

UNITED SOYA REPUBLICS

**The truth about soya production in
South America**

**Coordinator
Javiera Rulli**

**Elizabeth Bravo
Adolfo Boy
Georgina Catacora
Oscar Delgado
Lilian Joensen
Sebastião Pinheiro
Álvaro Porro
Javiera Rulli
Jorge Rulli
Stella Semino
Reto Sonderegger**

GRR

Coordinator Javiera Rulli
Edition Mariana Vázquez, Margarita Palau, Jaqueline Ortega
Editorial design Rafael Scorza
Translation Maite Bell

GRR Grupo de Reflexión Rural
e-mail: contacto@grr.org.ar
tel: (+54)(220) 477 3545
www.grr.org.ar

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Grupo de Reflexión Rural

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Foreword

The material in this book is a compilation of the social, economic and ecological consequences of the expansion of soya monocultures in Latin America. This book is the result of a network of Latin American activists working on issues relating to the impacts of the agro-export model. Some of the contributors are South American and others are European, but we all share our rejection of the globalised agriculture model of commodity production.

This model implies a war against the population, the emptying of the countryside, and the elimination of our collective memory in order to shoehorn people in towns and convert them into faithful consumers of whatever the market provides. The impacts of this model go beyond the borders of the new Soya Republics. The dehumanisation of agriculture and the depopulation of rural areas for the benefit of the corporations is increasing in the North and in the South.

The Grupo de Reflexión Rural raises two conceptual and decisive issues: The first is that soya is not merely a crop, it is a system that conditions policies. The soya system is the blind quota that fluctuates between established progress and neo-liberalism, between national sovereignty and globalisation, between finding one's own destiny and being subordinate to a colonial destiny. The second point is that this system is defined by its agricultural policies, which are designed in the technical departments of distant countries, and which inevitably cause a weakening of democracy within the target country, and in the in the countries from which the plans originate.

The globalisation of the 1990s pushed Argentina into the model of producer of GM crops and exporter of forage. The consequences of this were that immense areas of land were cleared of their rural communities. Hundreds of villages became 'extinct' and four hundred thousand small-scale producers were left destitute. New technological packages were developed that were heavily dependent on raw materials, GM seeds, herbicides from Monsanto, and direct sowing machines. The market laid down the rules for production and enforced the need to reduce costs to stay competitive. The same model of production and devastation repeats itself throughout the countries of Latin America's Southern Cone.

Within this book, we present the research and the testimonies of a diverse group of researchers and/or activists. We have attempted to combine a

mixture of scientific studies and the campaigning experiences of many organisations. The idea behind this compilation is to create the scenario of the GLOBAL SOYA MODEL. To achieve this, each contributor focuses on a specific issue, therefore the book can be read in any order. Each chapter establishes a framework of information and provides a basis from which to understand the scale of the problem and the specific characteristics of the model from each contributor's point of view.

This compilation endeavours to support political debate on Latin America and the consequences of the soya model on which the economies of these countries depend. It is the key factor in poverty and the destruction of biodiversity. The examples given are a useful tool for awareness raising within countries that are beginning their journey along the same path towards the industrialisation of agriculture. Paraguay and Argentina are examples of where the crisis caused by GM agriculture has been proposed as a solution to hunger and the development of the rural population.

Another objective of this compilation is to increase awareness within the populations of the North and the South to the environmental and social consequences of the soya agro-export model of forage production for livestock. We hope to generate a wide debate about European dependence on forage imports, and to highlight the consequences this has on the rural life on this continent. It is important to make the European population aware of the human rights violations that soya production is responsible for in the South, as well as the loss of food sovereignty and rural livelihood caused by this model, on both sides of the Atlantic. It is important to illustrate the consequences of this, both in the North and the South, so that the Latin American and European populations will reject this industrialised system of agriculture.

It is extremely important that this book is published at the present time. The insanity of the promotion of mass produced biofuels from industrial monocultures cannot be allowed to cover up the devastating consequences that this model is having on the environment and populations of the South. The impact of another wave of agricultural expansion pushing beyond the current boundaries would place us at further risk. We hope that the material in this book will generate much needed reflection within diverse sectors of the population, both in the North and the South.

The compilation within this book begins with a brief description of the growth of soya cultivation in the countries that make up Latin America's Southern Cone. This is followed by a description of the agribusiness model.

When describing the economic framework that occupies our territories, it is essential to understand the role of the corporations and the policies of the international financial institutions. Chapter one concludes with a brief review of the environmental impacts caused by these monocultures.

Chapter two describes the history of soya in Brazil. We believe it is important to understand the history behind the soya model and not to rely solely on technical information. We aim to provide a basic historical perspective to enable the reader to understand the origin of this model. For this reason, this chapter concentrates on a historical analysis of soya in Brazil from the 1960s and 1970s. The next chapter provides a description of the intimate relationship between food aid and agribusinesses. Chapter four introduces the future of the biodiesel market. This chapter will help the reader to understand how the new areas of expansion are being planned through the collaboration of different corporations, as well as their vain attempts to give the industry an air of credibility from an environmental perspective.

The following chapters provide an in-depth view of soya expansion in less frequented places. Examples include Bolivia, Paraguay and Northern Argentina. We document the violence and para-militarisation that forms part of the model - a situation which is repeated the length and breadth of the Southern Cone, with accounts of poisoning and evictions, threats and assassinations which are repeated throughout Argentina, Brazil, Paraguay and Bolivia. The soya model does not just affect rural populations, it also impacts on urban populations, but more specifically, it affects the inhabitants of the villages that end up drowning in seas of GM soya.

The book concludes with an account from Jorge Galeano, from the *Movimiento Agrario y Popular*, of the campaign to recover the campesino's land in Tekojoja, and his journey to Barcelona to take part in the Popular Soya Tribunal. The book is completed by an analysis of the recolonisation programmes within Paraguay. It is hoped that this will initiate debate on the proposals made within these programmes, and help us to decide how to manage the debate in order to break away from an agricultural system that is controlled by the large corporations. With the last essay we close the trade circle of soya, and at the same time we strengthen the circle of solidarity amongst fellow campaigners in the North and South.

Finally, I believe the compilation shows the paths that many of us (both young and old) are travelling in an attempt to change our history, to recover our land and our identity. We hope our work will be useful to all

those travelling along the same path, looking for answers and political action that will change the situation that we are experiencing today.

This compilation is not meant to be inert or full of academic references, but more of a source of inspiration and action to resist and stop agribusiness and the soya monoculture, and to open a debate calling for a different model to that offered by globalisation - a model which consists of Food Sovereignty and Social Justice, local development and solidarity in Latin America.

I am grateful for the participation of all the authors in this book. They are all my good friends in many ways – friends and guides along my path as an activist. I would also like to thank the Grupo de Reflexión Rural for the years that we have worked together, and for all that I have learned from them. We have shared some very significant experiences, which I will always value. I also want to thank Marga Palau y Jaquelin Ortega for saving me at the last moment and Maite Bell for the translation into English. I would like to thank my colleagues Nina Holland and An Maeyen who have been deeply involved in campaigns in the South against the soya model. Finally, my thanks go to the Swedish Society of Nature Protection for entrusting me with this mission.

Javiera Rulli
September, 2007

Introduction to the Soya Model

Javiera Rulli



Introduction to the Soya Model

The expansion of soya in Latin America

Agribusinesses are one of the major nuclei of power within the corporations that dominate the Southern Cone. Through the monoculture system, the region has been dominated by three production models: the production of oilseeds, tree plantations for cellulose, and sugarcane plantations for sugar and ethanol. The agribusinesses share the territory with the multinationals involved in mining and oil. We are currently in the new age of "Bioenergy" and different economic sectors have fused to create a mega-oligopoly. From the agribusiness sector a new regional strategy and a project of corporate integration is being developed. Domination of the region is taking place through the expansion of monocultures and the culmination of routes that drain the produce towards the ports, and from there, out of the country – this particularly applies to the Waterway –IRSA project (Integration of Regional Infrastructure of South America)¹¹.

The activities of agribusinesses and the extractive industries are the source of the social and environmental conflicts taking place within the South American region. Agribusiness is the engine that activates violence and criminal acts against the rural and indigenous communities that are fighting to keep their lands. Agribusiness has developed an inhuman strategy that has led to the destruction of the basic elements of human life for current populations and for generations to come.

The soya monoculture extends throughout the Southern Cone displacing rural populations as it spreads. It devastates forests and grasslands and weakens the foundations of food production within each nation. The countries where soya is grown become mere soya republics for the production of animal fodder, where populations are crowded into towns and are dependent on social welfare and gifts financed by the profits made from soya exports. The cycle of the agro-export model sentences the Southern Cone in its entirety to be a territory that is caught in the powerful grip of agribusiness, where all biodiversity and life has been eradicated, and which could be renamed as MonsantoLand, CargillLand, or Bungeland.

Soya originates from Asia. Once it has undergone the fermentation process, it is used as a source of human food (tofu). But since the beginning of the Green Revolution, soya crops have become a source of forage, a substitute for protein in the human diet and an essential part of a geopolitical strategy of land occupation. In the USA, soya cultivation began to increase in the 1930s and displaced small and medium scale producers. It was this that caused thousands upon thousands of impoverished families to migrate to California¹².

In South America, soya's place within the agricultural system was that of a legume used within the rotation cycle to enrich the soil with nitrogen, but it gradually turned into the monoculture 'starlet' of the agro-export model. Soya cultivation began to increase in Brazil during the 1960s, and later spread to Argentina and Paraguay. The cultivation of soya in Argentina became a massive industry during the 1980s, and it put an end to the rotation system of crops and livestock, replacing it with a system known as permanent agriculture. From the 1990s there was a reduction in rotation farming, and in many places it was abandoned altogether, with soya being planted in the summer with an application of chemicals on the fallow land during the winter.

In the North livestock farming intensified and industrial feed-lots began to be used for pork and poultry farming. This led to a decrease in meat exports to Europe and were replaced by the export to Europe of increasing amounts of forage. Gradually, Latin American replaced the USA as the main provider of forage. Recent crises within the European agro-industry, such as pig fever and mad cow disease (BSE), have been remedied by measures that only benefit increased forage imports and large-scale agro-industry. Additionally, the huge growth of agroindustry, together with the high rates of desertification in China have been responsible for the massively increases in global demand.

These policies do not only affect producers in the South, they have also caused a reduction in the rural populations of Europe. The areas near the ports were favoured for growth, of agro-industries and the traditional livestock areas in the interior of the continent were abandoned.

In the mid-1990s the soya model moved on another phase through the incorporation of transgenic technology, which culminated in the great event: SoyaRR (Roundup Ready) herbicide-resistant soya to Monsanto's herbicide Roundup. Because of its low production costs and high profits, this phenomenon triggered an exponential rise in the area targetted for monoculture.

Today, Brazil is the major soya producer in South America, with a cultivation area of 20,58 million hectares. In April 2006, Greenpeace announced that during the 2004/05 cycle alone, 1,2 million hectares of the Amazon rainforest was deforested as a consequence of soya expansion^{III}.

During the latest cycle (2006/07) in Argentina, the harvest reached a record volume of 47,5 million tonnes, and its cultivation covered an area of 15,92 million hectares. This represents over 50% of the nation's agricultural area. During 2006/07 soya has expanded by another 450 thousand hectares. In the last four years, a million hectares of forest have been cut down, the majority to make way for soya^{IV}. It is estimated that an average of 821 hectares of forest are lost per day, most of it due to

soya monocultures. According to the press, in the next cycle (2007/08) initial projections predict an even greater increase (of 20% to 25%)^V.

In Paraguay a record harvest of 6 million tonnes was registered in the 2006/07^{VI}, and a significant expansion has been recorded, with 2.429.800 hectares under cultivation. There were 2.200.000 hectares for the previous year's harvest and it is predicted to reach 2.800.000 hectares in 2007/08.

Production in Uruguay exceeded 631.900 tonnes and the area sown with soya reached 309.100 hectares^{VII}. In Bolivia, during 2006 the area under cultivation reached 950.000 hectares. During the last harvest, this area has decreased because of the heavy rains and floods in Eastern Bolivia, and there are reports of losses greater than 100.000 hectares of soya crops^{VIII}. At the beginning of this year, Monsanto announced the sowing of 5.000 hectares of GM (Genetically modified) soya in Chile. This is predicted to grow to 20.000 hectares by 2010, and according to relevant publications, these crops will be mainly for the production of seeds^{IX}.

The Mercosur block is at the top of the global export soy market, having exported 105 million tonnes. In order of importance, the world's largest soya producers are: the USA, Brazil, Argentina, China, India and Paraguay. Estimates suggest that, due to the emergence of the biofuels market, the area under cultivation will grow even more. The rise in market prices is due as much to speculation as to the reduction in the cultivated area in the USA. Nonetheless, demand remains strong and, for the moment, this keeps international prices high. This in turn, creates pressure to increase South American production.

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The soya model – a North-South model

In order to understand the soya model one needs to be aware that it is not a traditional form of agriculture, using land for cultivation on a reasonable scale, which supplies the national market and is a source of employment. The soya model implies an agriculture without farmers, an agroindustry which consists of turning agricultural production into outputs, the industrialisation and possession of the sector by agribusiness, and the (re)structuring of the dynamics of local/regional production. We cannot ignore that the soya agro-export model is an inherent consequence of the processes of economic integration and globalisation. Since the dictatorships of the 1970s in the Southern Cone, economic powers within the territory have been reorganised, so that when democracy is returned, international and financial institutions can design their economic programmes with geographically-strategic objectives.

Currently, the financial institutions and international banks invest and speculate with capital from diverse sources. Firstly the multilateral banks finance the construction of the infrastructure that supports the agro-export model (such as the waterways and the IIRSA complex, which is made up of motorways, tunnels, telecommunications, ports, etc.) and which result in higher levels of foreign debt. Secondly, the banks also invest money in the industrial and agribusiness sector.

Today soya is no longer a primary agricultural product, but has now become a commodity, a semi-manufactured product which is the basis for more complex industrial processes. Soya and maize are the principal commodities that supply the global agroindustry. The characteristics of the grain is no longer an issue. What is important is optimising its individual components, such as protein, oil and lecithin for their emulsifying properties. This production chain is dominated by the dynamics of agribusiness, and the farmer-producer is forced to follow this route, ending the local autonomous entity and turning into a consumer of inputs, dedicated to produce non-food commodities as the global market demands.

Since the 1960s, the area planted with soya has grown steadily, but with the introduction of genetically modified soya in Argentina during 1996 the model took a giant leap and expanded like wildfire throughout the south of the continent. "Argentina was the point from which the soyaRR seeds were spread for the global neo-liberal project of making the Southern Cone of Latin America the producer of soya for forage. The

illegal introduction of soyaRR took place in Argentina and was destined for cultivation in Brazil, Paraguay and Bolivia, even though the cultivation of genetically modified produce was not permitted at this time^x. Since the company lost their dominance of the market for their glyphosate formula due to its displacement by cheaper Chinese imports, Monsanto has guaranteed control of the sector through the patented RR seed.

The soya package consists of a system composed of the Roundup Ready seeds; the use of pesticides; and the direct sowing technique. The package is indivisible, given that these three components facilitate the industrialisation of agriculture, the implementation of areas of monoculture on poor soils, and the advantage of only needing a small labour force. Roundup Ready soya is a genetically modified seed patented by Monsanto and designed to resist the spraying of herbicides developed from glyphosate¹, such as Roundup.

Direct sowing is an agricultural technique that requires no ploughing or digging of the soil. This technique is being promoted as a soil conservation practice that increases levels of soil organic matter and reduces soil erosion. But in reality, it is one of the major technological methods for the expansion of large-scale monocultures on soils that were previously considered unsuitable. This intensification of agriculture is considered by some authors as an extractive agriculture – a mining of agricultural soils. By not farming the land, mechanical weeding is eliminated, and because of this, the use of herbicides becomes indispensable. Therefore the lack of mechanical weeding creates an exponential increase in herbicide and pesticide use. The use of direct sowing methods has led to critical levels of plagues and diseases such as, Asian rust, nematodes and snails.

“The expansion of soya monocultures and their dependency on a single herbicide have created increased tolerance and/or resistance among pest populations, resulting in the need to increase the quantities applied per unit of surface and the need to apply other herbicides than complement the action of glyphosate^{xii}. In Argentina alone, the use Roundup reached approximately 160 million litres in 2004 ^{xiii}.”

¹ Glyphosate, N-(phosphonometil) glicine, is a wide ranging non-selective, herbicide, used to eliminate weeds. glyphosate acts through the inhibition of an enzyme (enol-piruvil-shikimato-fosfato-sintetasa, EPSPS), blocking the synthesis of 3 amino acids that are essential for the survival of the plant. Due to the characteristics of the enzyme action, the toxicity of glyphosate is low. Glyphosate can affect certain enzymatic reactions in animals, but only when absorbed in high doses. However, the products that contain glyphosate contain also other substances that are considered toxic. (Kaczewer, 2006).

Without a doubt, the major benefit of direct sowing, along with the biotechnology of herbicide resistance, is the reduction of labour costs. In GM soya monocultures, there is a decrease in labour of between 28% and 37%, compared to the conventional farming needs. For GM maize the savings in labour costs can be reduced by 33- 55 %^{xiii}. In this sense, the soya package implies the disappearance of farms: It is an agriculture without farmers. In Argentina today, farms using modern technology will only need two workers per 1.000 hectares of cultivated land. The need for capital, economic resources with which to inputs (GM seeds, pesticides), and the necessary machinery, make soya profitable only on a large scale. This in turn generates a violent process that means the end of the small producer.

In Argentina, soya monocultures during the harvest of 2003/04 reached 14,2 million hectares and 60% of the land was in the hands of the "sowing pools" or similar enterprises^{xiv}. The adoption of the technological package for soya cultivation led to an increase in the scale of production in the Pampas, from an average of 243 to 357 hectares^{xv}.

The remaining producers become dependent on paying back the loans they borrow, and their whole existence revolves around calculating the inputs needed until harvest time. Their lives become a race against time, and even the medium-sized producers are also condemned to disappear. All that remains is the constant need to expand production in order to stay competitive.

New economic groups emerge from the soya model; agriculture becomes a branch of the speculators investment groups, such as the group Los Grobo that belongs to the family Grobocopatel in Argentina, and Favero S.A, in Paraguay. These are the most visible faces, the famous "Soya Kings" within the large groups of investors that rent land in many locations. They do not even buy land because their forecasts are based around "maximum profit in the short term" – a type of maquila- agricultural mass production. According to Grobocopatel, he considers himself the largest landless person in the world, and he believes that biotechnology has democratised agriculture. Everyone can take up agriculture today – provided they have the capital.

Agribusiness is led by anonymous groups of investors who speculate with pension funds. There are also groups of investors from communications industry, the livestock industry, and other sectors. The "sowing pools" are made up of herbicide and pesticide companies, agricultural technicians,

national and foreign investors. They all come together to create an enterprise for the production of commodities. The organisers of the First American Congress on Biofuels in May 2007 in Argentina provide an example of this collaboration. The group called BSG concentrated their investment in agriculture and have acquired thousands of hectares of soya and livestock². In addition, they control cable channels in Venezuela³, Argentina, Brazil and Mexico. This type of economy is also evident in the foreign ownership of land (in Argentina this is 17%). Sometimes, these companies are managed by local businessmen with capital from abroad. These economical tendency explains why there are advertisements in European newspapers offering land or agricultural operations for sale in Argentina and Paraguay.

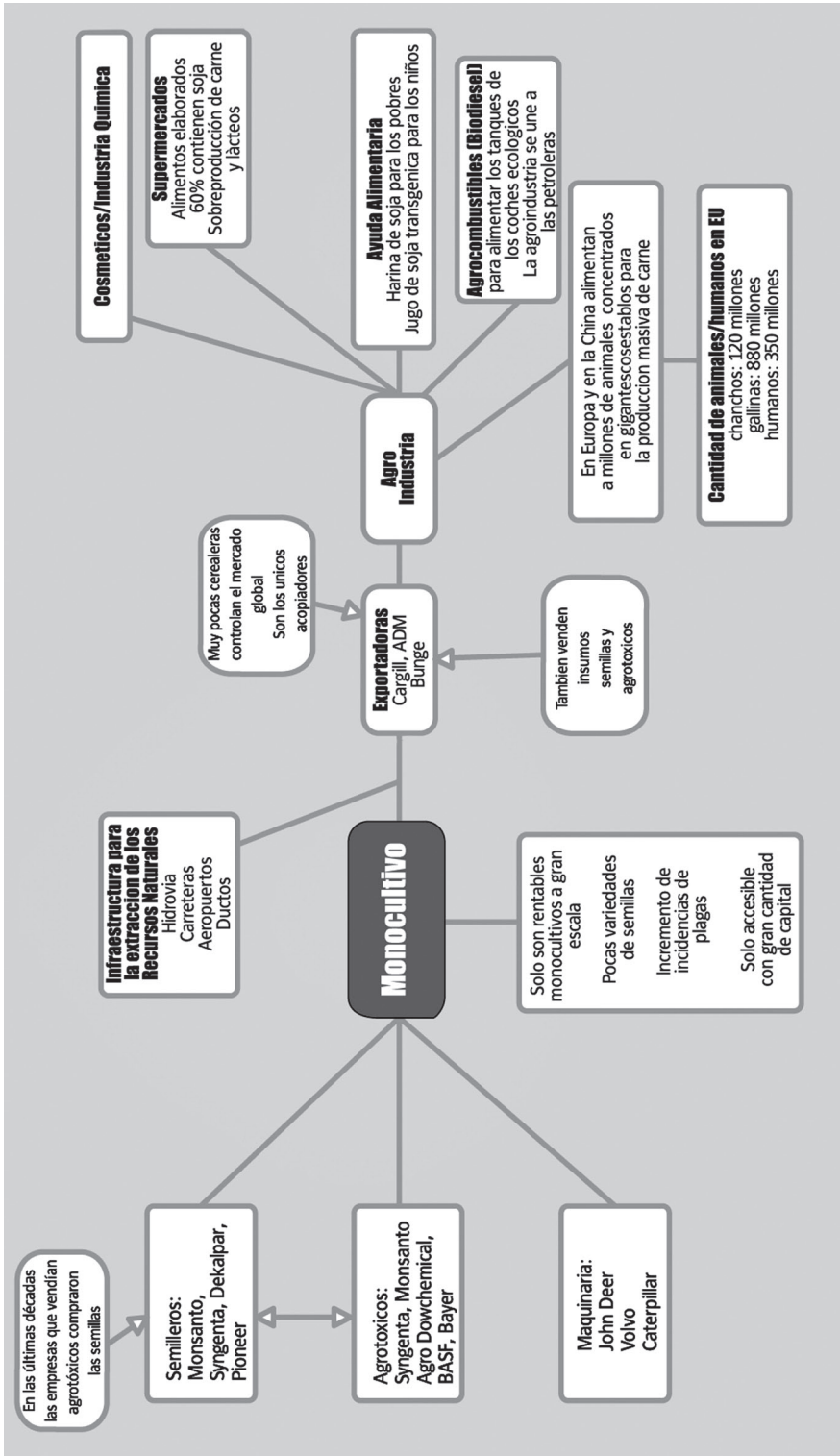
These investment groups use extremely violent methods to penetrate new areas. They are more like business mercenaries who act like thugs – a type of “Chicago boys” mixed with the “heavy-handed” style of the dictatorship. They have no qualms about corruption, violence or environmental destruction in order to obtain land. They are the front guard of the silos of the multinational grain traders.

The silos belonging to the corporations act as the front line, they devise expansion strategies and install their infrastructure before anything else, and then they are ready to spread their tentacles. They generally lean on Brazilian and Argentinian businessmen, particularly from Rosario and Cordoba, and use them to penetrate into Paraguay and Bolivia. These argentinean businessmen expanded in North West of Argentina, and from there, they made the leap to Santa Cruz in Bolivia. The official press praises these new economic players and calls them the successful promoters of their generation, even though they represent a direct inheritance of the violence and economic corruption of the dictatorship.

² BSG owns Fortin Quieto (Argentina): 12,000 hectares of land dedicated to arable and livestock. Main crops are maize, wheat, sunflower and soya. The Los Nietos Estate (Lincoln, Province of Buenos Aires): 2,700 hectares, activities include dairy, arable and livestock. Tambo y Cabana, Las Ilusiones, (Argentina): 2,800 hectares, destined for dairy production and livestock rearing. Dairy Produce Factory, Las Ilusiones (Argentina): 15,500 heads of cattle.

³ Intercable (Venezuela). Cable and Internet Business with majorities from Hicks, Muse, Tate & Furst, and with investments from international funds including Citycorp Venture Capital, UBS Capital and Chase Capital.

Esquema de la cadena de los agronegocios de la soja



Soya is exported by a small number of economic players. The international market is governed by only a few of the large grain corporations (Cargill, ADM and Bunge)⁴, and they have shared out the territories of the Southern Cone among themselves. The key players within this sector are the cereal corporations which act like invisible giants controlling the whole of the food market. These companies began life as specialist grain mills or commercial businesses, and during the past few decades, they have merged with other sectors. They have now expanded and also sell seeds, agrochemicals and fertilisers, they process grain, control transport links on land and sea, and they even produce specialist fodder for the meat industry. In many cases, they have also invested in meat, fish and other food production sectors, and through these activities have become specialised as financial entities within the agriculture industry.

The vertical integration of these companies allows them to manage agricultural development through having complete control over producers, thereby converting them into mere links in the chain of industrial production. With the multinational corporations acting as the food provider, the banker, the buyer of fattened livestock, the butcher, and the largest seller of the end product, an organised system is created that gives the company maximum control and ensures that any major risks (such as climatic variations, poor animal health) fall on the shoulders of others. It also provides a very good method for selling cheap grain - as long as you are not the rural farmer producing it. "The search for reduced costs and increased profits stimulates business to grow horizontally by expanding into new areas, also vertically by introducing new techniques (particularly in information), finally producing a spatial reordering of wealth concentration"^{xvi}.

⁴ **Bunge SA** is a company which was established in 1818 in Amsterdam. Its business focus during the past century has been on South America, and it is the largest soya processor and exporter in South and North America. In the soya global market Bunge sits in third place, behind ADM and Cargill. **ADM** (Archer Daniels Midland) is the largest cereal company in the USA, and the largest soya exporter in Brazil, Paraguay and Bolivia. ADM operates 8 soya milling plants and 6 refineries in Brazil, as well as the three largest oil processing plants. It has 20% of the EU market for ground soya and has plants in the Netherlands and Germany. **Cargill** is an American private company established in 1865. By 1997 Cargill had around 79,000 employees in over 1,000 locations, in 72 countries and had commercial activities with an additional 100 countries. Their commercial and processing activities include grain and oil bearing crops, fruit juice, tropical products and fibres, meat and eggs, salt and oil, the production and sale of livestock fodder, fertilisers and seeds. Their industrial activities include recycling steel, and the production, sale and processing of products related to steel. Their financial businesses include providing the mechanism for financial commerce, investment, structuring finance and fixed term operations, and loans. In 2001 Cargill had a total of US\$49.4 million, and in 2002 the company had profits of US\$522 million during the first six months of that tax year – a 51% rise on the previous six month period.

The principal markets for soya are China and Europe. During the 2006/2007 cycle, China imported 30 million metric tonnes of soya grain, 1,700 metric tonnes of oil, and 350 metric tonnes of cattle cake. Europe imported 22.362 metric tonnes of cattle cake, 15,123 metric tonnes of soya grain, and 925 metric tonnes of oil. During the same period South America exported 40.214 metric tonnes of cattle cake, 38.220 metric tonnes of soya grain, and 8.578 metric tonnes of oil^{XVII}.

Where is soya going?

In Europe, the majority of the soya is destined for livestock. This is an industry of gigantic proportions. It is estimated that livestock numbers in Europe⁵ have reached 880 million free-range hens; 120 million pigs; 87 million cows; and 98.5 million goats and sheep. In total, there are more than 1.000 million animals for a population of 380 million people. Europe imports approximately 39 million tonnes of soya per year. Imagine this figure as a line of loaded lorries stretching over 23 kilometres. 90% of these imports are destined for animal forage^{XVIII}.

The European agroindustry has intensified in such a way that a single farm can house thousands of animals, and requires virtually no personnel. Management is completely mechanised and the personnel's task is to monitor animal health, as livestock succumb to a continuous stream of diseases and need to be treated with vaccinations and penicillin. This intensification of production is generated by greater need for growth and capitalisation due to high investment costs and high costs of raw materials sourced from the multinationals. "Family farming is becoming less 'viable' and is being replaced with what can only be described as 'global livestock farming'. This is the reason why 73% of Spanish dairy farmers have ceased farming in the last 12 years alone"^{XIX}. Meanwhile many regions of Europe suffer by the contamination of the water systems caused by the intensification of the agroindustry.

The livestock farming system functions through the vertical integration model. European livestock farmers end up working on their own farms as salaried workers of large suppliers and middlemen. They have no control over production methods or commercial possibilities. The majority of the production is carried out by integrated companies that not only produce the meat, but also process and distribute it directly to the supermarket.

⁵ Refers to the European Union when it was composed of 15 member States.

The final link in this chain is the supermarket. They are the friendly face of agribusiness for the urban consumer. These giant emporiums are the new temples of consumerism and provide gathering places for urban populations. Supermarkets are the new giants, and they have even greater power than the food industry. Latin American and European supermarkets, dominated by Wal-Mart, Carrefour, Tesco, result in the disappearance of small businesses and changes in eating habits and consumer patterns. The dynamic of the supermarket could be described as “one of the engines that spurs on a food production model based on agriculture for export: industrial monocultures”^{xx}.

Supermarkets encroach into towns by offering the lowest prices. These are not the result of “supposed comparative advantage” (such as climate, farming methods, etc.) in food production, but come about through the abuse of the power that these companies have on the agricultural sector. Supermarkets establish homogenised production processes. Products are required to possess constant characteristics and to have the ability to be transported over long distances, as required by modern distribution. This limits production of agricultural varieties and creates a need to use products which are versatile on an industrial scale. Soya and maize stand out because of their industrial versatility, which gives agroindustry the opportunity to experiment with these substances to produce all kinds of foods. It is because of this that soya can be found in 60% of all process food products^{xxi}.

The over-production in the countries of the North, supported by subsidies which favour agro-industries, inevitably result in the dumping of excess produce on the countries of the South. The main products dumped are maize, soya, rice, wheat, dairy products, vegetables and meat. These subsidised products from the USA and Europe cause the destruction of subsistence farming and rural employment in the South.

The EU exports an annual 225.000 tonnes of chicken pieces to the ex-Soviet Union, 144.000 tonnes to Africa, 170.000 tonnes to the Middle East and 50.000 tonnes to the Far East^{xxii}. Africa is one of the most adversely affected areas. Between 1996 and 2003, competition from chicken imports caused the loss of 92% of the small chicken farms on this continent. The low cost of chicken pieces is the result of the European food processors selling the most sought-after parts, such as the chicken breast, to the European market. The remainder of the chicken can then be exported to the South, and as the industry has already made its profit, they can sell the remaining chicken pieces for slightly above the cost of transportation. As a result, if a kilo of meat can be transported for

0,08 euros, it can be sold for 1,20 euros, even if the market is thousands of miles away from the point of production^{xxiii}. In 2006, the Association of Citizens for the Defence of Collective Interests (ACDIC) in Cameroon organised a fierce international campaign to put a stop to these chicken imports in order to protect the national and local market^{xxiv}.

The age of bioenergy

With the rise in the biofuels market, the future of agricultural production becomes even more gloomy. Many international organisations have expressed fears about the possible impacts of this new model for energy production. The United Nations Food and Agriculture Organisation (FAO), and the Organisation for Economic Cooperation and Development (OECD) have both stated their concern relating to the growing demand for biofuels and the resulting rise in food prices within the report "Agricultural Perspectives 2007 to 2016". The authors emphasise that, for the production of ethanol and agro-diesel, there would be a need for a considerable, and increasing, quantity of production of maize in the USA, wheat and canola in the EU, and sugar in Brazil.

The soya sector within the Southern Cone promotes itself as a large-scale supplier of biodiesel and has promised that the next harvest (2007/2008) will set new records. It is expected that soya prices will continue to rise, not only because of the rise in demand for biodiesel, but also because other vegetable oils are used to make biodiesel, and because producers in the USA are increasingly cultivating maize for in the production of ethanol, thereby pushing the market price for soya. In Argentina, there is growing evidence of the petroagribusiness. Many corporations are investing in large scale projects in which feed lots of cattle or poultry are farmed alongside crops destined for biofuels^{xxv}.

For the Southern Cone, this could be the wave that sweeps aside the last remnants of rural food production, and the rural population. With this situation in mind, Roberto Rodrigues declared in a speech in Asuncion that Omega3 proteins will be introduced into soya so that it has a higher nutritional value. In this way the soya oil can be exported for biodiesel and the protein can be used as a dietary supplement for impoverished communities, and can be sold through the large supermarkets in towns and cities. This is the only way available to close the agribusiness loop. It has become an agriculture of death: now vegetable oil is destined for the tanks of motor cars and the protein by-product is sold to those who are impoverished because they were evicted from their lands.

Environmental impacts

The environmental impacts attributed to this form of globalised mono-agriculture are endless. Throughout the world during the last 20 years, around 300 million hectares (a little more than the total area of Argentina) of tropical forests have been destroyed so that agriculture and grazing estates, large-scale palm oil, rubber, soya, or sugar cane plantations can be created. According to the World Rainforest Movement, during the last few decades deforestation of tropical rainforests has been taking place at a rate of between 10 and 16 million hectares per year. An area equivalent to 16% of the total Amazon rainforest has already been lost, and each day we lose another 7.000 hectares of forest (an area of 10x7 kilometres). Soya and the African Palm account for the majority of the expansion, and this increased by 26% (or 77,1 million hectares) during 1999 to 2002. In 1940, Brazil had 704 hectares of soya plantations, a figure which rose to 18 million hectares by 2003^{xxvi}. Forest burning is one of the main emissions of carbon dioxide (CO₂) and this corresponds to approximately 20% of the total global CO₂ emissions.

Modern industrial agriculture contributes to the gasses that cause the Greenhouse Effect on a massive scale. It is responsible for 25% of global carbon dioxide emissions, 60% of methane gas emissions, and 80% of nitrous oxide emissions – all of which are major contributors to the greenhouse effect.

The destruction of natural habitats, such as forests, wetlands, or steppes, always signifies a great loss in biodiversity, as many species of plants and animals lose their natural habitats and run the risk of extinction. With the loss of many plant species, we also lose traditional knowledge of their medicinal properties, and consequently illnesses are treated less frequently with herbs and more through the use of chemical products from the pharmaceutical industry. This implies an extra financial cost for rural families.

The destruction and disappearance of the forests alters the water cycle: the loss of forest prevents the formation of the cloud that accumulates humidity and discharges this as rain. The droughts suffered in Paraguay during the first years of the new millennium are an expression and consequence of the indiscriminate felling of native scrub and forest.

As forests disappear the soil loses its dense vegetation cover and is left vulnerable to strong rains and the hot sun. The large-scale soya or maize

monocultures can not avoid the erosion of a considerable amount of fertile soil that is washed away by the rain. The remaining soil becomes poorer as it slowly loses fertility. Farmers attempt to compensate for this loss by applying chemical fertilisers, which means a large rise in production costs. Nitrogen fertilisers are another major source of nitrous oxide, and soya monocultures are very dependent on them. Around 70 million tonnes of nitrogen per year is applied to crops, contributing almost 10% of the 22 million tonnes of nitrous oxide released each year.

Agricultural activities worldwide generate erosion at such a rate that for every second of time, there are 2.420 tonnes of soil being washed into the oceans. The wind also contributes to this. Erosion is an extremely serious threat to humanity, as the area of arable land is being reduced whilst the world population grows and needs more food. According to the FAO, the average arable area per inhabitant was 0,32 hectares in 1961/1963 (for a global population of 3.200 million); it was 0,21 hectares in 1997/1999 (for a global population of 6.000 million); and it is predicted as 0,16 hectares in 2030 (for an estimated global population of 8.300 million). According to some independent experts, previous projections are highly optimistic, as the average area of land per person available in poor countries is estimated to be 0,09 in 2014.

Since the beginning of the Green Revolution we have lost a third of our arable land to erosion, salinisation and acidification. As long ago as March 1939, a sandstorm in Oklahoma (USA) swept away a large enough quantity of soil to cover an area of 2,5 million hectares to a depth of 30 cm (equivalent to the area growing soya in Paraguay during the 2006/2007 cycle). This extreme situation is the ultimate consequence of erosion, and leads to desertification. This takes place when the fertile surface of the soil has completely disappeared, and nothing can grow on the remaining arid soil. During every hour of every day 1.370 hectares of soil suffer permanent desertification on our planet. "In Argentina, the dramatic reduction in forest and scrub has been followed by desertification. In the past 75 years the destruction of natural forest areas for the exploitation of the timber and firewood, by over-grazing, and by the destruction of scrubland for the creation of livestock and arable farming reached 66% of the original forested area"^{xxvii}.

China is the country most affected by this phenomenon, as they heavily subsidise the use of agro-chemicals in agriculture. China is fighting - possibly a losing battle - against the advance of both old and newly formed deserts. In the middle of the last century, 24.000 villages were partly or completely abandoned. Every year from 1950 to 1975 China lost 175.000 hectares of land to desertification. Between 1975 and 1987

desertification claimed 200.000 hectares of land per year. From 1987 to 2000 desertification claimed 300.000 hectares per year. At the current rate, China will be losing 400.000 hectares of land each year from 2012. These facts also explain China's insatiable demand for food, forage and biofuels from the international market.

The loss of biodiversity signifies the disappearance of fauna that may be beneficial to crops, among these are many insect species. Within the green monoculture deserts there is no food for insects, and the use of insecticides not only affects plague insects, it kills herbs, insects, nematodes, spiders and snails. Some survive due to genetic differences, and they manage to reproduce and become viable populations, which cause harm to the crops. Farmers then have to increase herbicide doses and apply more poisons to the same area so as to kill a particular weed or insect. Over time, the poison may lose its effect on insect plagues completely. Then the agro-chemical companies have to create new and more toxic products to fight against them. And the vicious circle continues.

The "weeds", fungi, insects and other plagues are surprisingly adaptable: 500 species of insects have already developed a genetic resistance to the pesticides, as have 150 plant diseases, 133 weed species, and 70 species of fungi. The reaction to this is to apply larger quantities of stronger poisons. The annual cost of this in the USA exceeds 8 billion dollars, without taking into account the costs of application. Farmers are losing the battle and plants and insects are surviving the chemical impact. But rural communities are not. Many of these substances accumulate in the food chain and ultimately have a detrimental effect on human health.

Although GM soya has been genetically modified to resist glyphosate herbicides, it experienced a similar fate. Previously with the conventional soy, it was enough to apply 1 litre of glyphosate per hectare, but today more than 20 liters of application is needed. This is due to "natural selection" operating within nature. This is the reason why various species of herbs have developed resistance to the herbicide. For this reason glyphosate needs to be complemented with other herbicides, such as 2,4D or Paraquat, whose use was prohibited in the EU in 2007 because it is highly toxic. Sadly, these products are still available for sale in the South because environmental legislation is not as strict as in the countries of the North where the producer companies have their headquarters. During the past year in Argentina 12.000 hectares have been affected by the appearance of weeds resistant to glyphosate. The sector announced that 2,5 million litres of herbicides would be required (other than glyphosate) to fight against these plagues^{xxviii}.

Monocultures create more plagues and diseases because they do not use crop rotation methods. For example, the asian rust is a fungus which has an increasingly serious effect on soya production every year, and is responsible for high economic losses. If soya is grown on the same plot year upon year, the fungal spores survive in the soil and re-infect the plant as soon as it grows. This would not happen if a fallow period was implemented and soya was rotated with other crops.

The last impact to consider is that of water. Modern agricultural practices consume 90% of the world's fresh water. This resource is becoming increasingly scarce and good quality drinking water is unavailable for millions of human beings. The global agriculture model can be interpreted as a machine, a gigantic transfer of water and a transfer of raw materials "from regions where they can be found in relative abundance and at low cost, to other areas where they are scarce, expensive, and where their use competes with other priorities." In Argentina it is estimated that 52.000 million and 66.000 million cubic metres of water have been lost due to the export of soya^{XXIX}.

Conclusion

In this chapter I have attempted to provide a brief panorama of the basic aspects of the soya model, the geopolitical role of this monoculture that sustains the welfare of the countries of the North, the re-structuring of the State by the corporations, and an analysis of the environmental destruction caused by soya monocultures.

This agro-export model is being practiced in every Latin American country making up the Southern Cone. It threatens tropical countries such as Venezuela, Ecuador and Colombia where soya is beginning to extend. The expansion takes place in similar ways in each country, what is different is the range of powers that the agribusinesses possess. However, the impacts are always the same, as the frontiers of soya advance, the lands become empty of life and the toxic green desert begins to take hold.

The experiences of our countries show that the agribusiness model and globalised agriculture are incompatible with the development of the rural and indigenous communities. This system of intensive production does not respect any of the basic human rights of the rural population, and also has a knock-on effect on urban populations. Agribusinesses occupy the territory and condemn the population to migrate, either to the belts of poverty around the larger towns and cities, or to take on the kind of

dangerous or poorly paid jobs that no citizen of the First World would consider doing any more. Within the current framework of structural violence, no dialogue or Round Table of Sustainable Production (a WTO approach, Round Tables of civil society with industry) is feasible, neither is the kind of social corporate responsibility that attempts to mitigate the impacts, of the social and environmental destruction taking place, by stablishing private conservationist policies.

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