motivate each student to take their role very seriously, so they will need to carry out two very well-defined tasks: firstly, taking on the role they have been given, which they will have to present following the character's attitude and their way of thinking, putting aside their own personal ideas about GMOs; secondly, researching in depth their role and the arguments they need to use to defend their position in the best way possible.

Once each student has prepared their role carefully the meeting can start, in which the most important point is that they should put forward and defend their arguments, avoiding the use of anecdotal material when taking a position on rejecting or accepting genetically modified products. They will be told in advance that the aim is for them to establish a dialogue in which it is not just a question of putting forward their arguments, but also of putting forward counterarguments, refuting those of the others, and defining more clearly what the problem is, together with its causes and potential solutions.

Finally, they will have to explain to the group/class, taking into account that at the end of this dialogue they will have to conclude and respond to any final questions. And so, before the meeting takes place, they need to know they will have to reach some conclusions, including choosing the best presented and most important arguments on which a consensus will have to be found.

It has to be borne in mind that the aim of this activity is to tackle the theme of genetically modified products through a role play, the students putting themselves in the shoes of the people arguing for or against these products, researching the consequences of their use for health, the environment, etc. To be precise, it is about making sure that the students think about and are aware of the problems associated with basic foods and what their consequences are on our health and on the environment. The aim is also to lead them to search for and understand the alternatives to agro-industrial practices.

### Situation:

Pinospuente is an overwhelmingly agricultural village where the countryside is the main source of wealth. There has been a significant loss in the competitiveness of its products and the community is now faced with the dilemma of whether to convert the sector by changing its traditional production methods, either by introducing genetically modified corn, or by moving over to organic cultivation, knowing that these are incompatible. The decision as to whether some of the farmers in the area can start growing genetically modified crops (GMOs\*), or whether their district should declare itself a GM Free Zone, will be taken at a plenary session at the town hall.

\* A genetically modified crop, or Genetically Modified Organism (GMO), is a living organism which has been artificially created by manipulating its genes. The genetic manipulation consists of isolating segments of DNA (the genetic material) of a living being (virus, bacteria, vegetable, animal or even human) in order to introduce these segments into another organism.



You will all be given some time to prepare your arguments and the opinion you are going to defend, which will depend on the role you have been given in the plenary session. It is very important that you put your own ideas on the subject to one side and instead take on the role you have been allocated, assume the arguments your character would use to defend his/her interests and develop good reasons to convince the others.

You will have to take a well-reasoned decision based on consensus (which a spokesperson will then explain to the group/class). You can nominate a mayor to act as moderator and to ensure that well-argued conclusions are arrived at.

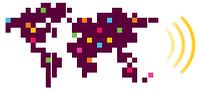
## Characters

### Mr. Smith

**Representative of Monsanto**, a multinational which sells genetically modified corn seed, who will try his very best to convince them of his goodwill. Obviously, he will receive a very nice commission for the contract. (He will have to have learned the arguments in favour of GMOs very well).

#### Arguments:

- 1 FAO (Food and Agriculture Organization) states: [...] that genetic engineering can play a part in raising production and productivity in agriculture, forestry and fishing.
- 2 The technology that has given rise to these organisms (i.e. GMOs) (...) has allowed the following four objectives to be achieved:
  - An increase in yields.
  - An increase in quality.
  - An increase in the area under cultivation.
  - The possibility of domesticating new species which would not have been possible otherwise.
- 3 MON810 corn is a genetically modified variety of corn into which a gene from a bacterium (*Bacillus Thuringiensis*) has been introduced; this produces a toxin which acts as an insecticide. The aim is to increase the resistance of corn crops to insect attack and ensure their successful production.
- 4 The criticisms aimed at these new methods by ecologists have, for Bourlaug, father of the 'green revolution', a clear cause: 'They say these things because they have a full stomach. The ecologists' opposition to genetically modified products is elitist and conservative. The critics, as always, come from the most privileged sections of society: those who live in the comfortable surroundings of western societies, those who have never known famine at first hand'. It is the most effective way of ending world hunger.
- 5 The following risks connected to genetically modified products are discussed, especially the risk to people and the environment.



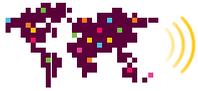
- Regarding humans, it is obvious that genetically modified products must not create any proteins which could be toxic for human beings. If both the company and health authorities adopt appropriate controls, there should be no accidents.
- Regarding the environmental effects, they discuss three types:
  - a) Against the argument that genetically modified products were created to combat pests or diseases, is that they can create resistance which leads to pathogenic agents and 'super-resistant' pests. The easy solution is that they should only be used for a few years and then this super-resistance can be avoided.
  - b) Against the argument about uncontrolled dispersion of genetically modified plant seeds, is the argument that this is confusing terminology and the real possibility of this happening would need to be assessed using real and scientific criteria.
  - c) The final risk for the environment is that put forward on the transfer of genetic modification to other, non-genetically modified, varieties, or similar species. This contamination problem would take place between neighbouring plantations. The solution is to create sterile male plants, which means buying the seed or plants.

## Ana

**Ana, representative of the village farmers' association.** Over the last ten years the farmers have witnessed profound changes in the agricultural sector which have resulted in their losing a great deal of competitiveness in an increasingly difficult market, in which the big distribution companies set conditions which are more and more difficult to comply with. Ana knows the countryside well and can see that farmers in other districts are in a similar situation. The association is well-informed about the corn sector and how genetically modified corn is gaining ground. The challenges Ana faces and the responsibilities of her job oblige her to look for a solution which allows them to maintain their production levels and lifestyle.

### Arguments (situation of the sector):

- 1 The serious situation of the countryside, where the most important problems are:
  - a) the gradual loss of profitability in agricultural production for small-scale farmers, which in turn makes their farms less profitable;
  - b) environmental problems associated with increasingly unpredictable weather patterns and seasons, ground and water pollution, which make the land increasingly less productive;
  - c) the high level of dependency on fertilisers and pesticides with their rising prices, which is also a problem with the diesel for machinery;
  - d) the fact that it is becoming more and more difficult to sell their produce at prices above the cost of producing them.



- 2 The dependency on the seed market; there are only a few companies active in this sector worldwide and they are inevitably becoming more dominant, and the consequent dependency on fertilisers, pesticides, etc., and the environmental consequences (soil impoverishment which means the land needs more fertiliser and has lower production capacity; and the subsequent water pollution).
- 3 Big distribution companies which demand more for less, paying products at source with derisory prices. This obliges the farmers to significantly increase production but, at the same time, they can see that increasing production creates surpluses which reduce prices all the more.
- 4 Farming subsidies (CAP) favour large landowners, who take 75% - many of them are associated with big companies in the agricultural sector - leaving only 25% for the majority of small farmers (who make up 84% of the number of producers).
- 5 All of these problems are due to the ever increasing importance of agroindustry, which consists of large agricultural companies which are invading the sector and which, with their big investments and large-scale production, are a serious danger to the small farmers. In many cases they are buying up the property of these small farmers at ridiculous prices.
- 6 They know some farmers who have taken a chance on organic farming, but there is no certainty that this will be profitable. In addition, they have a lot of problems as far as corn is concerned, because their plants become contaminated by genetically modified corn from nearby land and they lose their organic certification.

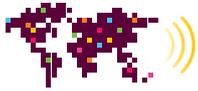
As her association's representative, she has the responsibility of deciding what will best suit the interests of her associates, thereby ensuring the sector's survival.



## María

**Mayor of Pinospuente.** We suggest making her a bad character (example: mayor)

The mayor, who has held the post over three mandates and has quite a lot of influence in her party at regional level, is looking for recognition to further her political career. In the dilemma, she takes the position that genetically modified crops are an opportunity for the rapid creation and development of wealth for the village. Some even say that the company which produces genetically modified seed has offered her a very nice commission if her town goes ahead with the planting of these crops.



### Arguments:

- 1 Emphasises the substantial economic benefits and the growth opportunities that genetically modified crops could bring to the town.
- 2 Argues that GMOs are the future and you cannot stand in the way of progress, pointing out that large-scale production could put them at the forefront of innovative agriculture and that the opportunity to be among the towns which first establish the use of these crops should not be missed.
- 3 Advantages of GMOs:  
The technology that has given rise to these organisms (i.e. GMOs) (...) has allowed the following four objectives to be achieved:
  - An increase in yields.
  - An increase in quality.
  - An increase in the area under cultivation.
  - The possibility of domesticating new species which would not have been possible otherwise.

<http://www.neoliberalismo.com/transgenicos-1.htm>

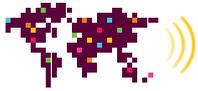
<http://www.terragnijurista.com.ar/doctrina/transgenicos.htm>

- 4 Arguments to dismiss the alleged risks posed by genetic modification:

The following risks connected to genetically modified products are discussed, especially the risk to people and the environment.

- Regarding humans, it is obvious that genetically modified products must not create any proteins which could be toxic for human beings. If both the company and health authorities adopt appropriate controls, there should be no accidents.
- Regarding the environmental effects, they discuss three types:
  - a) Against the argument that genetically modified products were created to combat pests or diseases, is that they can create resistance which leads to pathogenic agents and 'super-resistant' pests. The easy solution is that they should only be used for a few years and then this super-resistance can be avoided.
  - b) Against the argument about uncontrolled dispersion of genetically modified plant seeds, is the argument that this is confusing terminology and the real possibility of this happening would need to be assessed using real and scientific criteria.
  - c) The final risk for the environment is that put forward about the transfer of genetic modification to other, non-genetically modified, varieties, or similar species. This contamination problem would take place between neighbouring plantations. The solution is to create sterile male plants, which means buying the seed or plants.

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## David

Belongs to an environmental group which fights against the introduction of genetically modified crops, especially genetically modified corn. His association has a whole range of arguments, which he will need to prepare very carefully for this crucial council session, where the future of the district will be decided.

### Arguments:

- 1 Current scientific knowledge is not sufficiently advanced to accurately predict the consequences of these modifications, nor how they will evolve or interact with other living organisms once a GMO has been released into the environment.

The production of genetically modified organisms is mostly the creation of multinational companies who are only interested in generating enormous profits with the lowest possible costs.

In France, the cultivation of Monsanto's MON810 genetically modified corn has been banned.
- 2 In the case of corn, new varieties have been produced with are designed to resist the indiscriminate use of the herbicides produced by the same multinational companies (Monsanto, Novartis, Du Pont, etc.). Resistance to herbicides allows the plants to be sprayed with large amounts without being killed, or allows them to resist insecticides which are even more toxic than usual.
- 3 The multinational agrochemical companies such as Monsanto, Bayer, Syngenta, Pioneer and Dow Agrosience are trying to control world agriculture by means of genetically modified varieties. These companies are planning to make world agricultural and food production into an enormous genetic experiment, completely dependent on their patented seeds, destroying agricultural models based on food sovereignty and the free exchange of seeds. (Greenpeace)
- 4 In the years since genetically modified products first emerged on the market (1998), traditional and natural crops have been contaminated by genetically modified crops. And it is the farmers who have to pay the consequences. 'Coexistence' is not possible.
- 5 They pose a risk to health: they may potentially give rise to new allergies, the appearance of new toxins, a decrease in fertility levels (in animals fed on GMOs), food contamination, problems with internal organs, etc. (See <http://www.ecologistasenaccion.org/article20452.html>)
- 6 The first observable consequence in the environment is desertification and with it the loss of biodiversity in existing ecosystems.
- 7 Genetically engineered crops do not feed the world: 99.5% of farmers do not grow them.



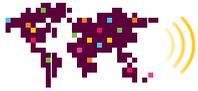
**8** On the one hand, because the cultivation of soya requires less labour and is displacing other crops in the search for greater yields, many farmers and agricultural workers are evicted from the land. On the other, the companies that monopolise its cultivation (Singenta, Bayer, Basf, Agrobitech, Dow Chemical, Limagrain, AstraZeneca, Monsanto, Dupont, Novartis and Adventis), which at first gave their seeds without major problems, nowadays have regulations and contracts which are impossible to avoid, locking farmers into a vicious circle which subjugates them to the interests of the companies, in other words, they always have to buy their seeds and associated fertilisers and insecticides from them.

You could also include information about what has happened in other regions where crops have been intensively planted.

## Raquel Vásquez

**Raquel Vásquez, coordinator of the Assembly of Rural Women.**

It is affecting us because the monoculture crops are African palm, cane, pineapple... It affects us because of pollution, because the entire production is treated with chemicals, and then there is the diversion of rivers to these fields. When there are heavy rains, the change in river courses results in flooding. Now we are experiencing very bad pest infestations. The planes spray and this poison, which is supposedly for the plantations, drifts across the rest of the countryside and causes illnesses, skin spots, allergies... If we do not vaccinate the animals, they die. (...) if they eat the grass, sometimes they are infected. This goes against food security. Last year a pest infestation caused the loss of the corn and then the floods meant everything else rotted. We ended up with rotten corn that could not be eaten. As we did not have corn, we were obliged to buy imported corn, which was often rotten as well, or contaminated. We are also proposing to the government that if there is corn there should be guarantees and this food should be reserved. In addition, as I said before, the land has been badly damaged; it does not produce as it did in the past. And so people are obliged to buy products which are not 'ours'. We are bombarded with products which do not come from our own baskets. We do not want to depend on imported products. Those of us who have land, what we want to do is to produce, we do not want to experiment with strange things, like beans for example, which are also possibly genetically modified... Because here we know what we want to sow. Instead of bringing us products which are not ours, why don't they help us reactivate production in a way that fits with the wishes of the community? (10)



## Juan

**Village resident, retired farmworker, philanthropist...** He has lived here all his life and wants people to be able to stay in the village and not to migrate to the city, to avoid the danger of it becoming an abandoned village. He has folk wisdom and experience and knows the history of the countryside well, because in addition to having lived through this history himself, has occupied himself with researching the agricultural situation across the world..

### Information:

- 1 Traditional and subsistence agriculture based on animal transport, replacement and improvement of seed by selection and natural hybrids, animal fertiliser, looking after the land, traditional storage techniques for produce.
- 2 The green revolution, which resulted in dependency on mechanical transport; the marketing of hybrid seed; the use of fertilisers and pesticides with the subsequent dependency on oil; erosion and pollution of land and water...
- 3 Problems of the countryside now:
  - Dependency on the seed market, which opens it up to genetically modified seeds sold as more profitable, and which recognises the absolute dependency on this type of seed that it implies, and which continues to be dependent on fertilisers and pesticides in the same way.
  - The environmental problems associated with increasingly unpredictable weather patterns and seasons (climate change), ground and water pollution, which make the land increasingly less productive.
  - Farming subsidies (CAP) favour large landowners, who take 75% - many of them are associated with big companies in the agricultural sector - leaving only 25% for the majority of small farmers (who make up 84% of the number of producers).
  - Big distribution companies, many of them with links to the big agricultural companies, demand more for less from the producers, pushing down prices at source to levels which cease to be profitable. Juan thinks that these big distributors are directly responsible for the profound changes that the agricultural market has experienced. (The difference in the price paid at source for some products and the price paid by consumers can reach as much as 500%).
- 4 He thinks it would be interesting to look at organic farming as an alternative, as this is much closer to the traditional farming he knew as a young man, but he is aware of the serious problem of organic farming existing side by side with genetically modified farming, because organic products tend to become contaminated by transgenics and therefore lose their organic certification.

**Web site that puts forward a similar situation to the activity above:**

[http://www.oei.es/salactsi/uvalle/gde\\_tema12.htm](http://www.oei.es/salactsi/uvalle/gde_tema12.htm)