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DISCUSSION PAPER

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GENDER, TECHNOLOGY AND ENVIRONMENT: THE IMPACTS OF MERCOSUL IN BRAZILIAN WHEAT FARMING

**Lena Lavinás
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Lena Lavinas
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Federal Government of Brazil

**Secretariat of Strategic Affairs of the
Presidency of the Republic**
Minister Roberto Mangabeira Unger



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DISCUSSION PAPER

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**GENDER, TECHNOLOGY AND ENVIRONMENT: THE IMPACTS
OF MERCOSUL IN BRAZILIAN WHEAT FARMING ***

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1 - INTRODUCTION

1.1 - Integration as a Novelty in Latin America

The idea of forming supranational economic spaces in Latin America is not really new. Yet despite attempts such as ALALC (the Latin American Free Trade Association, 1960) and ALADI (the Latin American Association for Integration, 1980), which preceded the creation of MERCOSUL on March 26, 1991, multilateral integration in Latin America never really occurred in practice and remained as a major proposal on paper.

In order to overcome the obstacles to economic integration that had been undermining trade relations between Latin American nations, Brazil and Argentina attempted a new approach in 1986 under the PICE (Program for Economic Integration and Cooperation).

Trade between Brazil and Argentina until 1963 had consisted essentially of agricultural products with a low aggregate value. In the 1970s, although there was a diversification of bilateral exchange (with a strong proportional increase in manufactured goods), total export rates between the two countries remained constant, and therefore low: some 10% for Argentina and 5% for Brazil. The 1980s crisis aggravated this situation, leading to an even greater drop in these rates, down to 8.3% and 2.3%, respectively.

In fact, this downward trend in foreign trade was not limited to these two countries. Rather, it was observed all over Latin America. As Macadar and Bello stressed (1989), contrary to the EEC countries, which have a longstanding, historically consolidated tradition of trade, Latin American nations market their farm surpluses preferentially to central countries, for example. Suffice it to say that Brazil's trade is concentrated basically with the United States and the European Economic Community, which together represented over 50% of Brazil's exports and over 40% of its imports in 1989, while the ALADI represented only 8.5% and 16.5%, respectively.

Still, the technological revolution and resulting restructuring of the world economy caused by the crisis have contributed to the slide in the relative position of economies like Brazil and Argentina in the international market. For the time being, MERCOSUL, which now includes Uruguay and Paraguay, appears to be a strategic alternative for confronting the crisis. Multilateralism is on a downswing, even though the globalization phenomenon, which in fact implies a deepening of interdependence between national economies

[Motta Veiga (1991)], dominates the international scenario.

In this sense, MERCOSUL is an initiative which many authors [Pereira (1991), Macadar e Bello (1989)] consider weak, since "it does not express a crowning of relations of interdependence or complementariness between national markets, the primary reason for establishing economic blocks" [Delgado et alii (1991)]. Rather, it is considered a reflection of "the political will of the Executive Branches of the member countries" [Pereira (1991)], faced with the impact of regionalization processes underway around the world, which end up complicating even free-trade principles.

Still, there appears to be a reversal in this trend. After a year of MERCOSUL, there seems to be a significant increase in bilateral trade between Argentina and Brazil and in interest by the private sector in the harmonization of macroeconomic and domestic sectoral policies among the four member countries. Delgado et alii (1992:31) point out that although the MERCOSUL member countries "as a whole represent a little over 1% of world exports, which expresses their relative marginality in world trade and reinforces the idea of conceiving of them as a peripheral regional bloc", trade flows between these countries, particularly between Brazil and Argentina, have grown vigorously over the last three years.

In spite of the numerous contradictions that emerge in identifying convergences and asymmetries among products, production processes, and production chains between MERCOSUL members, it seems probable that the integration process will gradually consolidate in a sectoralized, segmented way -- that is, through priority agreements between specific sectors and branches, stimulated by new growth and market control strategies aimed at new levels and forms of competitiveness [Delgado et alii (1991)].

We know that in terms of economic and social development levels, asymmetry and heterogeneity challenge the principles of complementarity and interdependence -- implicit to the idea of integration -- and reinforce the paradigm of unequal exchange that marked the phase of modernization and growth in the countries which (for that very reason) came to be known as peripheral.

The European experience dates from the early 1950s and is now an example of success -- after over 30 years of adjustments and negotiations -- in a consolidated integration process. In contrast, experiences in the

Americas point to tremendous weaknesses. Europeans are moving forward with a process of historical, cultural, and geographic exchange and are uniting -- even to the point of coining a new currency, but also in political and security issues -- in order to confront the United States' post-World War II hegemony. Meanwhile, in North America and Latin America, more strictly short-term economic interests seem to be the driving force behind integration, since regional interdependence, when it exists, seems to be limited to bilateral exchange mechanisms between the world's major power, the United States, and the other countries in the hemisphere.

As MOTTA VEIGA has pointed out very appropriately in listing seven hypotheses in the regionalization and integration processes in the Southern Cone, "while supranational integration processes tend to reinforce dualistic economic and social configurations, this threat is multiplied when the process involves economies with very different levels of productivity. In this sense, trade liberalization in the relations with a country with greater productivity is insufficient -- in and of itself -- for inducing industrial restructuring dynamics capable of upgrading the position of our economies in the world order. On the contrary, a liberal integration model can produce a "savage" industrial restructuring -- in reality, a kind of deindustrialization -- broadening the heterogeneity of the productive apparatus in the less developed country (...) -- and what is worse, reinforcing economic and social dualism in our countries" (1991:25).

NAFTA, the North American Free Trade Agreement, negotiated between the United States, Canada, and Mexico beginning in February 1991 and which is expected to be concluded in two years, keenly readdresses the issue of structural differences in the Mexico's economic base and social fabric as compared to the United States and Canada.

Although Mexico and Canada both have long traditions of bilateral trade with the United States due to their long common borders, and while Canada was the United States' largest trade partner in 1990 and Mexico was its third-largest (with Japan in second), this does not seem sufficient to avoid the risk of duality or reinforcement of asymmetrical, hierarchical relations.

Although it is too early to predict the depth and scope of effects stemming from the establishment of these economic spaces (a process which is still going on), some hypotheses may already be proposed.

1.2 - Agriculture and Integration

As we stated above, the formation of supranational economic blocs is now occurring in the midst of a grave crisis with multiple dimensions. One of these dimensions is the world agricultural crisis.

This crisis has manifested itself over the last decade through a drop in agricultural prices concurrent with the formation of huge surpluses, a result of the heavy increase in productivity in the farming sector worldwide, leading to an increase in supply that has not been matched by consumption, which in turn has decreased due to the broadening and deepening of the recession.

One of the key elements in this process of disorganization, as Iglesias has pointed out (1990), was precisely the fact that the European Economic Community became a net exporter of agricultural products, when previously it had been a net importer, thus leading to a significant loss in the United States' weight in world agricultural trade. This setback has been accompanied by a drop in its participation in other industrial and services markets, where the Japanese and others are now competing based on their technological and innovative power. The GATT impasse is primarily a confrontation between the United States and the European Economic Community.

However, the United States is still the main exporter of grain, followed by the EEC, Canada, Australia, Argentina, and Thailand. The largest importers are the former Soviet Union and the Eastern European countries and Japan, followed by the Third World countries. Furthermore, increased self-sufficiency by countries like China, India, and Indonesia in domestic grain production has also contributed to the decline in international grain trade.

In short, it is easy to observe that national policies for encouraging production and increasing productivity have played a major role in changes in world agricultural trade. Such domestic policies have aimed essentially at protecting the respective economies from price drops and instability on the world market, sustaining farmers' income, and in many cases ensuring the principle of food security, without which the sovereignty of nation-states would seem to be threatened in an increasingly competitive and unequal world.

Indeed, one of the objectives of the CAP (Common Agricultural Policy) since 1958 was "to achieve food

security and obtain reasonable prices for consumers" [Iglesias (1990)]. This goal was reached, considering that the EEC, while still the world's largest agricultural importer (the United States comes in second place), has almost completely reduced importation of what are considered strategic foodstuffs for its protection scheme (grain, sugar, meat, and dairy products).

With a protectionist thrust based on credit subsidies, such policies ended up stimulating further protectionism and aggravating the fiscal deficit, thus proving extremely costly to maintain.

With integration, however, such mechanisms are expected to be completely abandoned, along with some principles such as food security, which is defended by FAO and is admitted to be necessary.

Mexico is a good example of such contradictions. Initial studies indicate that as this country joins NAFTA, its vegetable and fruit production should be strengthened, with prospects for broadening the areas planted domestically and for relocation of food-processing industries to Mexico. It is important to point out that the largest imports of farm products from Mexico to the United States are fresh vegetables, obviously produced with U.S. seeds, a high-technology sector that is hardly expected to cross the border into Mexico. However, one of the staples in the Mexican diet, corn, which is planted extensively on the family farms that ensure national self-sufficiency for this crop, is expected to be cut back in Mexico, to the benefit of corn imports from the United States (where corn yields are extremely high). In terms of production volume and value, grain and fruits and vegetables are not exactly the same!

According to reports by the United States government, Mexican farm exports are expected to grow at a much lower rate than its imports, meaning a relative contraction in Mexico's primary sector, which has one of the strongest peasant bases of any country in Latin America. This may reduce the difference between percentages of individuals employed in agriculture in the United States as compared to Mexico: 2% in the former as compared to 33% in the latter. It is quite probable that the flow of Mexican migrant workers to the United States and Canada will continue to grow.

Although the United States is expected to increase corn exports to its southern neighbor by about 75%, as a result of the abolition of restrictive measures, this should mean an increase of only 2% in its total corn

exports and an increase of less than 1% in terms of production.

In addition, it is predicted that the reduction of grain production in Mexico will be greater than the increase in production of fruits and vegetables. The other side of this will be the weakening and reduction of United States fruit and vegetable production. Meanwhile, bilateral agricultural trade as a whole should grow by one-third for the United States, as compared to only one-fifth for Mexico. This is what is known as complementarity and (inter)dependence.

The case of Quebec points to difficulties of another kind. With the liberalization of exchange between Canada and the United States, beginning with the FTA in 1989, the agro-industrial sector has been witnessing large-scale mergers in the poultry, swine, and dairy production fields, leading to an unprecedented phase of economic concentration in installed processing capacity. This seems to be the way to confront international competition with some chance of success, since it is founded on dynamic management and the utilization of very sophisticated technologies, presupposing a constant harmonization of technical norms for production, processing, sanitary inspection and control, and marketing. In fact, this threshold is constantly being redefined upwards.

Indeed, the deepening of industrial concentration suggests a growing sophistication of production processes within productive chains, under the hegemony and control of leading companies. For this very reason, it means a weakening of the weaker links in the chain, in the case of integrated producers, which must submit even further to such companies' technical and contractual requirements, thus forfeiting their autonomy. This autonomy is further undermined by the fact that these companies -- now free of obstacles to the circulation and territorialization of their investments -- are able to redefine their strategies on a regional scale, pitting producers in heavy competition with each other as a function of efficiency, both inside and outside of national borders. With the reduction of the state's role and the decrease in subsidies, producers will encounter growing difficulties in negotiating prices and conditions for financing their crops.

However, according to Saint Louis (1992), efforts at greater diversification in productive activities by family farmers, reversing the previous paradigm of heavy productive specialization, have been successful, thus constituting a new strategy for resistance to the

monoculture model, so widespread and hegemonic during the 1960s and '70s.

In the case of MERCOSUL, the products and segments that are most sensitive to integration are already being identified. First, there are those that are characteristic of border areas, which are similar because of their geographic proximity: wheat, barley, apples, grapes, and dairy products.

Take the case of wheat. Despite a considerable improvement in conditions for production and supply of wheat in the country, due to a heavily-subsidized import-substitution process over the last fifteen years (a process which is now being debated), Brazil is far from achieving self-sufficiency for this grain, particularly if one considers that demand for food has been strongly repressed by recessive policies and high inflation rates. It is true that the 1987/88 wheat harvest was estimated at six million tons, for a total consumption estimated at seven million. In 1992, in spite of a new record harvest, Brazil began importing wheat again, now mainly from Argentina, as a result of the specific protocols signed during the founding of MERCOSUL. Previously, its largest suppliers had been the United States and Canada.

Indeed, Argentina has higher productivity and profitability levels than Brazil for wheat production: its average yields per hectare are much higher than those of Brazil, while its costs are much lower. While Brazil continues to subsidize its production, favoring specific sectors such as farmers, flour mills, and processing industries, Argentina surtaxes its agricultural products. This means that as integration protocols take effect and are respected by MERCOSUL members, they will probably lead to a suppression of subsidies and tariff barriers which should have negative effects on volume, conditions, and spatial distribution of Brazil's domestic wheat production.

1.3 - Integration and Brazilian Agriculture

Southern Brazil, and especially the family farmers there, who are the weakest link in the agro-industrial chain, can probably be expected to undergo a new process of adjustment to this model, which now has international standards of competitiveness. Although they are modern and relatively dynamic, many southern Brazilian farmers will have to opt for strategies other than constant intensification. This could lead to the exclusion of some of the farmers who in the 1970s and '80s were the target and backbone of the modernization

process and/or a new position in the productive process for others, now based on more diversified strategies.

For example, in the interior of the state of Paraná, in southern Brazil, this restructuring process already seems to be underway. In some regions, despite being highly integrated into the wheat-growing chain, some family farmers have been opting for new production standards which are less intensive and more diversified, considering that the rise in production costs and the consequences of adopting technological packages are harmful to both the environment and their own health, and that they do not compensate for the effort needed to remain amongst the most "competitive", considering the presence of their Argentine colleagues. In other regions, however, where favorable natural conditions allow for relatively significant scale economies, it may be possible to continue seeking greater productivity and profitability.

We thus observe that the free trade policy now underway will certainly have important consequences for spatial restructuring of productive activity -- altering the process of regionalization and localization that prevailed in the 1970s and '80s -- and redefining the place and weight of economic agents, leading to new internal readjustments in each sector. The European example leaves one quite skeptical about the possibilities for a relatively controlled integration process, without major losses: in Europe, struggles over similarities pitted large farmers, family farmers, and rural workers against each other rather than drawing them together.

Our objective in this study is to detect and analyze new trends in productive restructuring that are appearing in a specific Brazilian agricultural sector, wheat-farming, in the context of the profound changes described above. Such trends are expressed under contingencies such as the redefinition of markets -- greater international competitiveness, with heavy domestic impacts -- or in the farmers' search for new economic alternatives, to become more resistant and less vulnerable to market instability, if not more autonomous in the face of market pressures. Such instability and pressures have been the hallmark of the last decade and one of the determining factors in the search for flexibilization and interdependence.

In this sense, we will pay particular attention to the changes that have been occurring in farm operations -- in terms of the sexual and social division of labor -- considering that the strengthening and diversification of rural social movements over the last fifteen years

have been raising relevant issues and formulating alternatives for the resumption of development based on new foundations. Such foundations would be less exclusive than those prevailing in previous decades, during a phase of tremendous economic growth. Two issues will be approached specifically: the value ascribed to female labor and women's recognition as "rural producers" (*produtoras rurais* in the original, i.e., farmers - T.N.) on an equal level with men; and the change in the technical and scientific development standard, considering the proposal of sustained development, which would save natural resources and establish a new relationship between human beings and nature.

Both of these issues permeate the debate on economic and regional integration, even though they are not at the core of this debate, nor are they present in the discourses of all of the economic agents and social actors involved more directly with the challenge raised by the creation of free-trade zones, generating unequal expectations and opportunities. Nevertheless, they are relevant issues. In fact, they represent demands by important social sectors who have sought to point to new directions for resuming economic and social development.

Why should we give priority to this approach, dealing with social gender relations and the environmental issue? Because such moments of profound economic, productive, and technological restructuring are also times in which relations between the sexes are reshaped, in the different spheres and on the various scales where they occur, sometimes creating spaces for greater autonomy for women and other times reinforcing a more conservative division of "roles", thereby aggravating women's subordination, whether within the family, on the labor market, and in structures for representation and participation of power in general. However, we expect that given the growing, more organized, and institutionalized strength of the very diverse women's movements around Brazil over the last twenty years, the effects of this process of crisis and readjustment will not just impact women negatively, considering that there is an emerging gender identity in various social and socio-professional strata.

"Identity is established within social relations, in the struggle to change these relations. To speak of gender identity thus acquires a strategic dimension: it is a matter of a new way of naming and projecting one's self, based on the awareness that one exists in a social gender relation," [Lavinás (1992)], a relation which is given by gender. Women farmers and rural

working women seem to have acquired such an identity in their various struggles to put an end to sexist discrimination. Proof of this can be found in the real progress attained in formulating so-called social rights, which in a country like Brazil -- marked by exclusion and authoritarianism -- require extremely detailed contents, so that differences are not repeatedly transformed as a function of inequalities. This struggle for the recognition of the pertinence of demands has marked the more recent dynamics of popular movements in Brazil, including the women's and feminist movements.

After all, what rights are these? The denouncement of the invisibility of female labor in agriculture and the marginalization and discrimination that characterized their position in production (denial of social security rights, inferior wages, barriers to their assuming the position of independent farmers) are the backbone for the rural working women's movement, which has united women farmers, day laborers, sharecroppers, settlers, and landless peasants in an attempt to readdress and reconquer social rights in the feminine gender for those who make their living from agriculture. This includes the right to land itself and to property deeds, professional training, equal pay for equal work, social security (in its multiple components: maternity leave, sickness and disability pay and compensation, etc.), and retirement. It also includes access to individualized credit and individualized political representation in trade unions, cooperatives, and other organizations of farmers and rural workers, instead of delegated, family participation. Furthermore, it includes the right to establish one's self as a farmer, to no longer be assimilated as "an unpaid family member" in a secondary, undervalued position without one's own identity in relationship to the male farmer, the head of the farm operation [Lavinás (1991)].

To what extent do requirements for a redefinition of production levels by the new standard of competitiveness and market integration contemplate such claims and favor a greater symmetry in gender relations, as constituted in family farm operations? Can the search for individualization by women be a factor in favor of greater productivity, or is the latter merely a technical aspect related to the greater or more systematic use of increasingly capital-intensive technologies? The question is relevant, since the international literature analyzing the new pattern of flexible accumulation refers repeatedly to the fundamental importance of the organization of labor -- and not just salaried labor, but above all family labor, where it is the motto for economic activity --

in a new post-Fordist standard of accumulation. While there is a new technological paradigm at work in this process of economic restructuring, there also seem to be new forms of social organization of labor which allow for its success, based on the extensive (and not just intensive) use of differentiated labor, that is, female, migrant, and young people's labor, etc.

Various studies have shown how negatively female labor has been affected by such changes. Flexibilization of labor has reinforced asymmetrical labor by women, particularly part-time, seasonal, precarious, and unskilled labor [Kergoat, quoted by Abreu (1993)]. The introduction of new technologies has proven to be an element for devaluing activities that have traditionally been exercised by women, when it has not eliminated them entirely. Their impact has been felt not only at the professional level, but also within the household domain [Rieu (1992, p.128)].

In agriculture in particular, there is a well-known phenomenon of total exclusion of women during phases of sharp rises in labor productivity due to the use of farm machinery and implements. Rather than professional training for women, what generally occurs in family farm operations is the exclusion of women from activities that formerly were exercised by the couple, within a specific pattern of sexual division of labor. Men acquire new training and new roles (management, above all), while women retreat even further into the non-productive household domain. In southern Brazil, where the modernization process has been the most extensive and deep of anywhere in the country, the rallying cry "We aren't housewives! We're rural working women!" expresses women's dissatisfaction over the ground they have lost in family farm operations and their desire for professional training.

As Abreu (1992:125) has stressed so appropriately, "The utilization of female labor cannot be explained by technical requirements. The logic of the sexual division of labor in the productive sector and workplace depends on an understanding of the overall sexual division of labor in productive and reproductive work in contemporary society."

Meanwhile, family farmers -- the weakest links in the agro-industrial chain, since their scale of production is small and they must increase their expenditures and indebtedness in order to increase productivity -- have turned to the environmental issue as the focus for creating new alternatives for production and social organization. In similar fashion, the soil erosion caused by the intensive use of chemical inputs, with

their ominous effects on both the environment and the health of farmers (men and women), has been another driving force in the emergence of models for ecological agriculture. Thus, "The search is for a radically different approach: to regenerate ecosystems through ecological agriculture, together with broad social, economic, and political changes needed to ensure food and social justice for all." (AS-PTA, 1991:1) It is thus a matter of creating a new system of objectives and a new economic and social rationale combining environmental quality and social justice.

Environmentalist and alternative movements have also grown in southern Brazil and the Amazon Region, with the founding of the "Peoples of the Forest" movement, expressing not just diversity (rather than specificity in a productive relationship) but also a territorial and environmental identity (that of the forest). These are regions where the productive model of the Green Revolution was introduced, leading to a heated struggle for the use of the land (in the South) and a major dispute over new forms of what was still a less intensive appropriation of natural resources (in the Amazon Region).

To quote Klatzmann [Veiga (1993, p.164)], "*augmenter les rendements avec des quantités croissantes de nitrates et de pesticides est à la portée de beaucoup d'agriculteurs. Les augmenter en réduisant les doses de ces produits sera une toute autre affaire. Les adeptes de ce qu'on appelle l'agriculture biologique n'ont pas montré qu'ils étaient capables d'obtenir des rendements élevés.*" We shall also attempt to analyze this contradiction in this study: at a time of economic and technological restructuring, in which the adoption of market liberalization policies seems to reinforce the previous productivist and intensive growth model (proven to be elitist and harmful to the environment) to what extent -- based on a new form of production and a new relationship between human beings and nature and not on the search for greater short-term competitiveness -- can environmental awareness orient choices that are more extensive and more devoted to local interests?

This study has three parts. The first describes the introduction of wheat cropping in Brazil and the evolution of its contribution to agricultural household production in Southern Brazil (State of Parana, in particular). Based on a survey of agricultural households in the municipalities of Palotina and Medianeira, the second part of the study investigates the effects of MERCOSUL on the local production of wheat. Two types of effects are investigated. One the one hand, we analyze how MERCOSUL may have induced

improvements in the level of competitiveness of the local production of wheat via (a) the search for productivity gains, and (b) the search for improvements in product quality. On the other hand, we seek to identify the strategies for productive reintegration developed by wheat producers and other economic agents associated to the production of wheat. We also identify the changes in the use of labor in production with special attention for the changes in the sexual division of economic activities. Moreover, we also identify the impacts of this reestructuring process on the environment and technological pattern being used. Finally, in the third part of the study some conclusions are presented.

2 - WHEAT FARMING: RECENT TRENDS AND CHALLENGES

Domestic wheat production in Brazil is currently suffering from lack of definition in the face of new factors created by regional integration, above all by the deregulation process underway since 1990, involving wheat trade liberalization and the proposal of national self-sufficiency in production of this grain.

Following a record harvest of some 6.0 million tons in 1987 (for a national consumption of 6.6 million tons in the same year), national self-sufficiency in wheat production was predicted over the short run. However, this did not occur in subsequent years, as can be observed from Table 1. The 1991 harvest of some 1.9 million tons was even more disappointing.

Table 1
WHEAT HARVEST AND CONSUMPTION 1987-1991

Year	Harvest (1,000 tons)	Consumption (1,000 tons)
1987	5,889	6,650
1988	5,751	6,380
1989	5,140	6,950
1990*	3,090	7,000
1991*	1,980	

Source: FGV, 1989.

*IBGE. *Anuários Estatísticos* (Statistical Yearbooks).

When the Collor Administration dismantled the wheat-marketing system based on government intervention, it deprived farmers and the milling sector of their guarantee of both compatible returns on production costs and compensatory prices. These are the factors that help explain the sharp harvest drop, as shown in

the table above. The government's elimination of the marketing structure (the elimination of government support in the form of highly subsidized prices) subordinated the various actors in wheat farming and the wheat-product industry to market laws, which, in a situation of integration with the Argentine market, leaves them in a highly unfavorable position. In fact, the low cost of Argentine wheat, as Table 2 shows, together with its superior quality in relation to Brazilian wheat, make it extremely competitive on the Brazilian market.

Table 2
COMPARATIVE PRODUCTION COSTS FOR ARGENTINE AND PARANA WHEAT

	Argentina	Paraná
Variable costs (US\$/hectare)	223.34	379.61
Fixed costs (US\$/hectare)	129.16	244.98
Total cost (US\$/hectare)	352.50	624.59
Yield (kg/hectare)	2,500.00	2,040.00

Source: Adapted from Schilling (1992), p. 188.

In this sense, in order to ensure its participation in the context now being consolidated, the Brazilian wheat industry is faced with the challenge of competitiveness, which seems to depend on increasing specialization and verticalization of production.

In relation to the flour milling sector, the approval of wheat imports, which occurred together with the process of privatization of trade, has still not become an advantage. Until recently, government stocks -- consisting of domestic harvests bought up before privatization and the purchase of Argentine wheat through bilateral protocols -- guaranteed a supply to millers at attractive prices. This year, prospects for a good harvest have generated expectations as to advantageous prices for the milling sector.

Dealing with the uncertainties of both an underdeveloped market and the climatic instability affecting most of Brazilian wheat production, the solutions found thus far by the milling sector as a whole are just palliatives and are no solution to the supply problem over the medium and long run. Meanwhile, the possibility of Argentine flour entering the unified market threatens the very survival of the Brazilian milling industry.

Thus, the issue of competitiveness for Brazilian wheat production involves the reproduction of the entire agro-industrial complex supporting it and is thus not a challenge just to wheat farmers.

As we have already stated, increased competitiveness requires ever-increasing specialization and verticalization in production, which implies the intensive use of technologies devoted to an increase in Brazilian wheat productivity and quality, to the point of making it competitive with Argentine wheat.

"Following intensive growth beginning in the late 1970s, Argentine wheat harvests reached 13-14 million tons a year from 1983 to 1985 (two-thirds of which was exported), declining in the late 1980s to around nine million tons a year (45% of which was exported). Meanwhile, the volume of wheat sent to the flour industry grew very little: in the late 1980s, the milling industry was absorbing some 4.7 million tons a year (DESER, 1991:39). Argentina's ability to generate exportable surpluses is thus quite large (some 4.4 to five million tons a year at current harvest levels), and the direction it takes depends on the country's trade interests in relation to one of its main export products" [Maluf (1992)].

This is the challenge faced by the wheat sector in the MERCOSUL context: to make production and productivity compatible with quality at competitive levels.

As we know, development of Brazilian wheat production was carried out under the aegis of conservative modernization as protagonized by the state and farming and industrial elites, particularly from the 1960s on. Based on a credit and research system, Brazilian wheat farming developed through the massive utilization of inputs and machinery, not only by medium- and large-sized farmers but also by small family farmers, leading to significant increases in production and yields over the last thirty years.

Yet despite the increases in yields, the quality of Brazilian wheat is below international standards, mainly in relation to industrial processing characteristics (baking quality). Agronomic research over recent decades has concentrated on the adaptability of seeds to different environmental conditions in support of the spatial expansion of the crop as well as its productivity (Alves, 1991). In spite of wheat being the crop with the highest rate of utilization of improved seeds -- 92%, as compared to 80% for soybeans, 67% for corn, and 54% for rice (Alves, 1991), the issue of quality was virtually

absent from agricultural research, due mainly to the product's marketing scheme. In the case of farmers, government subsidies for the sector concentrated on increased productivity and production, while in the case of the flour industry priority was given to ensuring a regular supply of raw materials and a market for the flour, thus dismissing investment in improved grain quality. As Alves states (1991), the dissociation between agricultural research and industrial interests in the sector are a consequence of the wheat-marketing system.

At present, when the problem of competitiveness depends on improving the quality of Brazilian wheat as a way of guaranteeing its position in a competitive market such as MERCOSUL, and in the face of the adoption of economic liberalization policies, the need emerges to define new strategies for technological development of the sector, devoted to improving product quality. While previous research has concentrated on the grain's hectoliter weight in order to develop seeds that are adaptable to various microenvironments, it should now concentrate on its baking characteristics (gluten and protein content).

As we can see, new relations are being established between the agro-industrial sector and farmers, based on a convergence of interests devoted to improving wheat quality. Until very recently, the flour industry was only concerned with ensuring a supply of the grain at subsidized prices and did not care about quality or (consequently) about agricultural research, since it was operating on a non-competitive market. Currently, the wheat agro-industry is devoting its attention to improved quality, thus constituting a demand for agricultural research. In this sense, the technological issue for Brazilian wheat production depends on the redefinition of intersectoral relations in the agro-industrial chain, based on the search for competitiveness.

2.1 - Technology and Family Farming: The Environmental Issue and Social Gender Relations

The new technical standard that integration imposes on Brazilian wheat farming requires farmers to meet a degree of capitalization which is incompatible with their economic reality, particularly for family farming, which has been most heavily affected by recent credit cutbacks and which currently faces the uncertainties surrounding the fate of wheat farming without government support.

According estimates by the Getulio Vargas Foundation (1989), some 100 thousand farmers, involving 800 thousand individuals, are devoted to wheat farming in Brazil. According to IBGE, the Brazilian Geographical and Statistical Institute, in 1980, 76% of wheat-farming operations were in the 10-100 hectare bracket (24.7 to 247 acres), evidence of the importance of family farming for this crop.

Family farming, which is generally representative of agricultural production in the southern states of Brazil, currently faces the dilemma of whether to continue to plant wheat, since the government's sudden withdrawal from marketing created a market where the presence of a highly oligopolistic flour-milling industry reduces farmers' possibilities for obtaining favorable prices. Thus, wheat farming has become a highly risky activity for family farmers, since it does not ensure them of a return that will allow them to maintain the technological standard adopted in recent decades. Another factor is climatic instability, which has led to harvest failures in recent years, further aggravating risks for farmers.

Even as the economic situation (increased costs, credit constraints, increased interest rates...) has imposed limits on prospects for the inclusion of family farming at the new thresholds dictated by market integration, environmental concerns have served as the basis for rethinking the technological issue in the context of family farming.

As a way of making rational management of natural resources compatible with lower economic risks for farmers, agricultural diversification has become an alternative for maintaining family farm operations. Based on appropriate technologies (biotechnology) and crop-rotation systems, according to Romeiro (1992), agricultural diversification expresses a recovery of farmer rationality in management of natural resources, in the development of highly productive, ecologically balanced agricultural systems.

In the case of family wheat farming, diversification may become an alternative strategy in the face of current economic risks and the concern for environmental conservation. New grain options have been tried by farmers, who have gradually abandoned the wheat-soybean combination that has characterized wheat farming in recent decades. In addition, there is a flourishing environmental awareness among wheat farmers, particularly in southern Brazil, resulting from the environmental imbalance that the indiscriminate use of technological packages has caused

in wheat-growing areas and placing the economic survival of some communities at risk.

Another aspect of productive specialization with new technological levels is related to women's work in family farm operations and the nature of relations between the sexes. Various studies on changes in female labor caused by technical modernization show that in many cases mechanization has left women out of agricultural tasks or has at least reduced their activities to chores requiring less manual effort. Except in cases where proletarianization of family labor has occurred, what we observe on farming operations is the persistent invisibility of work done by women farmers in the production of goods for the market (Brumer and Freire, 1983/1984). In fact, the technification of the productive process further deepened the division of labor within family farm operations, to the extent that it differentiated between technically skilled labor and manual tasks, the former done by men and the latter by women (and children).

In this context, we analyze the role of women farmers in new issues that have an impact on wheat farming, under the logic of economic integration, and which refer to the redefinition of technological levels, labor market dynamics, and social and gender division of labor. What are the possible forms of reinclusion of female labor, considering a greater specialization and verticalization of family wheat-farming operations? What might come to be the standard of social and gender division of labor, if productive diversification prevails?

Given the way that agricultural technologies have been absorbed by family farming in recent decades, leading to specialization of male labor, it is not very likely that there will be a revaluing of women in the organization of productive labor with a new technological threshold. In this sense, agricultural diversification once again emerges as an alternative strategy for the redefinition of social gender relations in the context of family farming, considering that it requires the complexification of activities in farm management and therefore offers greater possibilities for valuing women farmers within a rearrangement of family labor.

Productive diversification has become the object of discussion by feminist and ecological movements. Documents such as the report resulting from the World Congress of Women for a Healthy Planet, held in the United States in 1991, reflect positions by organized

groups of women in opposition to increasing productivity through state-of-the-art technological innovations such as genetic engineering. In defending biological diversity, these groups propose to redirect agriculture in a sustainable way.

Given the speed of the economic integration process currently underway, the challenge is thus to make this proposal feasible without creating impasses to the inclusion of family farming in the unified market.

It would be worthwhile to stress that the issue of economic integration and the environment is already on the agenda of international forums.

The above arguments reinforce the trend towards diversification of family farming as a new form of socio-economic participation on the market. However, to what extent is agricultural diversification not contrary to the needs for productive specialization that emerge from market integration? To what extent can wheat farmers achieve greater competitiveness through alternative technologies? The option for crop diversification based on appropriate technologies apparently leaves family farming in a marginalized position in this emerging context.

In order to answer these questions, as formulated correctly, it would be worthwhile to observe empirically how diverse wheat-farming operations have been facing the process of regional economic integration and what the effects and responses have been. The municipalities of Medianeira and Palotina, both in the state of Paraná, which produces 50% of Brazil's wheat, were chosen as the basis for our field work, for three essential reasons: modern, integrated, family production predominates in both; they have high average wheat yields and are therefore immediately affected by integration into MERCOSUL; and they have organized social movements based on women's and environmental struggles.

2.2 - Description of Medianeira and Palotina in the Context of Agricultural Modernization in Paraná

Paraná is part of the context of Brazilian agricultural modernization as one of the states which has most incorporated this technical process, presenting a productive structure which is heavily capitalized and integrated with agro-industrial sectors.

The degree of agricultural modernization in Paraná can be measured by the variation in the number of farm operations using mechanization, which increased from

16,286 farms in 1970 to 201,108 in 1980, or a relative increase of 1,134.80%. As for chemical fertilizers, another indicator of technical progress, one also observes a major increase during the same period in the number of operations using such inputs, that is, some 267%. The most recent available census data show that in 1985, 43.60% of the farms were mechanized and 49.10% used chemical fertilizers.

The above data show that the technification process deeply impacted agricultural expansion in Paraná in the 1970s, integrating farmers from the state into the dynamics of the agro-industrial complex that represents the current stage of Brazilian agricultural development. This integration in turn enveloped various socio-economic segments, while it also excluded many others.

It would be worthwhile to recall that during the 1970s, Paraná was the state which had the largest population drop (some 1.5 million individuals), notably from the rural area.

The westernmost region of the state is an area of recent farm settlement, which in the 1970s underwent an extraordinary process of incorporation of technical progress due to government incentives for the agricultural sector.

Occupation of the region began in the 1930s, when there was a spontaneous migration of farmers from Brazil's southernmost state, Rio Grande do Sul. The settlement of these newcomers on land that had been abandoned by old logging companies led to land tenure conflicts, and in the 1950s the land was sold to private settlers. The resolution of the conflict in favor of the occupants from Rio Grande do Sul in the 1960s consolidated the development of small farming in the region, devoted to food crops.

The settlement process in the area thus resulted in an agrarian pattern characterized by the predominance of family farming operations. In the case of Medianeira, this pattern becomes quite clear when we examine Table 3, which shows average farm sizes, smaller than the average for the region and the state as a whole. On the other hand, Palotina has a higher average farm size than the region as a whole.

Table 3
AVERAGE FARM AREA, 1985

Average Area (hectares)	
Medianeira	18.7
Palotina	29.8
Westernmost Region of State	25.9
PARANA (overall)	35.8

Source: IBGE, 1985.

Beginning in the late 1960s, farming in the region took a new direction, dictated by the technological intensification of the activity based on subsidized farm credit. As Fleischfresser (1987) states in relation to the occupation of the westernmost and southwestern regions of the state:

"(...) even though there had not been an activity that would generate potential accumulation, as in the great northern region, there was a share of farmers with market concerns. These farmers (...) adopted more advanced production techniques, mainly in the westernmost region of Paraná, where the use of mechanization was already greater than in the homogeneous microregions in the northern region in the 1960s." (p. 9)

In addition to local farmers' own reasonable potential for incorporating technical progress, topographic and soil conditions favored technological intensification of the productive process.

The westernmost region of Paraná thus became the domestic frontier for the expansion of agro-industrial capital in the 1970s. Within this context, the municipalities of Medianeira and Palotina began to incorporate land into farm production and to consolidate their occupation. Table 4 illustrates the process of agricultural expansion in the 1970s, where we see an extraordinary growth in the productive area, particularly the area tilled for crops. However, the small growth in the total area of farms indicates that this expansion occurred mainly within existing farm units, which increased their productive areas. In the case of Palotina, crop expansion also occurred by occupying pasture areas.

Table 4
ABSOLUTE AND RELATIVE VARIATION IN TOTAL FARM AREA AND
CROP AND PASTURE AREAS, 1970-1980 MEDIANEIRA AND
PALOTINA

Municipality	AREAS (hectares)					
	Total		Crop		Pasture	
	A.V.	R.V.	A.V.	R.V.	A.V.	R.V.
Medianeira	9,518	13.9	26,569	101.2	3,580	35.1
Palotina	4,923	35.1	33,349	86.6	5,538	39.3

Source: IBGE, 1970-1980.

Technical modernization, which marked agricultural development in Medianeira and Palotina and the westernmost region of Paraná as a whole, can be measured by the figures observed in Table 5.

Table 5
RELATIVE USE OF MECHANIZATION AND CHEMICAL FERTILIZER
BY FARMS IN PARANÁ, BY REGION, 1970-1980

Regions	Mechanization		Chem. Fertilizer	
	1970	1980	1970	1980
	Old Paraná	1.8	27.2	15.6
Great North	2.3	49.3	11.6	52.1
Far West/Southwest	5.4	54.3	1.9	50.3
Total for State	2.9	44.3	10.2	45.3

Source: Adapted from Fleicshfresser (1984).

We observed that within the context of agricultural modernization in the state of Paraná, the western region stands out for the greatest incorporation of mechanization in farming operations, with a higher percentage of mechanized farms than the state as a whole. In relation to the utilization of chemical fertilizers, we observed a formidable increase in the number of farms using these inputs, nearly as much as in the northern region of the state, where the form of settlement had allowed for a greater development of productive forces.

Within the intense conversion of agriculture to technology in the westernmost region of Paraná, the municipalities of Medianeira and Palotina -- and

particularly the latter -- presented rather high rates in this area, as Table 6 shows. Based on these data, we were able to conclude that local family farm production intensely incorporated technical progress and became an integral part of so-called "modern agriculture".

Table 6
RELATIVE PARTICIPATION BY FARM OPERATIONS USING MECHANIZATION AND CHEMICAL FERTILIZER (IN %) IN MEDIANEIRA AND PALOTINA, PARANÁ, 1985

	Mechanization	Chem. Fertilizer
Medianeira	74.2	66.0
Palotina	93.2	80.1
Far West, Paraná	69.9	62.9
State of Paraná	43.6	49.1

Source: IBGE, 1985.

Agricultural modernization in the westernmost region of Paraná was also based on soybeans and wheat. Wheat farming, which was stimulated by heavy subsidies, developed to the detriment of diversified food crops. As we can observe in Table 7, the westernmost region as a whole and the municipalities of Medianeira and Palotina showed high growth rates both for total crop area and production, making the region the largest wheat producer in the state of Paraná.

Table 7
WHEAT PRODUCTION AND AREA, RELATIVE VARIATION DURING THE PERIOD 1970-1985, BY MUNICIPALITY, MICROREGION AND STATE

	R.V. '70-'80		R.V. '80-'85	
	Area	Prod.	Area	Prod.
Medianeira	1,785.1	3,356.9	-36.7	-63.5
Palotina	1,095.6	1,622.8	- 6.6	77.6
Far West, Paraná	1,095.6	1,622.8	77.6	- 6.6
State of Paraná	353.7	499.4	91.7	8.2

Source: IBGE, 1970/1980/1985.

Thus, we can situate agricultural development in Medianeira and Palotina in the context of the incorporation of the westernmost region of the state into the dynamics of capitalist accumulation prevailing

in agriculture in the state of Paraná and Brazil during the 1970s. The expansion of wheat farming, together with soybean production, led to a restructuring of family farming, including the abandonment of traditional activities such as food crops and its dependence on industrial and trade sectors belonging to the wheat agro-industrial complex.

In the context of Paraná state, the impact of the 1980s' crisis can be evaluated by the reduction of some 4% in crop area from 1980 to 1985, or by the growth of a little over 1% in the number of farms using agricultural machinery, according to data by IBGE. However, the wheat-farming sector presented positive rates for both area and production during the 1980-1985 period (Table 5), while the lower growth rates in relation to the previous decade reflect a slowdown in the growth rate due to the recession. The small growth in area as compared to production reflects the intensive nature of wheat farming in Paraná, which no longer concentrates on the expansion of the agricultural frontier, but rather on gains in productivity. The same can be stated with regard to the westernmost homogeneous microregion of Paraná, which showed a reduction in the area planted to wheat, associated with an increase in production during the 1980-1985 period. Comparison with the previous period reflects more clearly the sharp drop in wheat-farming dynamics.

In Medianeira, the effects of the crisis seem to have been more perverse, as one can observe in Table 8, where the reduction in crop area was greater than in the municipality of Palotina. Following the same trend, the area planted to wheat suffered a drop of 63.5% (some 12,000 hectares) during the 1980-1985 period, while production dropped 36.7%, showing a trend opposite that recorded in Palotina and the westernmost region as a whole.

Table 8
ABSOLUTE VARIATION (A.V, IN HECTARES) AND RELATIVE VARIATION (R.V., IN %) IN CROP-, PASTURE-, AND FOREST AREAS, 1980-1985, MEDIANEIRA

	Crop		Pasture		Woods and Forests	
	perm.	temp.	nat.	plant.	natural	planted
A.V	-349	-25,690	-160	-2,848	-2.253	-137
R.V.	-59.9	-49.1	-17.8	-18.6	-50.3	-21.3

Source: IBGE, 1985.

We agree with Fleischflesser (1987) when he points out that one element that helps one understand the drop in dynamism in agriculture in the westernmost region of Paraná is the fact that relatively less integrated family farmers predominate there, and that they are therefore more vulnerable to financial restrictions created by the crisis. In addition, the soybean crisis, set off by a drop in world prices, further undermined the regional agricultural economy.

3 - NEW REGIONAL STRATEGIES FOR INTEGRATION: DIVERSIFICATION AND QUALITY

In this chapter, based on a field study, we intend to identify the trends that seem to have emerged at the local level with the advent of MERCOSUL and the process of economic restructuring presupposing the creation of free-trade zones. As our area of observation, we chose the municipalities of Palotina and Medianeira. They are located in the westernmost region of the state of Paraná, one of the largest wheat-producing areas in the country. Modern, technologically advanced family farms prevail there which are heavily integrated into the agro-industrial complex. With the process of regional integration underway in the Southern Cone and the effects of an agricultural policy of restricting subsidies and deregulating wheat farming, the two municipalities seem to be responding differently to the challenge of the struggle between similarities.

Brazilian wheat production is currently undergoing a lack of definition in the face of new constraints raised by economic integration. The Collor Administration's dismantling of its marketing structure based on government intervention deprived farmers and the flour industry of the guarantee of returns that are compatible with production costs and market prices with a profit margin. When the government withdrew the marketing system for wheat, members of the wheat-farming and processing sector became subject to market laws which, under integration with the Argentine market, seem to leave them in a rather unfavorable position, as was explained in Section 2.

In this sense, one can imagine that in order to guarantee its position in the context now taking shape, Brazilian wheat farming will have to face the challenge of competitiveness, which seems to depend primarily on a growing specialization and verticalization of production.

The above premise once again raises the question of competitiveness for Brazilian wheat production, involving the reproduction of the entire agro-

industrial complex underlying it, now no longer a challenge just for growers. If competitiveness depends on improving the quality of Brazilian wheat and becomes necessary due to the adoption of economic liberalization policies, the need emerges to define new strategies for technological development of the sector, devoted to improving production quality. Who would be in charge of such initiatives? The private sector or the public sector? What strategies would these be? How would farmers react to them? Would their option be to adhere to or challenge economic integration under MERCOSUL? These are some of the questions that have oriented this field study, based on questionnaires applied to farming families and interviews held with members of local cooperatives, research and extension agents, and others.

3.1 - Characteristics of Farming Operations in Palotina and Medianeira, Paraná, and Farmers' Strategies

3.1.1 - Palotina

The farms visited in Palotina are all family operations. The majority of the families are from the municipality, but there are also natives of the states of Rio Grande do Sul and Santa Catarina who settled in the region around the 1950s. The families are made up basically of two generations: the parents and their children, who are some 25 to 30 years old. In this kind of family make-up, parents and their children manage the farm. Some of the children stay on the family operation, even after they marry. Even so, we found some farms managed by young couples, ranging around 27 to 32 years of age, with school-age children. In this case, the young couple's farming operation is part of the farm belonging to the parents.

The size of the farms where we conducted interviews varied from 8 to 19 hectares, and they are thus characterized as small farms. The area used in productive activities occupies nearly the entire extension of the farms observed. Unused areas correspond to the preservation of small natural groves, in accordance with legislation.

As for farm production, all of the farms interviewed have already planted soybeans and wheat at some time, but only half of them continue to plant wheat. In addition to growing soybeans and corn, the others work with alternative products such as rosehips and mulberries (for raising silkworms). The farms that continue to grow wheat have been decreasing this crop due to frosts, high production costs, and the low price of wheat on the market. This cutback in wheat

production has led to an increase in corn production through a second planting after the summer harvest (the so-called "safrinha", or "little harvest" of corn).

Another activity that has been attracting interest among local farmers is dairy production, which is already being developed on some of the farms visited. However, the high cost of dairy equipment has made it difficult to adopt as a production option. Chickens and hogs are raised on a subsistence level.

Non-agricultural activities are also developed by family members and include formal paid employment (civil service) or informal cottage industries such as making certain food products, like Easter eggs or bonbons.

Farm produce is marketed through a local cooperative. In the case of grain, some farmers also sell to grain companies. Cottage products are marketed informally through personal orders that are limited to the region.

In terms of the economic weight of activities carried out on the farms, corn and soybeans stand out as the main components in family income. In this context, wheat has gradually been losing economic ground to corn. Dairy production is also becoming a relevant source of income, considering the daily revenue it produces.

For half of the farmers interviewed, financing for crop and cattle production is obtained in the form of bank credit (from public and private banks), or from the cooperative, for covering crop production costs. However, the final volume financed has decreased due to high interest rates. In the case of wheat, the repeated drops in harvests have gradually led farmers to lose their crop insurance (PROAGRO) and to turn less and less to credit.

All of the farms interviewed belong to the Cooperative, but how they assess the Cooperative structure depends on the farm size. Small farmers criticize its discrimination against those who do not have any capital or large-scale production. They do not benefit from the extension services the Cooperative provides. Larger farmers acknowledge the advantages it provides: access to credit, price normalization, technical assistance, and future plans for processing, which are expected to greatly improve marketing conditions.

With regard to organization of labor on farms, what we observed in most cases was that activities connected to commercial crops (soybeans, corn, and wheat) are done

by the male, with the help of farm machinery and implements. The farm women are relegated to household chores. In the stages that require more labor (such as plowing and planting), day laborers are hired or neighbors trade days of labor, a very common practice. However, there are situations where commercial crop activities are done by the farm women, too, particularly on farms where the young children are already in school and the mothers are thus free part of the time for agricultural activities.

Household chores, in turn, are only restricted to women on farms where the couple's children are very small. Otherwise, it is common for such chores to be done by the children, both boys and girls, particularly when the mother is unable to do them (because of illness, travel, etc.).

Planting for home consumption is done by all members of the family, without distinction. In the same fashion, non-agricultural activities done on the farm involve work by the entire family, although the farm woman is in charge. Thus, during seasons that require more manual labor, the farm man and children also participate, for example, in painting and packaging Easter eggs and bonbons.

Management of farm production (purchase of inputs and sale of crops) is usually done by the man, except in the case of non-agricultural products, the sale of which is generally managed by the woman.

In relation to the technical conversion of the productive process, we can characterize the farms we visited as belonging to modern agriculture. All of the farms visited have at least one tractor and implements (a planter, plow, and cultivator). They use chemical fertilizers, insecticides, herbicides, and improved seeds. As a common farming practice, they rotate between corn-soybeans and wheat or corn-soybeans and pasture. They receive extension assistance from EMATER and IAPAR, which according to those interviewed have worked satisfactorily in disseminating farming techniques and providing improved seeds. However, these services are obtained by the farm men rather than the women.

From the environmental perspective, the intensive use of chemical inputs and machinery has led to damage to the local ecosystem and to farm families' health. According to the families interviewed, the main environmental problems are soil erosion, river pollution from chemical products, an increase in pests, and intoxication of farmers from insecticides and

herbicides. In all of these cases, the work done by EMATER in conjunction with the municipal governments has helped improve the situation. The microbasin program, effectively implemented in the entire region, has reduced erosion from rain and from the washing of toxic material into the riverbeds. Conservationist soil management practices and orientation on the adequate use of pesticides are part of the range of extension services provided by EMATER, which according to those interviewed have led to an improvement in environmental conditions in the region.

3.1.2 - Medianeira

The farms interviewed in Medianeira are also family farms, from a legal point of view. The families interviewed are originally from the state of Rio Grande do Sul, having come to this area in the 1950s, attracted by land settlement companies. The families are made up basically of the first generation of immigrants (the parents) and their first descendants, who are around 20 to 25 years of age. On all of the farms interviewed, farm produce management is done by the farm man and the farm woman. The younger generation participates little in the farming activities, since some of them work and live in the towns. The ones who have stayed on the farm are either school-age or have opted for farming as a living.

The average farm size is 8 hectares, which thus characterizes them as even smaller operations than those in Palotina. The areas are occupied almost entirely by crops and cattle, and there are just small groves (about one hectare) which are not used.

Most of the farmers interviewed grow wheat, soybeans, and corn. They do not intend to continue planting wheat in the future, due to unstable weather. Instead, one farm intends to plant canola, while others intend to intensify their production of swine and fish. There are other farms where oats -- for seed and animal feed -- and tobacco have been taking over where wheat is leaving off.

However, the farmers involved in tobacco farming expressed misgivings about it, due to the large amount of pesticides required. Dairy farming has been on the rise, and there are farmers that are devoted exclusively to this activity. In addition to milk itself, production of cheese has increased. In addition to beef cattle, we encountered poultry (only as a subsistence activity) and hogs, which are marketed as processed pork products (sausage, bacon, etc.).

Grain marketing is done through the local cooperative. Non-members market their grain through grain companies, which occasionally purchase part of the crops channeled through the cooperatives. All of the milk is sent to the cooperative, while the cheese produced on some farms is sold at the market run by the Farmers' Association, along with pork products. In the case of cheese, there are also buyers from Paraguay who negotiate directly with the farmers.

Despite the farm diversification already underway, corn and soybeans are still the main sources of family income, except on the farms where cattle-raising is the main activity. Production of milk, cheese, and pork products has been gaining economic weight, stimulated by possibilities for marketing these products at the sales points run by the small farmers' associations.

Half of the farmers interviewed belong to the cooperative, where they see real benefits such as the following: a supply of improved seeds and fertilizers and technical and credit assistance. The rest of the farmers, some of whom are former coop members, argue that the cooperative is only concerned with those who have high productivity. Non-member farmers have been hit harder by difficulties in wheat farming and have thus oriented their operations towards greater diversification.

The member farmers are the only ones who use credit for financing their production, which is supplied specifically by the cooperative. The farm credit offered by banks is also beyond the reach of Medianeira farmers, due to the high interest rates. Non-members seek alternatives for cutting their costs with inputs and seeds, relying on their own production.

In relation to work on the farms, we observed that activities related to commercial crops are generally done by the farm men. However, during the plowing and harvesting seasons, the women also participate. Day laborers (both men and women) are also hired for these activities, and neighbors often trade off days of work. Subsistence crops and dairy production are activities that involve both farm men and women. Cheese and pork products are produced exclusively by the women.

Just as in Palotina, the technical production standard is characterized by the use of mechanization and industrial inputs such as tractors and implements, herbicides, insecticides, fertilizers, and improved seeds. Farming practices include crop rotation (corn-soybeans and oats, corn-soybeans and pasture). However, we observed a reduction in consumption of chemical

inputs and precarious upkeep of machinery, due to high costs. In terms of technical assistance, in the opinion of those interviewed the extension agencies EMATER and IAPAR have done satisfactory work in organizing courses and talks on agricultural techniques and supplying seeds. On all of the farms contacted, the farm women are excluded as users of the services offered by these institutions.

Among the environmental problems encountered, the most common are the intensification of soil erosion, river pollution, and human intoxication from pesticides. EMATER has partially helped solve such problems by providing technical training on microbasins and disseminating management practices that are ecologically appropriate for local conditions.

3.1.3 - Similarities and Differences in Farm Operations

Detailed observation of farm operations in the two municipalities allowed us to identify specificities in the systems used.

In general, farmers had similar histories of migration from outside the region, considering that the economic structure of the two municipalities was linked to the westward expansion of the agricultural frontier in Paraná during the 1960s. The way that land was occupied in this region produced a land tenure context characterized by small family farms owned and run by farmers from farther south. The size of the farms shows that land tenure in Palotina is less fragmented than in Medianeira, perhaps due to the level topography, which is favorable to extensive crops.

We can thus distinguish between the family farmers from Palotina and Medianeira based on farm size. On the other hand, in relation to farm production per se, we noticed that soybeans, corn, and wheat were the main crops in both municipalities. However, the degree of productive specialization is different: in Palotina, the combination of wheat and soybeans was incorporated into family farming in a more structurally determinant way, that is, conditioning the entire organization of the productive process. In Medianeira, development of wheat and soybeans was not entirely contradictory with productive diversification. Wheat farming has lost ground in both municipalities, both in terms of area and economic weight, due to weather conditions in recent years, which has irreversibly hurt harvests, along with price drops for the crop. Still, wheat growing has decreased even more in Medianeira, due to the lower degree of specialization by local farmers and as well as local conditions, which are less favorable

for this crop. Thus, other farm products like oats and cattle products have been replacing wheat.

The degree of socio-economic differentiation between family farmers from the two municipalities can also be measured by the level of integration with the respective cooperatives. This integration is more common in Palotina than in Medianeira, supporting the idea of greater productive specialization in the former. The presence of small farms and farmers with fewer resources in Medianeira helps explain their lack of adjustment to production standards and productivity levels required by the cooperative.

As for level of organization of labor on the family farms, we found similarities when we distinguished between commercial crop activities and the other economic activities carried out by the families. In general, with soybeans, corn, and wheat, technical conversion of the productive process decreased the amount of human labor involved, attributing the management of corresponding techniques to the males. The women's work in this context was reduced to the plowing and harvesting stages, which require more manual labor. Even so, the practice of "trading labor" between neighbors and hiring day laborers reduces the relative importance of women's work in the commercial crops. In cattle-raising and subsistence crops, there is not a well-defined sexual division of labor, and both men and women take part in these activities.

The non-agricultural activities done on family farms are generally carried out and managed by the women, while the men and children do participate occasionally. The need to constantly generate income and take advantage of the productive potential of family members has led to an intensification of these activities as a solution to the reduction of participation by women in crop growing, whether due to the standard of technical conversion which has proven incapable of absorbing them or the decline in economic weight for the major crops.

Given these aspects of organization of family labor, common to both municipalities, we can affirm that in Medianeira women's labor has become more relevant since the activities they are normally in charge of on family farms are more frequent there.

The technological production standard in the areas studied shows that farmers are part of so-called "modern agriculture". The use of natural resources as part of this form of agriculture has caused environmental impacts, such as soil erosion, chemical pollution, and increases in pests and diseases, which

have been observed in both municipalities. However, the work done by government agencies has helped alleviate this situation.

We thus observed that farm operations were similar in the two municipalities, since commercial family farming predominated in both. However, what distinguishes between farmers from Palotina and Medianeira is the degree of involvement in the market. In Palotina, productive specialization was accompanied by considerable integration of farmers into the farm cooperative structure. In Medianeira, on the other hand, the lower degree of specialization led to a greater differentiation between member and non-member farmers, the result of different forms of participation in the market.

The differences we observed in productive structures help us comprehend the differentiated strategies, both in production and social organization.

3.2 - Farmers' Strategies vis-à-vis the New Wheat-farming Scenario

According to the farmers interviewed in Palotina and Medianeira, the main problems affecting wheat farming are weather conditions, the high cost of agricultural inputs, and the price of wheat. Temperature and precipitation instability during the growing season, particularly over the last three years, has decreased production and yields, in addition to favoring an increase in pests and diseases. In addition, an increase in the costs of chemical inputs, together with a reduction of farm credit, have impeded the maintenance of a technical level needed to increase productivity, not only for wheat but also for other grain crops. To further aggravate the situation, crop prices have not provided sufficient returns for farmers, thus depriving them of conditions for confronting technical and climatic difficulties.

Given this situation, the creation of MERCOSUL, for the farmers, is one more factor weighing against local wheat farming, since Argentine wheat enjoys more favorable conditions for production and is thus more competitive. It would be worthwhile to point out that from the farmers' point of view, MERCOSUL may simply reaffirm the trend towards a decline in wheat production which has already been taking shape in recent years due to the factors described above.

The creation of conditions for integration into a unified market, and therefore for competitiveness, thus demand that farmers confront issues that have been

interfering with performance of wheat farming and other grains. Strategies adopted by family farm operations are analyzed here, based on two different levels of activities. The first, in the farm operation itself, is related to the strategies for reorganizing productive activities and family labor. The second level of activity is situated in the sphere of social organization and corresponds to forms of mobilization of farmers in the struggle to defend their interests.

3.2.1 - Strategies for Farm Production and Organization of Labor

The problems listed by the farmers interviewed - such as those that most affect wheat production, in other words, the weather, inputs, and prices - reflect the fact that the region's dominant agricultural development standard, based on the combination of wheat and soybeans, has run its course. This standard leaves the farmer vulnerable to weather fluctuations, increases in production costs, and instability on a market that until recently was regulated by the government. Since climate and market factors are beyond direct intervention by farmers, the central issue permeating strategies adopted at the farm level is that of production costs. In an economic context marked by reduction in the volume of resources allocated for farm credit and high interest rates, reduction of production costs is the only way out for farmers.

The immediate reaction by farmers to difficulties in production has been a reduction in the area planted to wheat. This reduction, however, includes different plans of action by farmers in the reorganization of productive activities and family labor.

One practice that has become widespread among farmers from Palotina and Medianeira has been that of two harvests for corn or soybeans, as a way to compensate their income for the drop in wheat. The area planted to wheat decreases, in this case, since during the planting season for wheat a major portion of the land is occupied with the second harvest of corn or soybeans. These crops are planted right after their normal first harvests, thus taking advantage of the fertilizer still left over on the ground. Consequently, the yield in these "little harvests" is much lower than in normal harvests, but they still provide a safer economic return for the farmer as compared to wheat.

In spite of being a strategy for reducing production costs, the "little harvests" entail environmental risks that impede their adoption as a permanent practice by farmers. Overworking the soil and leading to its

depletion, they end up jeopardizing the normal first harvests, and soon require an increase in the use of pH adjustment and fertilizers, which in turn increases production costs. The farmers themselves admit that "little harvests" are a temporary resort in an attempt to take advantage of favorable market prices for soybeans and corn.

We should point out that "little harvests" are common in both municipalities, but that they are more widespread in Palotina, since crop production there is more specialized in soybeans, corn, and wheat.

From the perspective of organization of labor, the practice of "little harvests" does not reorient tasks by the various members of the family, since it reproduces the same mechanisms in the distribution of roles as in the normal crop harvests.

Based on the above observations, it is clear that continuous harvesting of soybeans and corn reflects strategic measures with little impact on the restructuring of activities on family farms. This practice is an immediate response by farmers to the difficulties they face, whereby they reutilize the factors at their disposal within a given rationality. Their awareness of the medium-run risks they are running leads them to experiment with other alternatives for productive organization.

These alternatives are related to agricultural diversification based on crop rotation. The development of other crops in the dry and rainy seasons and an increase in raising of animals as part of an integrated farming/livestock perspective are part of a strategy that tends to take hold among local farmers, thus restructuring the organization of the productive process on family farm operations.

Agricultural diversification, seen here not as the substitution of crops but as the development of diverse activities with alternating and complementary productive cycles, allows for the reduction of production costs, with no loss in productivity. For example, the use of organic material resulting from livestock operations and the practice of green fertilization reduce costs with chemical fertilizers and inputs, in addition to being conservation-wise practices, thus reducing environmental costs.

In addition, production diversity eliminates the farmer's dependence on wheat and soybeans, leaving him less vulnerable to weather and market instability.

The set of factors presented above helps one understand the trends towards agricultural diversification that farmers have been practicing in Palotina and Medianeira. In Palotina, initiatives in this direction are still rather circumscribed, particularly considering the importance of soybeans. Even so, one observes an interest by farmers in new crops (like oats and cotton) and in livestock, particularly hogs. In Medianeira, agricultural diversification is a more common practice. Cattle and swine, for example, carry more economic weight on the family farms there than in Palotina, and there are already farmers specializing in dairy farming and others who are intensifying swine production. Crops in the experimental stage, such as canola, are also in the plans for coming harvests, along with oats and fruits.

As a strategy for readjusting productive activity to the current economic context, agricultural diversification reorganizes family labor, providing possibilities for new skills for women. The change in the technical level included in the development of diversified farm operations broadens the demand for farm labor, creating opportunities for farm women to participate in the productive process. For example, the development of dairy and swine production has broadened women's participation in generating family income. In addition to participating in the raising of animals, women farmers have been carrying out and managing the processing of animal products on the family farms. This was the case for some women farmers interviewed in Medianeira.

Agricultural diversification is thus the main strategy adopted by family farmers for facing current difficulties in the wheat-farming sector and farming in general. Maintaining wheat farming is only feasible in a context of diversification when production costs are reduced.

Diversification of farm production, a clearly-observed trend that farmers are consolidating in Medianeira, has run up against the lack of access to appropriate technologies by farmers. According to the farmers interviewed, this is the main obstacle to diversification.

3.2.2 - Strategies for Social and Sexual Organization of Labor

Representative movements are another strategy developed by family farmers. Such movements are organized around the major issues behind the struggle for the economic and social survival of small farming in Brazilian

agriculture: access to technical and financial means and marketing of produce, legal recognition of women farmers' labor, and environmental preservation. By articulating diverse interests and particular forms of activity, the organized movements directly or indirectly incorporate farmers' concerns in relation to new economic pressures.

In the two municipalities studied, we observed a clear difference in the degree of organization of family farms through representative movements. In Palotina, there are no organizations representing social movements. The local Rural Workers' Union itself restricts its activities to union assistance, without any connection to the organized movements of rural workers. This reduced level of "politicization" among farmers reflects a certain social homogeneity in local farming, with capital-based family farming prevailing.

In Medianeira, on the other hand, social differentiation of small family farming is greater, offering conditions for the emergence of organized social movements. The historical reference for social mobilization of local farmers was the emergence of the landless peasants' movement, as a result of the expropriation of farms for building the Itaipu hydroelectric plant in the late 1970s. This movement, which later acquired national dimensions, projected Medianeira as the stage for activity by various grassroots organizations such as the CPT (*Comissão Pastoral da Terra*, or Land Ministry Commission) and CUT (*Central Única dos Trabalhadores*, or Central Workers' Union), in addition to some NGOs.

The existence of a structure to support the emergence of grassroots movements, together with the socio-economic differentiation in local small farming, help one understand the emergence of different forms of social representation. We will now refer to two movements that are related to the environmental issue and that of women farmers' labor: PROMAM (*Proteção e Melhoria Ambiental de Medianeira*, or Medianeira Environmental Protection and Improvement) and the Rural Workers' Movement (connected to the Rural Workers' Union and CUT).

A. The Ecological Movement in Medianeira, or a Brief History of PROMAM (Preservation and Improvement of the Environment in Medianeira)

In 1979, the nongovernmental organization PROMAM (Preservation and Improvement of the Environment in Medianeira) was founded by some medium-sized farmers, agronomists, teachers, and individuals involved in

improving local living conditions. Nevertheless, the organization's main objective was to discuss new forms of soil management in order to solve soil erosion problems. The underlying motive that led to the founding of PROMAM was thus the implementation of a conservationist type of agriculture.

That same year (1979), the local government in Medianeira was restructured politically in such a way as to attempt to meet the population's demands. The environmental, socio-political, and economic conflicts resulting from the land expropriation occurring prior to building the Itaipu Binational Hydroelectric Plant in the westernmost region of Paraná were crucial factors in raising awareness in the local population. The mayor's office "responded" by creating the Medianeira Municipal Environmental Secretariat. Its objectives include limited reforms and specific conservationist practices; until the 1980s, such characteristics drew it close to PROMAM, but they were not sufficient to sustain a joint action program between the NGO and local government.

PROMAM broadened its scope of action by interacting with other political protagonists and setting up programs for action and consultancy. We could cite a few examples of work that was carried out in conjunction with the Paraná State Government, such as the PMISA, or Program for Integrated Soil and Water Management; "Água Limpa" or "Clean Water", done jointly with the Medianeira city government, and the "Green Education" Project, which includes visits to public schools for activities and talks on ecology, and "Urban Tree-Planting", for the production and planting of seedlings; with the Rural Workers' Union, talks on agriculture and environmental conservation; and finally, together with SANEM (the Society for Aid to the Needy and Minors) and the Yanter Grassroots Health Clinic in providing advice on producing medicinal herbs.

PROMAM's main struggles can be grouped along two main lines: awareness-raising and action. The first includes environmental education and ecological movements. The second includes preservation of riparian woods and forests (the vegetation along riverbanks), river water improvement, a project for a waste recycling plant, and inspection of the use of pesticides in agriculture.

B. The Rural Workers' Movement

The rural workers' movement in the western region of Paraná varies considerably from one municipality to the next in terms of its combativeness. In the two

municipalities covered in this study, Palotina and Medianeira, such differences are directly related to both the struggles that have been waged there and the respective land tenure situations.

As we explained above, Palotina's land tenure structure includes flatter farms, mostly medium-sized, with a relatively intensive use of technology. Medianeira has a rougher terrain and more small farmers. In addition, its proximity to the city of Foz de Iguacu (where land was expropriated to build the Itaipu hydroelectric plant), the marked presence of the Liberation Theology movement, and the emergence of the Landless Workers' Movement were all factors in the late 1970s leading the population of Medianeira to create various kinds of organizations, landless workers' struggles, an ecological movement, an active rural workers' union, and various farmers' associations.

In this same context -- in the late 1970s and early 1980s, and more precisely in 1981 -- the Progressive Church worked with the creation of the Paraná Women's Grassroots Movement. This movement was subdivided into various study groups working on issues faced by women: health, politics, Bible studies, farm production, and the rural union. The latter had the support of CPT (*Comissão Pastoral da Terra*, or Land Ministry Commission) and gained strength to the point of promoting a number of meetings where the issue of Social Security benefits for rural workers was a constant concern and a claim that was immediately absorbed by the Medianeira Rural Workers' Union.

The Medianeira Rural Workers' Union, concerned with small farming, promoted a discussion on women's productive activities by incorporating them into its board of directors. Zélia, a woman farmer and union activist, emerged in the late 1980s as member of the women's commission in the union and later became one of the representatives of the DEMTR (Paraná State Department of Rural Women Workers), connected to CUT (the Central Workers' Union), which was a major gain for rural working women in 1988.

In the late 1980s, the rural trade unions closely monitored the discussions in the Constitutional Congress on social security for rural workers, and this helped bolster awareness among both men and women workers, not only concerning retirement per se, but also in relation to proof of participation in production -- that is, through land ownership by women and the visibility and legal recognition of women's labor. Retirement for women is also a benefit that

interests men, so it is essential that they acknowledge women's participation in the productive process.

In this sense, the demand presented by women activists from the Medianeira Rural Workers' Union concerning recognition of women's participation in farm production includes a correlate, namely that of political representation. This has been one of the main concerns of the Paraná State Department of Rural Women Workers in their intense campaigns to unionize women workers, a characteristic of the Department itself: to prepare constituencies and representatives as political and economic protagonists.

In 1988, this participation by the Medianeira rural women workers' movement in the discussion of their role in the productive process led to the founding of APAM (*Associação de Pequenas Agriculturas de Medianeira*, or the Medianeira Association of Small Farms). APAM began with meetings of some thirty farmers (mostly women), the aim of which was to discuss small farming and marketing techniques, including the production and marketing of cheese, eggs, pork products, vegetables, and beans.

In the state of Paraná as a whole, this issue has been dealt with by the Department of Rural Women Workers. Through the Central Workers' Union, the department has developed a program to market produce directly to São Paulo, and it takes women's products (honey, medicinal herbs, beans, etc.) straight to the factory doors in São Paulo on pay day, thus ensuring lower prices for consumers and marketing facility for the farmers, using a strategy linking producers directly to consumers.

APAM membership now includes some 80 small farmers. At the beginning of 1992, it set up a small market outlet in downtown Medianeira. In July of that same year, it set up another outlet in Foz do Iguaçu.

Without failing to acknowledge the specificities of women's activities, including the historical connection between them and family reproduction, in 1991 the Department of Rural Women Workers and RURECO promoted a course in the CTP (*Centro de Treinamento para Pecuarista*, or Cattle-Raisers' Training Center) in Castro, Paraná. This course, aimed at dairy farming techniques, is normally taught to men and lasts two weeks. Since the organizers were aware that it is hard for women to be gone from home for that long, it was condensed to a week and was a complete success, according to the participants and representatives of the sponsoring organizations. The women learned about cattle breeds and kinds of pasture, a field of

knowledge that had been restricted to men but which women were highly interested in, since they are the ones who manage dairy production, one of the alternatives included in an emerging model of diversified, ecologically sustainable agriculture.

3.3 - Structuring the Cooperative Sector: Current Characteristics and Strategies

Coop organization has assumed an important role in structuring agro-industrial activities in the areas we studied. Organized along entrepreneurial lines, the cooperatives in Medianeira and Palotina work with the production, marketing, and industrial processing of farm produce, which gives them considerable weight in the process of reordering agricultural activities in a context of economic integration, redefinition of technological productive standards, and emergence of environmental issues.

Under the impact of the scenario now taking shape, cooperatives have developed multiple strategies to adjust to new conditions for accumulation. Before focusing on such strategies, we will attempt to provide a profile of the cooperatives in the two municipalities and to identify differences in their forms of organization, considering that they have different productive structures.

3.3.1 - Social and Spatial Structure

The Medianeira and Palotina cooperatives had a total of 12,904 members in 1991, over half of all farmers from the two municipalities. This scope is even more impressive if one considers that the physical operating base of the cooperatives goes beyond the respective county limits and is thus regional in nature. Table 9 shows the distribution of members broken down by coop warehouse for each cooperative.

Table 9
NUMBER OF MEMBERS PER WAREHOUSE

Coopervale (Palotina):	
Palotina	2,389
Assis Chateaubriand	2,352
Terra Roxa	1,265
Diamantina (Mato Grosso)	179
Mutum (Mato Grosso)	245
Total	6,450
Cotrefal (Medianeira):	
Flor da Serra	402
Matelândia	553
Sóo Roque	317
Sóo Miguel do Iguacu	498
Medianeira	515
Santa Terezinha Itaipu	215
Santa Helena	799
Diamante	403
Céu Azul	298
Ramilândia	182
Missal	708
Apreciadinha	312
Santa Rosa	192
Total	5,394

Source: Coopervale, Cotrefal.

We observed that there was a broad geographic spacing of cooperatives in the westernmost of Paraná. COOPERVALE - *Cooperativa Agrícola Mista Vale do Piriqui Ltda.*, with headquarters in Palotina, although working with fewer municipalities, has a range of activity that goes beyond regional limits and has members in settlement areas in the state of Mato Grosso. In supporting farm activities, the cooperative also works in the states of Santa Catarina and Goiás, where it has agricultural stations that produce soybeans for planting. COTREFAL, *Cooperativa Agropecuária Três Fronteiras Ltda.*, with headquarters in Medianeira, only works with regional farmers, and has its base of action more split up among the other municipalities.

In relation to the social picture, the Palotina cooperative has about one thousand more farmers than that of Medianeira. This fact indicates that although it is set up to operate in fewer municipalities, COOPERVALE is more representative of the farmers from

the region. In Palotina, some 80% of the farmers are coop members. In Medianeira, the percentage of members is around 60%, indicating a greater fragmentation of local farmers.

The land tenure profile for members (Table 10) allows one to draw some conclusions about differences in the social situations for the respective cooperatives studied. Although the data were stratified differently, we can still observe greater participation by small farmers in the COTREAL membership, where 80% of the farms represented in 1991 measure 30 hectares or less. In COOPERVALE, small farms (up to 20 hectares, in this case) made up only 49.8% of membership, while there were many more farmers with over 100 hectares than in the Medianeira cooperative. Data from COOPERVALE allow one to examine the specific situation in Palotina, where one observes the significant presence of medium-sized farms (20-100 hectares), or over 40% of membership.

The data thus show that the composition of membership reflects the land tenure structure in the two municipalities. In the Medianeira region, where land tenure is more fragmented, there is a significant share of small farmers in coop membership. On the other hand, in Palotina and surrounding municipalities, land ownership is less fragmented, and participation by medium-sized farmers is more significant.

We can thus relate the membership profile in the two areas with the degree of social differentiation of farmers. In Medianeira, prevalence of small farm operations is not accompanied by a greater integration into the cooperative structure, since there is a large number of non-member farmers. In Palotina, the fact that farms are larger (and that there are better opportunities for capital investment) partially explains the greater degree of incorporation of local farmers into the cooperative structure.

3.3.2 - Productive Structure

Despite the difference in membership for the two cooperatives, the members in general plant soybeans, wheat, and corn, the main crops in the two municipalities.

Table 10
COOP MEMBERSHIP BY FARM SIZE

1. COOPERVALE

Size (ha)	No. members in region	%	No. members in Palotina	%
0-10	1,784	30.5	640	26.8
11-20	1,423	24.3	551	23.0
21-50	1,476	25.2	715	30.0
51-100	536	9.2	283	11.8
>100	631	10.8	201	8.4
Total	5,850	100.0	2,390	100.0

Source: Coopervale, 1991.

2. COTREFAL

Size	MEMBERSHIP IN REGION					
	Absolute (no.)			Relative (%)		
	1989	1990	1991	1989	1990	1991
0-10	1,875	1,828	1,863	35.4	34.7	34.6
11-30	2,469	2,377	2,439	46.6	45.2	45.4
31-60	636	673	703	12.0	12.8	13.0
61-100	200	224	226	3.8	4.2	4.1
101-500	112	152	152	2.1	2.9	2.8
>500	8	11	11	0.1	0.2	0.2
Total	5,300	5,265	5,394	100.0	100.0	100.0

Source: *Relatório e Balanço Informativo*
COTREFAL, Year XII, no. 110, Jan.-Feb. '92

Table 11, which shows the produce received by the cooperatives, confirms the importance of soybeans, wheat, and corn. Cotton was also important, particularly for COOPERVALE; however, it is difficult to compare it with other crops, since the amounts are expressed in arrobas (1 Brazilian arroba = 32.38 lbs. avoirdupois) rather than sacks.

The same table also shows a drop in total produce received by the two cooperatives from 1989 to 1991. This drop was mainly due to a decline in soybean and wheat production, since the other crops generally showed good results. Wheat production decreased the most, as a reflection of the wheat-farming crisis in the region. The opposite was true for corn, where total volume received by the cooperatives has been increasing steadily, having doubled in the three years shown. Such

phenomena reflect the expansion of corn in the region, to the detriment of soybeans and wheat. Since it draws better prices and presents lower risks, corn has been grown twice a year (in the so-called "little corn harvests"), which in turn have led to environmental risks which will be discussed later.

We should also point out that in terms of volume, the farm produce received by COOPERVALE is greater than that of COTREFAL, reflecting a greater economic weight for agriculture in Palotina than in Medianeira.

Table 11
PRODUCE RECEIVED

1. Coopervale - sacks/arrobas*

	1989	1990	1991
Soybeans	6,218,761	5,360,994	4,295,016
Wheat	3,031,125	525,315	1,549,924
Corn	433,925	550,923	99,950
Beans	102	708	813
Coffee	5,478	1,936	6,966
Cotton*	1,155,227	1,507,930	2,243,890
Sorghum	-	-	-
Rice	52,031	10,584	55,168
Manioc	-	-	-
Barley	-	19,268	16,146
Total	10,896,000	7,978,000	9,172,334

2. Cotrefal sacks (60kg)/arrobas*/sacks (25kg)**

	1989	1990	1991
Soybeans	2,843,473	2,395,586	2,400,046
Wheat	2,343,648	618,092	843,477
Corn	457,348	558,540	1,042,406
Beans	2,262	2,392	4,955
Coffee	4,151	2,017	700
Cotton*	305,743	409,944	812,809
Sorghum	2,717	77	1,629
Rice	68,168	59,735	69,848
Popcorn	6	480	747
Peanuts**	13	107	50
Castor beans**	69	124	72
Triticale	2,027	8,534	2,021
Total	6,028,628	3,645,684	4,365,951

Source: Relatório COTREFAL, Year XII, No. 110, Jan.-Feb. 1992. COOPERVALE, 1991.

The availability of more detailed data on Palotina allows one to visualize more precisely the amount of produce received at COOPERVALE and its weight in relation to total production in the municipality. We found that members' production of soybeans, corn, and wheat was quite significant, despite the instability in production trends. In relation to soybeans, the relative increase in production by coop members in the 1980s was mainly due to the overall decrease in the municipality, which indicates a greater drop in non-member production. The same occurred with wheat in the last five years of the period studied, particularly in 1990, when wheat production was limited almost exclusively to coop members. Such facts show the greater vulnerability of non-member wheat and soybean farmers. Although we do not have the corresponding figures for Medianeira, we have reason to believe that the same is happening there, since non-member production is more significant.

Coop member dairy produce is sent to SUDCOOP, the regional dairy cooperative to which the two above-mentioned cooperatives belong. In addition to processing the milk, SUDCOOP has been developing an integrated dairy and pork production system with its members in which it provides technical assistance and feed produced by the cooperative. Since the animal products are marketed through the regional cooperative, it was not possible to measure the weight of cattle and swine operations in terms of coop members' overall production in the two municipalities. However, we did obtain information on cattle, swine, and poultry production for COTREFAL, as shown in Table 12. We observed an upward trend in beef, dairy, pork, and poultry production by coop members, which reflects an overall trend in the two municipalities. More recently there have been incentives for silkworm production, which appear in the figures for 1991. The development of animal products in the two municipalities, particularly Medianeira, is part of the context of agricultural diversification now being undertaken in the local cooperative strategies, which we will examine below.

Table 12
COTREFAL - ANIMAL PRODUCTS RECEIVED

	1989	1990	1991
Pork (kg)	9,404,637	9,279,742	9,656,232
Beef (kg)	43,210	90,030	246,699
Milk (liters)	12,536,848	13,433,784	17,597,878
Eggs (units)	8,369,103	11,792,463	30,943,488
Silkworms	-	-	3,665

Source: *Relatório Cotrefal*, Year XII, no. 10, Jan.-Feb. 1992.

The cooperatives have a well-developed warehouse and marketing complex. They have expanded their storage capacity, despite the overall drop in produce received, as Table 13 shows.

Table 13
STORAGE CAPACITY

	1989	1990	1991
Coopervale	606,956	606,956	613,456
Cotrefal	292,560	303,420	305,257

Source: Coopervale, Cotrefal.

In terms of marketing produce, the cooperatives have Sales Departments which are in charge of direct negotiations with millers and processing industries all over the country. In the case of wheat, privatization of trade left this structure virtually unchanged. New channels for marketing, such as the Farm Produce Markets (i.e., grain and livestock markets, etc.) are still not used by the cooperatives, since the level of market competitiveness is still low due to the drop in production, among other factors.

The biggest change in marketing structure for farm produce began in the 1980s, with the development of supermarket chains. This fact brought out the verticalization process in the farm cooperative sector, which began to broaden and diversify its scope of action and redefine its original responsibilities.

While in the area of marketing the two cooperatives have similar structural levels, in terms of processing

and industrialization they have different levels of verticalization.

The Medianeira cooperative underwent a major process of agro-industrialization in the 1980s and consolidated an important industrial infrastructure. Such activities include processing of rice, beans, corn, and eggs, the initial processing of cotton (ginning/carding), and soybean products (oil, lecithin, and soybean cake for feed).

Despite wielding greater agricultural weight, the Palotina cooperative did not accompany the agro-industrial verticalization process that occurred with COTREFAL. Its industrial infrastructure is limited to two cotton gins, a manioc flour and tapioca mill, and the wheat seed industries in Goiás and Santa Catarina which were mentioned earlier.

However, this picture is expected to change soon with a verticalization process which the cooperative is implementing. The plan over the short run is to install an industrial park in Palotina for processing soybeans, wheat, and corn. It will also include expanding the capacity of the manioc flour and tapioca mill, currently estimated at 200 tons a day. This broadening of the COOPERVALE agro-industrial sector is part of a larger context of modernization of its productive structure, which is a necessity due to the current development standard for the cooperative sector.

One can thus identify specificities in the cooperative structures in the two municipalities studied. In Palotina, significant agricultural development, in particular that of wheat and soybeans, greatly favored integration of farmers into the cooperative system. This sector was structured much more by establishing a complex for receiving and distributing produce and by expanding its activities beyond regional boundaries than by verticalizing its productive structure. In Medianeira, on the other hand, the more limited weight of agricultural production and local farm cooperative membership was offset by verticalization of productive activities.

3.3.3 - Current Strategies and the MERCOSUL Issue

The Medianeira and Palotina cooperatives have been developing strategies in view of the new characteristics of the domestic and international markets and the current agricultural context in Brazil, marked by both increasing integration between agriculture and industry and a crisis in the financial system (a cutback in resources, coupled with high

interest rates), directly affecting small farming. Such strategies are linked to the redefinition of technological standards, and they lead to significant changes in production that have impact on the local wheat-farming sector.

Market integration in the form of international economic blocs has been calling the attention of cooperatives and raising new issues. In relation to MERCOSUL, the geo-economic position of the western region of Paraná places it in an ideal situation for integration, a factor which has led to the mobilization of economic agents there.

A series of meetings were held in the westernmost region of Paraná this year (including participation by the two cooperatives studied here), with the aim of raising awareness about MERCOSUL and discussing strategies for various economic sectors. There have been six meetings in all, organized by CACIOPAR (*Coordenadoria das Associações Comerciais e Industriais do Oeste do Paraná*, or the Western Paraná Board of Trade and Industrial Associations), with support from SEBRAE/PR (*Serviço de Apoio às Micro e Pequenas Empresas do Paraná*, or Paraná Extension Service for Micro- and Small Businesses). As part of the discussion on the agricultural sector, new development perspectives have been defined which are orienting the restructuring of the Palotina and Medianeira cooperatives. These perspectives are expressed in the following excerpt from a newspaper article on the seminars, taken from a COTREFAL report:

"There is increasing support for the idea that there is a need to genetically upgrade livestock herds, improve planting techniques, obtain better, well-adapted seeds, and diversify farming and cattle-raising activities. Agro-industrial development is essential for the region, as a way of aggregating greater economic value to the raw materials produced here, so as to reduce the unemployment problem and obtain better market prices for produce." (May 1992, p. 9)

We observed that the agricultural sector's new needs are linked to a redefinition of technological standards for agro-industrial production. This is the purpose behind new strategies now being adopted by the cooperatives studied. We should stress that MERCOSUL is not viewed as an important market for expanding trade activities. Representatives of the cooperatives claim that the Southern Cone Common Market is primarily a bloc for negotiating with other markets that are being organized around the world (EEC, NAFTA, etc.). In their opinion, MERCOSUL will establish new trade regulations

for market competition. Thus, to establish conditions for competing in MERCOSUL means to prepare one's self to compete on the world market.

Based on this assessment, the cooperatives believe that in order to become more competitive, what is needed is better product quality, and that the search for quality requires the use of new technologies.

The technological issue is not restricted to production, but includes administration and management. Although it is somewhat behind schedule, the Palotina cooperative is seeking to modernize its organizational structure by streamlining its personnel (Table 14) and by computerizing its administrative activities. In 1990 it set up the Planning and Strategic Affairs Sector for generating and implementing new projects.

The Medianeira cooperative has progressed more in its organizational modernization, in view of its greater productive verticalization. In addition to streamlining its personnel (Table 14) and upgrading its computer base, COTREFAL has been outsourcing some services such as transportation of hogs (done by a company set up by two former employees), along the lines of economic flexibilization.

Table 14
TREND IN NUMBER OF EMPLOYEES, 1989-1991
COOPervalE - COTREFAL

	1989	1990	1991
Coopervale	6,523	6,505	6,450
Cotrefal	1,436	1,326	1,196

Source: Cotrefal, Coopervale.

In terms of productive structure and processing of produce, the previous section shows that the trend is to aggregate value to products marketed by expanding and diversifying the industrial infrastructure. COOPervalE has a project underway to install an industrial complex, where its main concern is to seek new technologies to guarantee the industrial quality of the final product. COTREFAL is also concerned with industrial quality.

However, it is in the scope of agricultural production per se that the technological and productive issues tend to produce significant changes.

According to the cooperatives themselves, improving the quality of agricultural products is essential for making them more competitive on an increasingly competitive market. With the emphasis on quality, the cooperatives seek a strategy for promoting productive specialization, not in the sense of concentrating on one exclusive product, but rather of producing different kinds of products with a quality standard that makes them competitive on any international market.

In the context of formation of competitive markets, agricultural diversification has a strategic role in ensuring farmers' and cooperatives' competitiveness: a diversity of high-quality products with aggregate value allows them to act in different segments of the market, minimizing the effects of price oscillations due to increases in supply or decreases in demand.

For wheat and soybeans, the two main crops in the region, factors other than purely market-related ones add to the quality issue. Production costs are one such factor. Increased costs for inputs and farm implements in recent years have increased wheat and soybean prices to the point where it is hard for them to compete with Argentine and international production. In addition to the cost increase, the elimination of government subsidies for wheat has further increased costs for this product. Cooperatives claim that freight costs and tariffs still keep the price of Argentine wheat on a par with Brazilian wheat, but the elimination of tariff barriers is certain to change this situation. In this sense, agricultural diversification based on an integrated land management system and the use of selected seeds would allow farmers to both reduce costs with inputs -- through the greater utilization of biological components produced on the farms themselves -- and increase quality.

Constant weather problems (draughts and frosts), which have led to a decrease in the area planted to wheat and soybeans and thus to the impoverishment of farmers, are another factor backing the diversification strategy for the cooperatives studied. Diversification means new possibilities for minimizing the effects of weather factors, since it spreads the various productive cycles over the course of several years.

The cooperatives' respective proposals for agricultural diversification are technically similar. Crop rotation is a necessary tool for the development of self-sustainable agriculture. According to a technical expert from COOPERVALE, the new technological approach's main characteristic is the utilization of

organic soil management practices. COOPERVALE recommends an integrated farming and cattle-raising system, where chemical fertilizers are replaced by manure and feed for the herd is almost entirely obtained from the fields. The cooperative's approach has been promoted through meetings with members in which it attempts to show the rationale behind diversification. The cooperative provides technical assistance and financial support for interested members. In order to make cattle-raising more dynamic, COOPERVALE and SUDCOOP have been developing integrated dairy and swine production projects for interested coop members.

In the area of crop diversification, the concern has been to broaden the farmers' range of options, yet to give priority to corn and sugar cane, which can be used as fodder for livestock and which also have commercial and industrial value. Other crop options include oats, barley, and sorghum. However, COOPERVALE does not propose to replace wheat and soybeans as the main crops in the region. For these two crops, the idea is to work to improve quality, and not just productivity. The cooperative believes that there are no longer any technological barriers to growing wheat in the region: soil conditions in the municipality (and region) are the most favorable in Brazil and are appropriate for the strains (like the Mexican type) which are superior to those grown in other parts of the country. Such comparative advantages, together with progress in research on seeds which are better adapted to industrial processing, allow for the production of wheat which is equivalent in quality to the Argentine product. Impediments to production are related to both the price and -- above all -- weather instability in recent years.

The Medianeira cooperative's proposals for diversification are aimed more at restructuring production. A sharper drop in soybean production and an even greater drop in wheat production in recent years have left coop members (most of whom are small farmers, as we explained above) extremely vulnerable. This makes it easy to understand why the local cooperative has become involved in agricultural diversification. The options seen by COTREFAL are integration between farming and livestock production, green fertilization, and alternative crops.

In this sense, COTREFAL's strategy includes an extension program for member farmers interested in diversifying their production. Members must reach a given threshold of productivity with the support provided by the cooperative (inputs, credit, and

marketing). This response in productivity to incentives from the cooperative makes the member eligible for incorporating additional diversification techniques. Such coop members are the target for the Efficacy Programs set up by the cooperative, which are intended to increase farmers' income through technical partnership, decreasing production costs through the use of organic inputs. With these programs, COTREFAL intends to monitor and supervise farmers, establishing a more solid relationship between extension experts and farmers. Technical assistance for farmers includes the following: a. soil management systems; b. crop operations; c. crop density; d. input management; e. organic fertilizing; and f. biological pest control.

In addition to technical partnership, the cooperative has been promoting the development of alternatives to soybean and wheat production. COTREFAL has been encouraging small farmers to set up joint swine operations. Such operations include some six neighboring farmers each and include pigging stalls and joint areas for initial fattening of hogs. Following this phase, each farmer does the final fattening on his own farm. The cooperative provides technical assistance and credit for the swine and inputs needed to get started. In the area of dairy production, COTREFAL is also associated with SUDCOOP in a program for technical improvement of milk production.

As for alternative crops, COTREFAL has taken a particular interest in canola. As a winter crop, canola has achieved increasing economic importance, mainly in the EEC and Canada, the world's largest producer (the name canola is an abbreviation for Canadian Oil Low Acid). Worldwide interest in this crop is due to its low saturated fatty acid (cholesterol) content in comparison to other vegetable oils (soybean, sunflower, and olive oil). This property, in addition to its industrial processing characteristics (high oil and protein content), encouraged COTREFAL to plant a 150-hectare canola crop with interested member farmers during the last winter season. In addition, the cooperative promoted a seminar this past October on its experimental farm, with farmers, agronomists, and technicians from Paraguay and Argentina, in order to establish technical cooperation, particularly with the Argentines, who have been growing this crop for the last three years.

Since it is a winter crop, canola is a promising alternative for wheat farmers. There is good reason to believe that with the expansion of the canola market and the development of research with support from OCEPAR, the area occupied by wheat will be greatly

reduced, a process that has already been observed as a result of climatic factors.

Based on the above, we perceive the cooperatives' strategies for adjusting to the new domestic and world economic reality. The concept of quality in the productive process is an imperative, and this concept takes concrete shape in farming and livestock activities through agricultural diversification based on crop rotation. In this context, the cooperatives play the role of introducing and disseminating a new technological standard which partially challenges the prevailing model.

The strategies adopted are similar in terms of their technical content, although the intensity and scope of the proposals for diversification vary. The Palotina cooperative is working towards diversification, although it has not adopted a policy of phasing out prevailing crops, the basis of the local economy. On the other hand, the Medianeira cooperative has adopted a more daring diversification strategy, since this may be the only way out for the municipality's economy. However, its structure for the spread of technology is similar to that used predominantly in Brazilian agriculture in general, in other words, to favor the farmers that are more capable of incorporating technological innovation (which means the ones with more capital). The result may be further social segmentation of local small farming.

3.4 - Public Institutions for Generating and Disseminating Technologies

The infrastructure of services devoted to research and rural extension in the municipalities we studied includes the cooperative sector and public agencies for generating and disseminating technologies. Through their joint action, these organizations are the main agents in the redefinition of technological standards for farm production. In the previous section, we showed how the cooperatives have been promoting diversification and corresponding techniques. We will now focus on the role of public agencies by examining their main lines of activity in relation to research and rural extension.

The development and dissemination of agricultural technologies is carried out through exchange between the various public and private agents involved. This articulation between the cooperatives and public agencies characterizes the organization of technological support services for agricultural production in Palotina and Medianeira.

The main institutions in charge of agricultural research in the region are OCEPAR (the Paraná State Organization of Cooperatives), linked to the State Secretariat for Agriculture and Food Supply. OCEPAR and IAPAR, with experimental farms in the municipality of Palotina, work quite closely in the development of new technological standards needed for agricultural diversification. IAPAR carries out agronomic research per se (genetic improvement of grain crops, development of new strains, etc.), while OCEPAR is in charge of experimentation with the technological innovations, which in turn are reproduced on the experimental plots runs by the local cooperatives.

IAPAR's work in generating technologies can be felt mainly in its research on improvement and genetic cross-fertilization of seeds, particularly various types of grain. In the area of research on wheat, IAPAR has a cooperative agreement with CMMYT, an international institution with headquarters in Mexico, for exchange of strains that are adaptable to soil with a high aluminum content, a characteristic of the wheat-growing areas in Paraná.

Until two years ago, research on wheat concentrated on the development of highly rustic strains (ones that were resistant to disease). Recently, however, the issue of quality has been incorporated into IAPAR research in order to meet demands by the milling industry. The IAPAR 53 strain, which was released this year, is the result of reorientation of agricultural research: it is a semi-hard strain with a higher gluten content and in terms of baking quality is equivalent to U.S. and Argentine wheats.

However, the issue of resistance to disease has become a major challenge for IAPAR in the field of wheat research in the region we studied. Climatic conditions (a winter with high temperatures in July and heavy rainfall during the plant's growing cycle) favor the occurrence of diseases; in the case of some diseases, like Brusoni, there is no chemical product on the market to combat them. New strains like IAPAR 29 have thus been tried in order to make the grain more resistant to diseases and pests.

IAPAR's agricultural research has been carried out in a context of technological redefinition, providing subsidies for the development of integrated production systems based on planned crop diversification. In the case of wheat, the lesser concern with yield is the result of a new view towards productivity, based on ecologically balanced management of natural resources. Likewise, research on resistance to diseases is

concerned with reducing the use of pesticides and fungicides and promoting biological control. Research has come to view wheat as an integral part of a complex, diversified agricultural system, and not just as part of a wheat-soybean combination. In this sense, IAPAR experts recommend that farmers chose improved strains and that they plant wheat every other year on a given stretch of land as part of a crop rotation scheme.

In addition to providing new perspectives on wheat farming, IAPAR has been working with OCEPAR and local cooperatives to development experimental research with new crops. The objective is to promote productive diversification, as part of an integrated view of soil management, providing farmers with crop options having a high economic potential.

One of the production alternatives that has been studied on the experimental farms is triticale, a genetic cross between wheat and rye. With a high protein content -- some 15% (corn, for example, has 8%) -- triticale can be used as feed for livestock and as a raw material for making cookies.

Oats and forage beans have also been studied as part of a crop rotation system, since they are crops that regenerate the soil and are thus ideal for green fertilization.

Other crops that have been studied by IAPAR (in conjunction with the local cooperatives) include canola, which was mentioned in the previous section, and sunflower seeds.

Research developed by IAPAR is spread to farmers through the cooperatives and EMATER. The cooperatives' work in disseminating new technologies was presented in the previous section, when we analyzed strategies by the agricultural sector. EMATER, which is linked to the State Government, does extension work by visiting farmers, holding courses and talks, and promoting joint activities with cooperatives. In addition to disseminating the technology developed by IAPAR and the cooperatives, EMATER works as a support agency for programs developed by the State Secretariat for Agriculture and Food Supply (SEAB).

One of the most important programs developed by the State Secretariat and carried out by local EMATER offices is called "Rural Paraná", which includes the "Integrated Plan for Soil and Water Management", in charge of implementing microbasin projects. The technical assistance that EMATER furnishes to farmers

plays an essential role in the success of microbasin projects in the municipalities we studied. In addition to the microbasins, "Rural Paraná" includes credit for building compost bins and a supply of seeds for green fertilization.

The existence of a well-developed infrastructure for generating and disseminating technology in the areas we studied helps put the current diversification trends in perspective. Since they have similar interests and strategies as well as integrated, complementary forms of action, the public agricultural research and rural extension agencies and the cooperative sector are the main driving forces for a new standard of technology.

4 - CONCLUSIONS

Based on the above field work, we can draw some conclusions concerning our preliminary reflections taken from a reading of the bibliographical and statistical material at our disposal. Such reflections concern technological, environmental, and gender issues that involve Brazilian wheat farming in the context of the integration of national markets with the creation of MERCOSUL.

In our preliminary reflections, we stressed that productive specialization was the basis for reaching a threshold of competitiveness demanded by economic integration. In the case of wheat farming, this specialization was jeopardized by the crisis in the sector due to a reduction in farm credit (together with high interest rates) and the dismantling of the marketing structure that existed until two years ago. In the case of the two municipalities we studied, the wheat-farming problem has been further aggravated by a series of climatic variations, thus contributing towards an accelerated drop in production and productivity.

As a response to factors conditioning production, we found in our first field study that agricultural diversification has become a trend among farmers. This strategy provides greater possibilities for incorporating female labor and meets environmental concerns that have emerged as a result of the over-utilization of the soil in recent decades.

Our perception of new forms of productive organization in a context of market integration -- and therefore of redefinition of thresholds for competitiveness -- led us to question to what extent agricultural diversification may contradict the needs for productive specialization that arise with market integration. We

are thus led to ask, to what extent can wheat farmers become more competitive through alternative technologies? As a way out of the economic impasse in wheat farming, within a new perspective of valuing the environment and women's labor, diversification -- in principle -- could also contribute towards the exclusion of such farm operations from the integration process.

However, field research data presented in this chapter, showed us that agricultural diversification is not contradictory with new factors for market integration. On the contrary, it becomes a way to make family farming competitive, by decreasing production costs and environmental risks. In addition, the adequate use of support technologies like improved seeds and crop rotation allows farmers to combine an increase in productivity with improved quality, a requisite for participation by this kind of farming in an integrated market. In this sense, specialization is achieved not by the exclusive production of one product, but by a concern over its quality.

Although all of the agents involved in production (farmers, cooperatives, and extension agencies) defend diversification of production as a strategy, the way it is presented varies according to the form and degree of participation of family farming in the market. On the one hand, we observe a diversification model developed by cooperatives together with public agencies devoted to generating technology. Based on farm activity planning devoted to crops that can be processed by industry and that have a high aggregate value (canola, triticale, rye, etc.), this model does not rule out reproduction of the wheat-soybeans combination; on the contrary, it further raises the potential for integration with agro-industrial trade. Dissemination of such a technological standard, which can be achieved through joint action involving rural extension agencies and cooperatives, concentrates on those families that have already achieved a high technological and productive threshold. This previous experience makes them more willing to adopt the technological innovations inherent to diversification. Considering that these farmers are the ones that are most integrated into the cooperative system, we can describe the set of strategies adopted as "Integrated Diversification".

On the other hand, we observe that family farm operations that have little or no integration with cooperatives have also been adopting a kind of diversification which -- in terms of content -- is similar to the model proposed by agencies for

generating and disseminating technology, but which implies alternative forms of participation on the market. In this sense, diversification of production includes the development of diverse crops, raising of animals, and processing of produce (cheese, chocolates, and pork products). At the same time, alternative forms of participation on the market are developed through representative organizations. Diversification is also a strategy for reorganizing labor on the farms, raising the potential of women farmers in generating family income. This set of practices make up what we call "Non-Integrated or Alternative Diversification".

The existence of two forms of agricultural diversification -- integrated and non-integrated -- in the organization of production reflects existing differentiation in family farming in the areas we studied. This differentiation is not expressed so much in the major irregularities in farming systems, but rather in the degree and form of participation on the market. The kinds of relations that are established with the market are thus what determine different strategies by respective economic agents. Geographical factors (topography and climate) also help one understand how this differentiation process is expressed spatially, thus individually characterizing the two municipalities we studied.

As this study has shown, the change in the technological production standard based on adoption of appropriate soil management techniques and diversified agricultural systems is not done homogeneously by farmers in Palotina and Medianeira as a whole. On the contrary, the prevailing forms of dissemination of technology tend to further increase existing differences. Considering the cost of adopting new technologies, it seems logical to predict that farmers in the region will only assimilate them partially. The issue of changing the local family farming technological standard is thus linked to democratization of access to new technologies, integrated production systems, and new markets. In this context, organized movements may come to play a relevant role as they become political protagonists in this integration process.

For the women's movement, the challenge is to conquer a new economic place including professional recognition for their status as farmers. Indeed, the two trends that are expressed as ways of restructuring farming operations -- namely integrated as compared to non-integrated or alternative diversification -- indicate the emergence of an economic dualism in the formation of markets, with identical consequences in the social

sphere, just as Motta Veiga predicts, as quoted in the first chapter of this study. The possibility of establishing integrated production systems based on crop diversification has still not truly taken shape, and the prevailing perspective is to maintain two parallel circuits for production, marketing, and distribution.

On the one hand, we find the persistence of "noble" crops, namely soybeans, corn, and (some would have it) wheat. Such crops are the object of state-of-the-art technological research, the most stable and well-structured trade circuits (which are heavily cooperative-based, albeit more competitive), and farm price and credit policies. Here, the trend is to keep the prevailing standard of social and sexual division of labor, with exclusion of women from the productive sphere as acknowledged economic agents. Even though such practices as organic soil management, combatting soil erosion, and attempts at cutting production costs may be adopted, this will not be sufficient to change the family farming model consolidated by the Green Revolution and based on the predominance of male labor, competence, and authority.

On the other hand, the trend towards non-integrated or alternative diversification supported by part of the cooperatives (as in the case of COTREFAL) in order to develop alternative crops in fact provides no guarantee of a new division of labor between the sexes; rather, it reiterates the prevailing division of labor with sex-based spaces for production, where women are left with activities having limited economic potential which are unlikely to be affected by the regional integration process, given their localized, marginal nature in terms of production. This means that if women come to affirm their status as farmers and have it acknowledged legally by class-representative organizations and the social security system, this condition may be exercised again in the interstices of cultures and noble circuits, thus reaffirming -- through economic duality -- the social duality of gender. Given their ability to take initiatives and organize creatively, it may even be possible for women to achieve some success in these smaller, more flexible production and distribution circuits, which can be adjusted to both the daily experience of domestic chores (since they are less competitive) and the precepts of self-sustainability oriented by the material limits of family reproduction. To overcome such limits without truly overcoming the current standard of sexual division of productive and domestic labor means to further degrade family living and to erode emotional relations and other positive meanings that are attributed to women and over which

women have exclusive responsibility. It is this unsustainability that reproduces sex-based spaces and differentiated weights and balances, both in economic and social terms. It is likely that this will be reinforced rather than changed by the creation of more competitive, regionally integrated free-trade zones.

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