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Gender, Contracts and Wage Work: Agricultural Restructuring in Brazil's São Francisco Valley

Jane L. Collins

ABSTRACT

Brazil's São Francisco Valley provides an example of the ways in which agro-food firms are attempting to mobilize and control labour as they expand production of fruits and vegetables for domestic and global markets. In crops where cost reduction is a primary concern, firms choose highly 'flexible' forms of labour mobilization, drawing on the casual labour of migrants from the Brazilian Northeast. In crops where the quality and timing of produce are of great importance, firms use either subcontracting arrangements that mobilize family labour, or the labour of local women and children. In this way, firms involved in the production of fruits and vegetables show many similarities to their counterparts in certain branches of industry: they are actively experimenting with labour arrangements that tap the most vulnerable segments of the international workforce, and that appropriate unpaid family labour.

INTRODUCTION

This article describes the labour relations that are emerging in a region of irrigated agricultural production in northeastern Brazil. The national and international firms operating in this region produce a range of fruits and vegetables, both fresh and processed, for markets in cities of the northeast and south-central Brazil, and for export to Europe, the USA and Japan. These firms use wage labour; their recruitment practices have led to the development of a highly segmented labour force consisting of seasonal migrants from the impoverished areas of northeastern Brazil and locally recruited women and children. Companies are also experimenting with subcontracting. Fruit and vegetable processors and some export

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firms have introduced contract farming on US models; smaller, locally based firms have drawn on a long tradition of sharecropping in the region, reshaping older labour practices to new ends. These diverse production relations reflect the efforts of local firms to obtain labour of an appropriate 'quality', in sufficiently 'flexible' forms, and under arrangements that make the political mobilization of workers difficult or unlikely.

The coexistence of such diverse production relations in a relatively circumscribed area invites exploration of when, where and how agribusiness firms seek to establish different types of labour arrangements. Theories of agrarian transition have frequently been employed to address diversity in production relations; according to this approach different relations of production represent different 'stages' in a transition to fully capitalist agriculture. In such a view, agricultural enterprises are in the process of becoming fully integrated into the global economy. As they are forced to rationalize their operations in a competitive environment, they gradually shift from different kinds of share contracting and other 'pre-capitalist' production relations to the use of wage labour. Non-waged arrangements 'persist' where firms are not able to rationalize themselves for one reason or another, where profit margins are not high enough, or where the productive forces are insufficiently developed.

Theories of agrarian transition cannot account for the situation described in this paper. In Brazil's São Francisco Valley, none of the production relations currently in use precedes the others historically, since all were established following irrigation in the 1970s. Sharecropping, where it exists, has been 'reinvented' (Wells, 1984) and adapted to global commodity production. It is thus impossible to assign different labour arrangements to categories such as 'traditional', 'transitional', and 'fully capitalist', or to otherwise view them as representing points on a trajectory toward capitalist development. All of the production relations currently existing in the Valley have been negotiated and established by capitalist firms operating for profit in a world economy. All represent the firms' best efforts to economize and to negotiate risks in the complex social environment of the Brazilian Northeast.

Another explanation for the existence of non-waged production relations focuses on the features of specific commodities, or on the technical factors associated with their production. In part, this approach is based on an understanding that agriculture is more closely tied to the properties of materials and rhythms of the natural

environment than is industry, for example. Mann and Dickinson (1978) have described the 'natural' obstacles faced by agribusiness – in particular a fixed and lengthy production time that places constraints on the rate of turnover of capital; the highly seasonal nature of labour requirements which generates problems of labour supply and is accompanied by intermittent employment (and under-utilization) of constant capital; and the susceptibility of agricultural products to violent fluctuations in price, which is linked to their susceptibility to uncontrollable natural factors like the weather, and is compounded by the farmer's inability to respond quickly to price changes. Goodman et al. (1987) and Goodman (1991) have described the attempts of industry to overcome these natural constraints. While they note massive increases in productivity, increased control over plant characteristics (and to some extent growth cycles) and other accomplishments, it is clear that most crops still have fixed space requirements, lengthy production cycles that exceed necessary labour time and significant vulnerability to climate, pests and plagues.

It is partly based on this understanding that many analysts have focused on crops and the technologies through which they are produced as the most significant determinants of labour arrangements. Extensive grain farming fits well with family labour farms; intensive cultivation demands a disciplined labour force, and perhaps a piece rate; wage labour is favoured by increasing mechanization and standardization of tasks. In broad strokes, these correlations make some sense – there are clearly important relationships between crops, technology and labour regimes. But the relationships are not direct, simple and unidirectional; rather, they are mediated by the actions of firms and of labour, operating within historically specific political and legal contexts, and within established networks of social relations.

This article argues that the production relations through which a global agriculture is organized can neither be deduced from theories of agrarian transition, nor simply read off from the characteristics of crops and technologies. Production relations are generated out of social processes in which agribusiness firms seek to acquire and discipline labour in accordance with their needs. Labour regimes emerge as the outcome of negotiation and struggle between firms and labouring classes in particular times and places. The account that follows focuses on the roles of agribusiness *firms* in this interaction.[1] It seeks to give an account of what entrepreneurs in the

agricultural sector are attempting to do as they choose particular ways of recruiting and controlling labour for particular crops. The more complex history of the responses of working families, and of the ways these shape outcomes in this region of Brazil, has yet to be written.

In attempting to determine what kinds of labour arrangements are seen by firms as solving what kinds of problems, a relatively simple procedure has been followed here. The literature on agricultural restructuring describes three overarching problem areas that firms face in managing labour: 'quality', 'flexibility' and 'political stability'. All of these problems were mentioned by the entrepreneurs interviewed in the São Francisco Valley. Having established a list of problem areas, an examination of the array of labour arrangements practised in the valley makes it possible to rank each arrangement in terms of how well it 'solves' each problem. Some problems are more crucial than others to particular crop regimes; it is reasonable to expect that firms will deploy labour in ways that solve the most crucial problem for that cropping system. It thus becomes possible to predict, based on the rankings developed, which labour arrangement a firm would choose for each crop regime. These predictions are then compared to the distribution of labour arrangements actually observed in the valley.

THE LABOUR DILEMMAS OF FRUIT AND VEGETABLE FIRMS

Within agriculture generally, the displacement of large quantities of labour is an important trend (Pugliese, 1991: 144). Harriet Friedmann (1991) has described the three major 'food regimes' in world food production in the 1980s and 1990s. In all of these – the wheat complex, durable (highly processed) foods and the livestock-feed complex – labour displacement is significant. Cattle, soya, sorghum and wheat all tend to use less labour than the more diversified subsistence crops they frequently displace, often contributing to rural-urban migration flows.

There are some sub-sectors of agriculture, however, where this kind of labour displacement is not occurring, where technological developments have not overcome the need for large quantities of relatively intensive, careful labour. Fruit and vegetable production, along with a few other perennials grown for export, fall into this

category. Many fruits and vegetables, for example, require manipulation and care throughout the growing season (fumigation, pruning, monitoring for pests and blight). Most are constrained by their market niche to high quality standards that are difficult to obtain with mechanical harvesting techniques. The timing of task performance is often critical, and labour-absorbing irrigation technologies are frequently used. For all these reasons, agro-food firms involved in fruit and vegetable production require more intensive investments of labour than their counterparts in other subsectors of the industry.[2] It comes as no surprise, therefore, that these firms have been among the most active in experimenting with new forms of labour recruitment. Fruit and vegetable firms have not only restructured their waged labour forces in ways that resemble patterns in some sectors of industry (particularly through casualization of employment relations and the increasing employment of women). In many cases they have also adopted the dispersed and less highly regulated forms of subcontracting associated with flexible production strategies in the industrial sector.

Global demand for a year-round supply of fresh fruits and vegetables increased markedly in the 1980s.[3] Developments in biotechnology, as well as in refrigerated transport and information services, improved the possibilities for long-distance shipping and supply (Mackintosh, 1977). The support of national states and international donors for what were perceived as lucrative non-traditional exports led to expansion of land devoted to their production. Under IMF pressure to resolve debt crises by increasing exports, states provided support services and fostered linkages between local producers and transnational agro-food firms.

Firms themselves also sought to expand their global markets. In the industrialized countries, this involved marketing strategies that would expand fresh fruits and vegetables from their niche as luxury goods, mainly purchased by salaried workers (see McMichael, 1990) to a broader consumer base including the waged segment of the population. An important part of this strategy has been a reduction in consumer prices (with implications for wage strategies in zones of production). In the developing world (and this applies mainly to the group of nations frequently referred to as NICs, or newly-industrializing countries), the major point of expansion has been the growth of marketing through grocery chains. The expansion of these chains in places like Brazil during the 1970s and 1980s was premised on training consumers to expect both year-round

availability of products formerly available on a seasonal basis, and a superior quality (or uniform, unblemished appearance) of goods. This allowed firms to capture a portion of the middle-class market within the newly industrializing countries that had formerly turned to local (street) vendors for fruits and vegetables.

The Demand for High 'Quality' Labour

When firms produce fruits and vegetables for national or global rather than regional markets, their products must conform to global standards for quality and appearance. In addition to being disease- and pest-free, they must meet the expectations of urban consumers for large, unblemished and colourful produce. Frequently, they must also meet strict scheduling requirements, both to avoid spoilage and to take advantage of sensitively timed off-season markets. Similar standards and scheduling pertain when the crop is destined for processing (Watts, forthcoming). These technical requirements have implications for the ways that labour is deployed in production. As noted above, they place a premium on the quality of labour, rather than simply its quantity. Insurance of labour quality requires high levels of supervision, or some other mechanism to ensure that tasks are appropriately performed.[4]

In her essay on sharecropping in Californian strawberry farming, Miriam Wells used the phrase 'quality of labour' to refer to situations where the 'pace, efficiency, timing and inventiveness of labour' was a critical determinant of output (Wells, 1984: 7). While the metaphor of 'factories in the field' frequently applied to industrial agriculture suggests task standardization and de-skilling, Wells suggests that strict quality standards for some fruits and vegetables may create a demand for alert, observant, somewhat skilled and experienced labour. Producers seek ways of mobilizing labour that will permit monitoring of plants, careful handling of fruit and timeliness. It is in this sense, as a gloss for the requirement for thinking, observant workers, that the term 'quality' (of labour) is used here.

The Demand for a Flexible Labour Force

The production of fruits and vegetables is a relatively high-risk enterprise. New crop varieties and production technologies have

reduced but not eliminated the risk factors historically associated with agricultural production. These include weather, pests and plague, failure of technology (such as irrigation infrastructure) and the problem of acquiring adequate labour at key periods. Transport of highly perishable produce involves additional difficulties. Finally, with the proliferation of enterprises producing similar crops in Africa, Southeast Asia, Mexico and Central and South America, firms must frequently struggle to maintain their position in global markets. These risk factors and economic constraints also have an effect on the labour regimes that firms will choose in new production environments. In contrast to the demands imposed by global quality standards and the need for precise scheduling of supply, however, they tend to favour flexibility and attendant low cost over reliability and high levels of skill or experience.

The flexibility imperative refers to the necessity of tailoring labour supply to production cycles, as a way of minimizing costs. This is not simply to avoid paying workers during periods when there is no work for them to perform; but in most cases it also absolves the employer from responsibility for providing benefits such as health insurance or paid leave. In addition, protective legislation may not be fully applicable to the part-time, or seasonal, employee. In a sense, crop cycles have forced agricultural employers into the forefront of flexible labour practices; the uses of short-term contracts that had long been characteristic of agriculture were widely adopted by industry in the 1970s and 1980s. According to Pugliese (1991: 141), while flexible labour strategies are becoming increasingly common in the economy as a whole, they are growing more rapidly in importance within agriculture. Agribusiness's implementation of more flexible employment strategies has gone hand-in-hand, he argues, with the increasing internationalization of the labour market.

The Search for Political Stability

Imperatives for quality and flexibility have inevitably to be balanced against a third consideration – the employer's desire for a stable and relatively docile work force. This political dimension is central to firms as they seek to avoid any disruption of the productive process, and sometimes even to avoid worker insistence that they adhere

to protective legislation and labour codes. Both theoretical accounts (such as Pugliese, 1991) and field-based, historical accounts (for example, Friedland et al., 1981; Thomas, 1985) have emphasized that the imperative of political stability leads agribusiness firms to avoid using a stable, waged labour force whenever possible. Empirical studies indicate that the employment of women and undocumented workers are frequently used as strategies to segment the agricultural workforce and enhance employer control (Arizpe and Aranda, 1981; Roldán, 1982; Mies, 1986). The use of alternatives to wage labour such as sharecropping or contract farming have also been shown to play an important role as strategies to avoid development of organized labour movements (Wells, 1984; Watts, forthcoming).

THE EMERGENCE OF IRRIGATED AGRICULTURE IN THE SÃO FRANCISCO VALLEY

Brazil's São Francisco River extends some 3100 km, originating in the uplands of Minas Gerais and finally reaching the sea on the border between Alagoas and Sergipe. The scope of this study was limited to the lower middle valley, encompassing parts of the states of Bahia and Pernambuco from the Sobradinho Dam to the dam at Itaparica. The region falls within the notorious 'drought polygon' of northeastern Brazil. It is a zone of low and irregular rainfall (350–600 mm annually) and average evapotranspiration of 1900 mm/year. The native vegetation is scrub cactus or *caatinga*. Prior to irrigation, local small farm families cultivated subsistence crops in the flood plain, usually supplementing this activity with artisanal fishing. The majority of large properties in the region were devoted to extensive livestock production.

The severe droughts that have plagued the Brazilian Northeast at irregular intervals, and the endemic poverty of the region, have made it the focus of many relief efforts by the Brazilian state. Successive national governments established a long series of drought relief agencies beginning in the early part of this century, the main accomplishments of which were the building of small dams and reservoirs with local labour. While these projects did little to stabilize production or promote economic growth they tended to reinforce the power of the local landowners (*coroneis*) on whose lands the reservoirs were built and who were charged with recruiting

labour for the projects. The establishment of the Superintendency for Northeastern Development (SUDENE) in 1959, under the leadership of the economist Celso Furtado, represented a new attempt on the part of the Brazilian state to overcome regional inequalities by opening the Northeast to investments from the South (Oliveira, 1977). While SUDENE's original mandate has been weakened by political power struggles in the Northeast, and by US resistance to its role in coordinating foreign investment and foreign aid (Roett, 1972), it continues to oversee development efforts in the region.

The twin cities of Petrolina (in Pernambuco) and Juazeiro (in Bahia) dominate the lower middle São Francisco Valley. Powerful patriarchal families, who owned large expanses of land and monopolized political power in the region, controlled these towns and their hinterlands in the nineteenth and early twentieth centuries. This system, known in Brazil as *coronelismo*, changed significantly in the period after the Second World War, as ruling families became agents for merchant capital and monopolized control over state credits and programmes. In Petrolina/Juazeiro, the 'new' *coroneis* (represented by two closely-intertwined dominant families) consolidated their power after Brazil's 1964 coup through ties to the military government. While the near-absolute control exercised by these families has been seriously challenged since the mid-1970s, they remain an important economic force in the region, and continue to influence both local politics and the disbursement of government funds (Chilcote, 1990).

While the Brazilian state supported a series of attempts to develop irrigated agriculture in the region beginning as early as 1946,[5] the first successful moves to open the area to agro-industry began with the building of a massive hydroelectric dam at Sobradinho in the 1970s. The decision to build the dam was made in 1971. The work, administered by the state-run São Francisco Hydroelectric Company (CHESF), was begun in 1973 and completed in 1978. The dam had 6 Soviet-built turbines and a capacity of 34 billion cubic meters; it flooded an area of 4214 km^2. Some 64,000 people were moved from the flooded areas. Because land titles along the margin of the river were unclear (most dated to the colonial period), and because many of those whose plots were expropriated were sharecroppers, remuneration was most often limited to the value of 'improvements' on the land. The greatest difficulty was caused, however, by the fact that the majority of people were moved before

any government-administered smallholder schemes were available for resettlement. Thus, most people whose lands were expropriated either migrated to southern cities or colonization zones like Rondonia, or settled in squatter settlements around Petrolina and Juazeiro, living from intermittent low-waged work in construction or in agriculture (Duque, 1984; Andrade, 1984).

While the major purpose of the dam was the provision of electricity, a secondary goal was the irrigation of lands along the river's margin. The government expropriated additional lands in areas that were deemed appropriate for irrigation. It installed pumping stations and primary and secondary canals. A para-statal firm, the São Francisco Valley Development Company (CODEVASF), was established in 1974 to oversee the distribution of irrigated land to private interests, administering a series of state-run irrigation projects, and coordinating private and foreign investment through its recommendations for access to government-subsidized credit.[6] The National Department of Water and Electrical Energy (DNAEE) was charged with administering access to water. By 1990, CODEVASF had overseen the irrigation of more than 91,000 hectares in the lower-middle valley, approximately half of which were in the public sector.

In 1989, the São Francisco valley produced one tenth of all of Brazil's non-citrus fruit exports – an annual value of around US$ 5 million, absorbing approximately 5–6 per cent of the valley's production. Firms exported fruits (including mango, banana, papaya, melons, goiaba, maracuja and table and wine grapes) to Europe during the off-season for Spanish produce.[7] They marketed the remainder of fruit production, independently or through supermarket chains,[8] in south-central Brazil (70 per cent) and the cities of the Northeast coast (30 per cent). The region surpassed the formerly dominant state of São Paulo in its production of canned tomatoes. The five major canneries with operations in Petrolina/Juazeiro processed 390,000 metric tons in 1989. Several of these firms are integrated with Brazilian supermarket chains, while canned tomatoes are also exported to Europe and Japan.

A few companies produced sugar (for Brazil's methanol production programme, PROALCOOL), long-fibre cotton, beans, onions and a wide range of commercial seeds. Others experimented with exotic fruits: acerola, figs and tamarinds, paprika and other condiments, and asparagus (for canning). Yields of all crops have proved extremely high; technicians claim they represent the highest yields that have been obtained in Brazil.

Traditional economic indicators of growth and modernization in the region's farming economy have been impressive in the period since 1975. The area surrounding Petrolina/Juazeiro currently has the highest rates of use of fertilizers, irrigation and tractors in the Brazilian Northeast. It has the highest cash expenditure per hectare, the highest labour productivity, and the highest rates of growth in the value of production per hectare and in total agricultural production (Graziano da Silva, 1989: 61).

The main irrigation technologies in use in the region are central pivot, aspersion and drip methods. Farmers generally hire a private firm to perform a technical assessment indicating which crops and irrigation technologies are most appropriate for their land. Performed by CODEVASF for public sector lands, technical assessments are required in order to obtain government-subsidized loans. Technicians generally advise the use of central pivot or aspersion systems for grapes, mango and watermelon, although the cost of these technologies is often prohibitive. Drip systems are by far the most common, even where not ideally suited to the crop. They are also the most labour intensive to use. To date, only the highly capitalized farmers use central pivot systems; most rely on simpler technology and more labour.

The majority of capital currently operating in the region is national in origin. Dominant local families continue to control a number of mercantile enterprises, such as machinery franchises; they have taken lucrative state contracts for construction, and are beginning to diversify into food processing. Of the forty-one firms for which information was available, 17 per cent were local in origin, 44 per cent national (but not local), 32 per cent were international or joint ventures, and 7 per cent were state enterprises.[9] Data on the economic activities of firms revealed that 70 per cent were involved in primary production of agricultural goods; 13 per cent in food processing; 11 per cent in manufacture (largely of goods in support of agriculture, such as fertilizers or machinery); 6 per cent were vertically integrated firms that combined agriculture and processing.[10] Thirteen out of eighty-four firms (15 per cent) are actively involved in overseas exports of the goods they produce.

Among those firms that engage in agricultural production, the scale of landholdings varies greatly. The largest landholder in the region owns 18,000 ha; at least six large firms currently hold

between 3000 and 4000 ha. Eight of the region's largest firms are located on public sector lands in projects organized by CODEVASF. Middle-sized farms (with 10–150 ha under production) may or may not be formally incorporated as business enterprises. There are 150 of these small to medium producers on public sector lands, with at least an equal number operating outside public perimeters. Most of the farms in the region which work less than 10 ha (some 2160 in total) are located on public sector projects.[11]

The urban centres of Petrolina/Juazeiro have boomed with the massive state investments of the 1970s and 1980s. A modern airport was constructed in Petrolina, and the river port has been improved. Four federal highways serve the region, as well as a railroad, and a large 'supply market' designed to serve truckers carrying produce (mainly to Brazil's Northeast) has been built. The Sobradinho dam provides electricity. Several banks operate branches, an agricultural training centre has been established, and the Brazilian Agricultural Studies Enterprise (EMBRAPA) has established a major research station for studies of agriculture and livestock in the semi-arid tropics. An industrial park was built in 1982, and had ten functioning enterprises by 1989, including companies producing seeds, fertilizers, juices and concentrates, agricultural machinery and irrigation equipment. Between 1980 and 1989, the urban area of Petrolina/Juazeiro grew from 220,000 to 400,000 people.

Most of the incentives available to firms investing in the region are administered by SUDENE, although CODEVASF is responsible for coordinating requests in keeping with their goals for regional development, and for making recommendations. The Brazilian state provides 'social capital' of up to 50 per cent for projects approved by the Northeastern Investment Fund (FIN). It provides subsidized credit through the National Bank for Economic and Social Development (BNDE), the Bank of Brazil and the Bank of Northeastern Brazil. Land, as well as water and electric power, are subsidized by the state of Pernambuco, which also exempts certain key industries from property taxes. The national government will reduce tariffs on some imported equipment. Processed agricultural goods, as well as meat, fruit and vegetables, are exempted from the value added tax imposed on primary product exports (Goldin and Castro de Rezende, 1990: 61).

LABOUR IN IRRIGATED PRODUCTION REGIMENS

The agricultural calendar of the São Francisco Valley is perhaps less governed by climatic change than any area in the world – a factor widely touted in brochures promoting investment in the region. The temperature is close to 26°C all year round. Although there is a slight increase in rainfall from December to March, the dam has eliminated the seasonal flooding that supported rainfed agriculture.

Most of the crops grown in the valley are cultivated in extremely labour-intensive ways. Data from local cooperatives[12] indicate that onions require the most labour per hectare, because of the need to transplant them, but they are planted in limited quantities. Grapes are the second most labour-intensive crop, requiring fumigation, fertilization, pruning, tying, fencing and much manipulation of irrigation equipment. As of 1989, 2000 ha had been planted in vineyards, and interviews with farmers and exporters indicated that hectarage is growing extremely rapidly, even among small farmers.[13] Following grapes in degree of labour intensity are tomatoes, melons and tree crops. Data on labour investments in sugar-cane were not available.

Contract Farming

The processing firms and specialized export firms operating in the region generally sign contracts directly with producers. Most contracts specify the period to plant and harvest, dictate inputs to be used, set dates for receipt of crop and for payment, and set quality standards (and associated price differentials). Because the contract dictates many aspects of the production process, Clapp (1988) has argued that they represent a de-skilling of agricultural work. He argues that while petty commodity producers have historically retained a large measure of independence, contract farming agreements separate 'the farmer's execution from the company's conception' in the ways that Braverman (1974) described for factory work. This presents particular problems, according to Clapp, when farmers have a long history of producing in a specialized environment, and suddenly find themselves no longer free to use the detailed ecological knowledge built up through years of experience. In parts of the world where farmers are drawn into contract production from independent farming, such a process may indeed be

occurring. It is important to recall, however, that contracting represents a de-skilling of labour as compared to the independent peasant farmer. While contract farmers may need fewer skills and have less managerial control than petty commodity producers, the skills required of them are *greater* than those required of agricultural wage workers.

Some processing companies and export firms provide seeds (or trees) and credit under the terms of the agreement. While CODEVASF officials repeatedly said that prices for crops like tomatoes were set at the beginning of the season, the processing firms involved said that growers receive installment payments every fifteen days, and that the prices they receive fluctuate with the market through the season. Many contract producers cultivate 5–8 ha of land that they are purchasing from the state, supported by state-run irrigation management, credit and extension services. Others cultivate somewhat larger plots of privately purchased land.

There have been conflicts between growers and processors, at least in the case of tomatoes. After a bumper crop in 1988, processors reneged on contracts and prices dropped to extremely low levels for those who could sell their crop. In 1989, a plague affected the crop. Two consecutive bad years led many farmers to shift their land out of tomatoes. In the wake of these events, the Agro-industry Committee of the State of Pernambuco established a special task force on tomatoes, which included representatives from EMBRAPA, CODEVASF, banks providing agricultural credits, producers, agro-industrial firms and the Union of Food Industries of Pernambuco. In 1990, the task force was working on refining and redesigning production contracts, in the light of the difficulties of the past two years and the current cost matrix of production.

Farmers under contract hire labour at key points in the agricultural cycle. They are generally unable to hire from among the migrant labourers who come to the region from poorer parts of the northeastern sertão, since most of these individuals have their way paid by large corporations and are under a wage contract to those firms. They turn to local labour, generally employing women for seasonal tasks. Most men, they argue, have taken more regular jobs in packing, shipping, irrigation maintenance or local industry. They note that women are not only available, but are better field workers, more obedient and handle vegetables more carefully. The same arguments are used by larger firms who hire women for

specialized agricultural tasks. Some contract farming families use sharecroppers to work part of their land. Even on public project lands, cases have been recorded of families setting up sharecropping arrangements as a way of obtaining access to labour.

While families under contract usually require outside labour, household labour is still of greatest importance. As Watts (forthcoming) has noted, the contracts that agribusiness firms negotiate with an individual draw in the labour of an entire family – labour that in a patriarchal society is, in a fundamental sense, unfree. Evidence for the importance of family labour in contract farming in the São Francisco Valley is provided by the fact that one of the criteria for inclusion as a *colono* on state-run projects (the majority of whom are or have been involved in contract farming) is the number of family members of working age. Families with more working members were assigned more points on the scale that determined their eligibility, based on the assumption that this would contribute to their success. As Clapp (1988: 11) has noted, contracting offers access to a 'hidden' peasant labour market not available to the large-scale hirer of wage labour. Thus, the contract enters into the arena of social reproduction, making use of existing understandings of gender and filial responsibility. It harnesses the social reproductive work of women and men – performed in support of the contracted labourers – in ways that ultimately benefit the enterprise.

Contract farmers in the São Francisco Valley are thus both direct producers and employers. While they continue to exploit their own labour, their credit relations and the terms of the contract ensure that they operate as small capitalist firms. Processes of differentiation are clearly at work, as some families succumb to debt and bad harvests, and others manage to diversify into specialized, non-contracted crops. In general, however, government supports and subsidies have constituted contract farmers as an important petty bourgeois farming sector within the region.

Migrant Labour

Migrant labour is used mainly in tomatoes and sugar cane during the months of the harvest, from June until November. In tomatoes, labour is used both for picking and for work in the processing plant. A CODEVASF official estimated that 2000 to 4000 workers

were recruited for field work in tomatoes, with an additional 5000–6000 working (in three shifts a day) in processing.

The availability of seasonal migrant labour is seen as an important inducement for foreign companies interested in investing in the region. One promotional brochure explains the situation to foreign investors as follows:

> The Northeast of Brazil, where most of the São Francisco River Valley lies, is considered a poor region, afflicted with periodic droughts, and with a large number of under- or unemployed. It has become a tradition, during the droughts, for the population to migrate to the Mid-South of the country in search of employment. The irrigation projects now under way have attracted part of this contingent. Thus, the labour force that is found right in the region has helped reduce production costs. The average salary for a farm hand in the irrigated areas is around 150 dollars a month [1989], while technicians with a secondary education make 350 dollars.[14]

The largest tomato and sugar producers send their own trucks to small rural centres in Piauí, Rio Grande do Norte or Ceará to recruit and transport labourers. Smaller firms use labour recruiters (*empreteiros*, or *gatos*) who are responsible for the behaviour and productivity of workers. They take back truckloads of unsatisfactory workers at mid-season and bring others. Some migrants find their own transportation to Petrolina/Juazeiro and assemble, with local labour, in appointed recruitment areas to be picked up for work.

Many aspects of the employment of casual or seasonal labour are not covered by Brazil's Rural Labour Statute, since a number of regulations only become applicable when the employment relation lasts more than a year (Gonzales and Bastos, 1977: 43–4). Employers of seasonal labour do not need to provide paid leave, the traditional *décimo* or thirteenth month of salary, or severance pay (Palmeira, 1979: 80). They also have greater freedom to alter wages in rapid response to the changing economic environment. OECD reports for the 1980s showed that daily wages in the agricultural sector fluctuated much more sharply than monthly wages. Between 1986 and 1988, for example, the wage paid to permanent workers fell 29 per cent, while the wage paid to casual workers fell 48 per cent. The OECD suggests that the practice of employing casual labour provides agricultural firms with 'a cushion of declining costs' during recessive periods (Goldin and Castro de Rezende, 1990: 54).

The short-term nature of the employment relation in casual labour also makes it easier for firms to use undocumented or 'clandestine' workers recruited by *empreteiros*. These individuals either do not possess a worker identification card, or agree to work off-the-record (*sem carta*), thus allowing the employer to avoid making payments to FUNRURAL (the current rural social security system). While clandestine workers are sometimes paid at a higher rate than documented workers (Gonzales and Bastos, 1977: 45), they are generally more susceptible to threats of firing than their documented colleagues. Like undocumented workers in the south-western US, their vulnerable situation makes it easier to exert control over their activities (Thomas, 1985).

Despite the fact that many regulations do not cover their labour, a significant proportion of migrant workers are members of rural unions, and they have occasionally mobilized to demand that firms comply with health and safety regulations included in labour codes. In 1985, for example, workers demonstrated to demand that one of the larger firms use buses, not trucks, to transport them to and from the Valley. While in the São Francisco Valley, workers have tended to live in *vilas* or make shift communities near the *fazendas* where they worked, although many now find housing on the outskirts of Petrolina/Juazeiro.

Local Labour

Workers recruited from the local area are predominantly women. Like contract farmers, large firms and the technicians who advise them argue that women are 'better' workers. Explanations range from, 'they are more obedient and follow orders', and 'they are gentler and work more patiently', to 'they are good in grapes where the tasks are somewhat complicated', and 'they are smaller and fit under the grape arbours'. While the reasons given may be varied, the preference for women is clear. It is most marked in grapes – which require more skilled and less seasonal labour than other crops grown in the region – but it extends to all crops for which local labour is used. While no firms or CODEVASF officials would discuss the use of child labour, children were seen working in virtually every field context. English-language brochures produced by the State of Pernambuco, designed to attract foreign investors, juxtapose photographs of modern irrigation technologies with photographs of children harvesting and packing onions.

While some employers argued that few local men were available for field labour – all being employed in more lucrative jobs – there is little evidence that this is the case. What does appear clear is that work in grape arbours and pruning and caring for fruit trees is virtually year-round and requires more skill than most field labour. These characteristics would ordinarily foster the emergence of an élite segment of the labour force, with stable employment providing opportunities for workers to organize, and skills giving them bargaining power. Given predominant cultural constructions of gender in Brazil, this is far less likely to occur with a female labour force. Women's primary responsibilities are assumed to be home and family; because they are presumed to need flexible work schedules, they are not employed on a full-time basis, but in a series of short-term contracts. Thus, while they may be employed on an almost year-round basis, their contracts are never long term, and they are not covered by protective legislation, nor are they eligible for benefits. As in many other parts of the world, gender ideologies permit firms to portray work-related skills (which would require greater remuneration) as 'patience' or 'gentleness' (which do not). Finally, while women make up about 15 per cent of rural union membership, they have not played active leadership roles (Lavinas, 1991); thus, issues related to women's labour have rarely been high on the agenda for union action.

Sharecropping

Sharecropping is most commonly employed by small to medium-sized agricultural firms. It is more frequently used by locally-based firms, run by former landowners who worked with sharecroppers in the pre-irrigation period.[15] A few foreign firms have experimented with sharecropping, but to date it has not been used successfully on a large scale. Contract farming and sharecropping solve similar kinds of problems for the employer; the possibility of sharecropping, however, is only open to those who have or can develop appropriate social networks in the local setting.

Graziano da Silva (1989: 84) found that local entrepreneurs who share-contract production attribute their decision to do so to the 'low qualifications' of the local labour force. What they mean, Graziano da Silva argues, is that the process of work in irrigated agriculture in the region is not sufficiently routinized to rely on wage

labour. It retains an artisanal quality, relying on the experience, monitoring and management abilities of labour. Water distribution in drip irrigation is still manual in most cases. A sharecropper can observe changes in plant health and growth, and adjust water volume accordingly. Given the lack of differentiation (by skill, experience or training) of the locally available labour force, sharecropping represents an attempt to recuperate the more highly qualified 'peasant' labour of the sharecropper and his or her family.

This situation presents obvious parallels to Miriam Wells's description of the reinstitution of sharecropping in Californian strawberry farms. She argues that strawberry production requires careful, timely, inventive labour that is not easily observable or enforceable – supervisory costs would be prohibitively high. Under these conditions, the added incentive of a share in returns provides a self-regulated or self-managed labour force. Sharecropping increases incentives to effort, while reducing supervision costs. The contracts on which it is based have the incentive features of a piece-rate wage system in which the rate is variable (Wells, 1984). It should be noted that all these features also apply in the case of contract farming.

Many sharecroppers act as administrators; they contract, pay and control a salaried work force, while guaranteeing the quality of the services performed (Graziano da Silva, 1989: 84). They exercise many of the functions of labour bosses, receiving a portion of the crop in lieu of cash payment. However, they employ waged workers only during peak seasons, such as the harvest; during the rest of the year, like contract farmers, they draw on family labour to care for crops and to perform maintenance and repair work. Sharecropping, like contract farming, harnesses the unfree family labour of women and children and 'captures' work performed in support of social reproduction. Sharecroppers thus perform a highly flexible 'sequence of functions' – from the careful, artisanal production and exploitation of family labour characteristic of peasant households, to labour supervision and administrative tasks.

PRODUCTION IMPERATIVES AND LABOUR REGIMES: AN ANALYSIS

Agricultural firms producing in the São Francisco Valley are clearly experimenting with a wide range of employment relations. The

production process for each enterprise is shaped by complex combinations of the three imperatives outlined above: first, externally determined schedules and quality standards; second, flexibility in scheduling and remunerating labour in a high-risk, seasonal production environment; and third, security against labour mobilization and disruption of production. The third imperative is not only important to individual firms safeguarding their own profits. It is crucial to institutions like CODEVASF, SUDENE and the states of Pernambuco and Bahia as they seek to attract southern Brazilians and foreign investors to the region. Given the pervasive association of the Brazilian Northeast with unions of sugar-cane workers and the Peasant Leagues, they cannot afford to awaken investor fears by even a hint of labour difficulties.

Firms can recruit labour into any of the relationships outlined above – contracting/sharecropping, permanent waged labour, or casually contracted labour. In addition to a range of production relations, however, they confront a diverse workforce. Given existing cultural conceptions and legal codes, the workers to whom they have access are divided by gender and status (i.e. 'official' *vs.* undocumented). Employers use these 'worker characteristics', as well as different labour arrangements themselves, in order to resolve the labour dilemmas that have been outlined. They strategically appeal to cultural understandings of women's place in the family and the inferior value of their public work, in order to deploy women's labour in particular ways. They manipulate their understanding of current laws protecting workers in order to constitute a portion of the workforce as 'outside' those laws, and thus more vulnerable and easier to control.

To some extent, the imperatives outlined above call for mutually exclusive solutions. If high-quality, timely production were the only consideration, then the following scale of preference would obtain:

	Highest	:	*Lowest*
WORKER SKILL LEVEL	Contract farming/ sharecropping	Permanent (local) wage labour	Casual (migrant) wage labour

Contract farming and sharecropping provide the highest skill levels because they allow the agro-industry to specify inputs, scheduling and work practices while fostering artisanal monitoring and care of

crops, motivated by what Wells (1984) calls 'the incentive features of a piece-rate wage system'. Permanent wage labour permits development of experience and skills over a period of time, and makes investments in training feasible. While casual wage labour (particularly where clandestine workers are used) may provide opportunities for high degrees of control, the particular operations required in high-quality fruit and vegetable production are not easily supervised and enforced.

On the other hand, if the only consideration was achieving a flexibility that would tailor labour availability to production schedules and reduce costs, then the preference scale would look like this:

	Highest	:	*Lowest*
FLEXIBILITY	Casual (migrant) wage labour	Contract farming/ sharecropping	Permanent (local) wage labour

Contract farming and sharecropping are not considered forms of employment under the Rural Labour Statute, and thus are not regulated by it. The fact that they have annual written contracts thus places them as intermediate between casual wage labour (also unregulated) and permanent wage labour that is subject to rural labour codes.

If political factors involved in worker unionization and mobilization were the sole consideration, then the firms' preferences would be as follows:

	Highest	:	*Lowest*
POLITICAL STABILITY	Contract farming/ sharecropping	Casual (migrant) wage labour	Permanent (local) wage labour

As Wells emphasizes for the California case, sharecropping by agribusiness firms may be instituted as a protective response to the struggle emerging from union organization of rural wage workers. The sharecropping family's interests are structured in such a way that any disruption of production affects their own livelihood. Because their employment is less regulated (and less regular), casual wage workers have fewer opportunities for political action than permanent employees, but their interests are not tied

to the success of the harvest in the same ways as those of sharecroppers.

Contract farming/sharecropping clearly emerges as an attractive option, both on dimensions of skill and political stability. We could thus expect casual wage labour, the most flexible option, to be used only in circumstances where the cost of labour was a more important consideration than product quality or timing. As Figure 1 shows, this is clearly the case for sugar-cane, where sugar from northeastern Brazil must compete with more highly mechanized southern production, and where quality control is not a major issue.

The case of tomatoes – the other major crop in which significant quantities of casual labour are used – is somewhat more complex. The quality standards for tomatoes used in processing are not difficult to ensure. Timing is important, but so are cost factors, as processors compete with industries in São Paolo for national and international markets. These somewhat contradictory constraints are reflected in the continued experimentation of the industry with different combinations of direct production using casual (migrant) wage labour, and with contract farming. The expectation that casual labour will be used in crops where flexibility is of primary importance is thus confirmed.

	Contract farming[a]	Migrant labour	Local labour (women)
Sugar cane (F)[b]		x	
Tomatoes (F-Q)	x	x	
Tree crops (Q)[c]	x		x
Grapes (Q)	x		x
Melons (Q)			x

Notes: [a] Includes sharecropping; [b] F indicates that the major problem to be solved by firms is cost reduction through flexibility of labour force; [c] Q indicates that the major problem to be solved by firms is guaranteed quality of produce.

Figure 1. *Cropping Regimes and Labour Arrangements in the São Francisco Valley*

Crops where quality considerations are primary include a range of non-traditional and 'exotic' fruits and vegetables. As described earlier, Brazilian firms are seeking to establish a niche for their crops in world markets, and to create a stable consumer market for high

quality produce sold in domestic grocery chains. These crops include mango, papaya and other tree crops, fresh (not processed) tomatoes, grapes (both table and wine), peppers for paprika and asparagus. Contract farming accounts for a large measure of total production of all of these crops, and share contracting is common in several. In tree crops and grapes, as well as melons and onions, however, a significant amount of local waged labour is used.

Local labour is acceptable, in these cases, because it is almost exclusively female. Subcontracting has been explained, both here and in the broader literature, as an alternative to a docile, semi-skilled, low-cost labour force. Where such a labour force is, in fact, available, it can provide the same combination of qualified, flexible and politically docile labour that firms are seeking. Women from local communities provide this alternative to entrepreneurs in the Valley. Their labour is not available in sufficient quantities, however, to satisfy the total demand. Whether a firm opts for female wage labour or contracting under these circumstances is often a function of the amount of land to which they have access, their corporate structure (its degree of vertical integration) and the kinds of social networks they possess in the Valley.

Manipulation of cultural understandings of gender provides employers with a way of reconciling the contradictory imperatives outlined. In contexts where the need for skilled workers would suggest that permanent workers should be employed, gender changes the equations for flexibility and political stability. A view of women as primarily responsible for home and family justifies hiring them on short-term contracts even though they are employed for large portions of every year, thus making them more 'flexible' than their male counterparts. The more limited opportunities for women to participate in the political sphere – in this case, union activities – renders them less risky politically. And, as already noted, gender ideologies even permit the high skill levels they demonstrate in production of certain crops to be portrayed as innate (and devalued) characteristics possessed by women (see Stolcke, 1988: 145–9, for similar observations from southern Brazil).

This strategic deployment of ideologies about women, this drawing of advantage from their lack of political power and their responsibilities in the sphere of social reproduction, is not unique to the São Francisco Valley. Thomas's (1985) description of how employers use the labour of women and undocumented workers in southern Californian lettuce crews presents striking parallels. In this

case, highly vulnerable undocumented men are used in 'skilled' positions in ground crews, where they are paid according to piece rates and where levels of remuneration are high. Documented women are used for 'unskilled' work in wrap crews, where they receive a much lower daily wage.[16] Here, the vulnerability of undocumented workers and the lack of power of women make them somewhat substitutable for one another as malleable and politically 'safe' members of the work force. The high employment rate of women in wrap crews serves to mark that activity as less skilled and thus to justify lower rates of remuneration.

CONCLUSIONS

Brazil's São Francisco Valley provides an example of the ways that agro-food firms are attempting to mobilize and control labour as they expand production of fruits and vegetables for domestic and global markets. In crops where cost reduction is of primary importance, firms choose highly flexible forms of labour mobilization, drawing on the casual labour of migrants from the Brazilian Northeast, often requiring migrants to work *sem carta* – without documentation and thus outside state regulation. In crops where the quality and timing of produce are of great importance, firms rely either on subcontracting arrangements that mobilize family labour (in these situations the contract functions like a piece rate to increase incentives to effort), or the labour of local women and children. Clearly, agricultural firms involved in the production of fruits and vegetables are operating in ways that are similar to their counterparts in certain branches of industry. They are actively experimenting with labour arrangements that tap the most vulnerable segments of the international workforce, and that appropriate unpaid family labour through subcontracting.

Evidence from other parts of the world indicates that these trends are not unique to the São Francisco Valley, but go hand-in-hand with labour intensive production of fruits, vegetables and some export perennials (Saez, 1986; Lago and Olavarría, 1981; Mbilinyi, 1990). As Watts and Little (forthcoming) have indicated, they are frequently associated with new patterns of export-led industrialization, becoming more predominant as developing nations abandon the goals of food self-sufficiency that were frequently associated

with previous policies of import-substitution industrialization. In the Brazilian case, the strategies described are part of an historical context of attempts to incorporate the Northeast into the national economy, beginning with the establishment of the Superintendency for Northeastern Development (SUDENE) in the 1950s. Like SUDENE, current government subsidies facilitate capital investment by southern and south-central Brazilian firms in the 'underdeveloped' Northeast (see Oliveira, 1977; Roett, 1972). The labour practices described represent attempts by firms to 'rationalize' production in a region that they perceive to be risk-laden and underdeveloped.

Graziano da Silva (1989) and others have argued that practices such as sharecropping will disappear in the São Francisco Valley with the progressive development of the forces of production – specifically once mechanization permits the routinization of tasks. Yet examples of cases where wage labour is currently used are telling. In one, sugar-cane, high quality labour is not an issue. Casual wage labour can meet (and traditionally has met) requirements for quality and scheduling, and given the competitive environment for northeastern sugar-cane, cost imperatives are primary. In the other case, grape production, the majority of wage workers are women. In crops where a trained, permanent work force is required, and where the political risk of labour mobilization is perceived to be high, a shift to wage work will not occur unless women (or other relatively vulnerable workers) can be used. Only if mechanization permits the routinization of these tasks to the extent that casual (often undocumented) labour will suffice, will such a shift occur. Until that time, sharecropping/contract farming and women's wage work will provide high quality labour without the attendant political risks.

However, this is obviously not the whole story. Corporate goals and activities are only a part of complex local histories shaped by such factors as state development policies, the organizational strategies of unions and political parties, the actions of international donor agencies and shifting consumption patterns that alter demand structure. As contract farming develops a petty bourgeois sector capable of representing its own interests, or as women's employment issues are given greater attention by rural unions, the dynamics of local labour relations may shift significantly.

Whether we are talking about casual or permanent wage labour, contract farming or sharecropping, it is clear that the labour

arrangements employed in new forms of capital-intensive agriculture in the Third World are deeply embedded in culturally defined relations of gender, family and community. Capital in agriculture is actively experimenting with new ways of taking advantage of the labour of whole families, rather than individual workers; it is also using its understanding of gender relations and gender inequality in the family to justify inequality in labour markets and work regimes. Capitalist firms in agriculture, as in industry, are seeking ways to mobilize and reorganize gender and family relations to their own advantage. As this happens, the sphere of social reproduction will increasingly become a site of struggle.

NOTES

1. The research on which this paper is based was conducted in February–March 1991. During that time, interviews were conducted with officials of state development planning agencies in Brasilia, Recife and Petrolina; and with agribusiness firm managers, agricultural technicians, exporters, workers and small farmers working under production contracts in the São Francisco Valley. These interviews, and the data provided by the agencies involved, are the basis for the account that follows. The research was supported by the Research Foundation of the State University of New York at Binghamton and the Institute for Development Anthropology, Binghamton, New York.

2. According to US Department of Agriculture documents, 'production of fruits and vegetables is still labor intensive and furthermore, processing technology is mature and widely available. Thus, developing countries with relatively cheap labour will find it increasingly attractive to produce large quantities of fruits and vegetables for export to developed countries in both fresh and processed forms' (Sarris, 1984: 4).

3. US imports of fruits and vegetables more than doubled between 1979 and 1989, from a dollar value of just over 2 billion to 4.8 billion. During the same period, the value of Mexico's exports of fruits and vegetables increased from 500 million to 837 million; Brazil's from 457 million to 1.2 billion; and Chile's from 184 million to 676 million. Values given are in 1982 dollars (FAO, 1985, 1989).

4. At the same time, the technology involved in increasing yields (such as improved seeds, pesticides and fertilizer) is highly divisible (Mackintosh, 1977: 288), so that a range of sizes of production unit may be viable.

5. The 1946 Constitution, inspired by the Tennessee Valley Authority, established that 3 per cent of national income should be applied to development of the Amazon Valley and 1 per cent to the development of the Valley of the São Francisco. In the lower middle valley, a large irrigation project at Petrolandia was begun in 1946 by the National Department of Works Against the Drought (DNOCS); the Bebedouro I irrigation project, near Petrolina, was undertaken by SUDENE in the 1960s.

6. CODEVASF's charge, according to Law 6088, article 9, was to 'stimulate and orient private initiatives, and to promote the organization and participation of capital in industries of production, processing and industrialization of primary products' in the São Francisco Valley.

7. Grapes are most often shipped by air, while melons, papaya, mangoes and vegetables are shipped by boat in refrigerated containers. Exporters in the São Francisco Valley are fond of reminding potential investors that the distance from the port of Recife to Rotterdam is the same as the distance from Jacksonville, Florida to Rotterdam.

8. Sorj (1980: 25) has noted the growth of supermarkets in Brazil, and their need for a stable, high-quality supply of fruits and vegetables, as an important influence on recent investments in agricultural development.

9. These figures are based on a coding of eighty-four firms. Information on ownership was available for only forty-one of the total. I would guess that national capital is most heavily represented in the group that could not be identified with certainty; thus, more detailed information would probably reveal a higher proportion of national firms.

10. Data on economic activity was available for sixty-four of eighty-four firms. I would guess that among those firms for which information was not available, agriculture was the primary activity. Thus, were more detailed data available, the figure of 70 per cent for primary production would probably rise.

11. Public projects were officially 'emancipated' from dependence on CODEVASF in the 1980s, with the expectation that they would continue as self-supporting service cooperatives. In reality, CODEVASF continues to subsidize most projects unofficially with provision of services and equipment.

12. Several production cooperatives sponsored by the Brazilian government (with significant foreign development assistance) were established in the São Francisco Valley in the 1960s and 1970s. They were administered in the 1970s and early 1980s by CODEVASF. These cooperatives have been officially 'liberated' from state control (see note 11); in 1991 they were incorporated into irrigation management districts (Associaçoes dos Usuarios) and preserved some service cooperative functions.

13. Many small farmers began to put in vineyards after becoming engaged in conflicts with tomato processing plants about purchase of the harvest in 1989 and 1990.

14. While agricultural wages in the Brazilian Northeast generally lag behind those paid in South and South-Central Brazil, wages in the São Francisco Valley are higher than the northeastern average.

15. In some cases these arrangements can be quite convoluted. Duque (1984: 35) describes a situation in which former sharecropping families were expropriated during the flooding at Sobradinho and later received an allotment of land. These families were too poor to invest in irrigation infrastructure. In some cases, they rented their land to their old patrons, who installed irrigation equipment, and then contracted the legal owners as sharecroppers to work the land. In one of the few cases of foreign capital using sharecropping, a Japanese firm has rented land from smallholders, irrigated it and planted it in mango; they then share-contracted the owners to care for the plants and to build wooden crates for exporting the fruit.

16. The skills involved entail the precise coordination among members of these large crews to insure that picking and packing operations are conducted smoothly and without bottlenecks. Wrap crews work around a conveyor belt, requiring less cooperation and coordination among crew members.

REFERENCES

Andrade, Manuel Correia de (1984) 'Producão de energia e modernização do vale do São Francisco', *Revista de Economia Política* 4(1): 43–55.

Arizpe, Lourdes and Aranda, Josefina (1981) 'The "Comparative Advantages" of Women's Disadvantages: Women Workers in the Strawberry Export Agribusiness in Mexico', *Signs* 7(2): 453–73.

Braverman, Harry (1974) *Labor and Monopoly Capital*. New York: Monthly Review Press.

Chilcote, Ronald H. (1990) *Power and the Ruling Classes in Northeast Brazil: Petrolina and Juazeiro in Transition*. New York: Cambridge University Press.

Clapp, Roger A.J. (1988) 'Representing Reciprocity, Reproducing Domination: Ideology and the Labour Process in Latin American Contract Farming', *Journal of Peasant Studies* 16(1): 5–39.

Duque, Ghislaine (1984) 'A experiencia de Sobradinho: Pfoblemas fundiarios colocados pelas grandes barragens', *Cadernos de CEAS* (Centro de Estudo e Accao Social) 91: 30–8.

FAO (Food and Agriculture Organization) (1985) *Trade Yearbook*, vol. 39. Rome: FAO.

FAO (Food and Agriculture Organization) (1989) *Trade Yearbook*, vol. 43. Rome: FAO.

Friedland, William H., Barton, Amy E. and Thomas, Robert J. (1981) *Manufacturing Green Gold: Capital, Labor and Technology in the Lettuce Industry*. New York: Cambridge University Press.

Friedmann, Harriet (1991) 'Changes in the International Division of Labor: Agri-food Complexes and Export Agriculture', in Friedland et al. (eds) *Towards a Political Economy of Agriculture*, pp. 65–93. Boulder, CO: Westview Press.

Goldin, Ian and Castro de Rezende, Gervasio (1990) *Agriculture and Economic Crisis: Lessons from Brazil*. Paris: OECD.

Gonzales, Elbio N. and Bastos, Maria Ines (1977) 'O trabalho volante na agricultura brasileira', in Jaime Pinsky (ed.) *Capital e trabalho no campo*, pp. 25–48. São Paulo: Editora Hucitec.

Goodman, David (1991) 'Some Recent Tendencies in the Industrial Reorganization of the Agri-food System', in Friedland et al. (eds) *Towards a Political Economy of Agriculture*, pp. 37–64. Boulder, CO: Westview Press.

Goodman, David, Sorj, Bernardo and Wilkinson, John (1987) *From Farming to Biotechnology*. Oxford: Basil Blackwell.

Graziano da Silva, Jose (1989) *A irrigacao e a problematica fundiaria do nordeste*. Campinas: UNICAMP/PRONI.

Lago, M.S. and Olavarría, C. (1981) *La Participación de la mujer en las economías campesinas: un estudio de casos en dos comunas frutícolas*. Santiago: Grupo de Investigaciones Agrarias, Serie resultados de trabajo no. 9.

Lavinas, Lena (1991) 'Productoras rurais: a novidade dos anos 90', *Reforma Agraria* 21(2): 4–10.

Mackintosh, Maureen (1977) 'Fruit and Vegetables as an International Commodity: The Relocation of Horticultural Production and its Implications for the Producers', *Food Policy* 2: 277–92.

McMichael, Philip (1990) 'Class Diets and Trajectories in World Agriculture', paper

presented at Fernand Braudel Center, SUNY-Binghamton (October 1990).

Mann, Susan and Dickinson, James (1978) 'Obstacles to the Development of a Capitalist Agriculture', *Journal of Peasant Studies* 5(4): 466–81.

Mbilinyi, Marjorie (1990) ' "Structural Adjustment", Agribusiness and Rural Women in Tanzania', in Henry Bernstein, Ben Crow, Maureen Mackintosh and Charlotte Martin (eds) *The Food Question: Profits vs. People*, pp. 111–24. New York: Monthly Review Press.

Mies, Maria (1986) *Indian Women in Subsistence and Agricultural Labour*. Geneva: International Labour Organization.

Oliveira, Francisco de (1977) *Elegia para uma re(li)giao: SUDENE, Nordeste, planejamento e conflito de classes*. Rio de Janeiro: Paz e Terra.

Palmeira, Moacir (1979) 'The Aftermath of Peasant Mobilization: Rural Conflicts in the Brazilian Northeast Since 1964', in Neuma Aguiar (ed.) *The Structure of Brazilian Development*, pp. 71–98. New Brunswick, NJ: Transaction Books.

Pugliese, Enrico (1991) 'Agriculture and the New Division of Labor', in Friedland et al. (eds) *Towards a Political Economy of Agriculture*, pp. 137–50. Boulder, CO: Westview Press.

Roett, Riordan (1972) *The Politics of Foreign Aid in the Brazilian Northeast*. Nashville, TN: Vanderbilt University Press.

Roldán, Martha (1982) 'Subordinación generica y proletarizacion rural: un estudio de caso en el Noroeste Mexicano', in Magdalena Leon (ed.) *Debate sobre la mujer en America Latin y el Caribe*, vol. 2, pp. 75–102. Bogotá: Asociacion Colombiana para el Estudio de la Poblacion.

Sáez, Arturo (1986) *Uvas y manzanas, democracia y autoritarismo: el empresa frutícola chileno (1973–1985)*. Santiago: Grupo de Investigaciones Agrarias, documento de trabajo no. 30.

Sarris, Alexander H. (1984) 'World Trade in Fruit and Vegetables: Projections for an Enlarged European Community'. International Economics Division, US Department of Agriculture. Foreign Agriculture Economic Report No. 202.

Sorj, Bernardo (1980) 'Agrarian Structure and Politics in Present Day Brazil', *Latin American Perspectives* 7(1): 23–34.

Stolcke, Verena (1988) *Coffee Planters, Workers and Wives: Class Conflict and Gender Relations on São Paulo Plantations, 1850–1980*. New York: St Martin's Press.

Thomas, Robert J. (1985) *Citizenship, Work and Gender: Social Organization of Industrial Agriculture*. Berkeley: University of California Press.

Watts, Michael (forthcoming) 'Life Under Contract: Contract Farming, Agrarian Restructuring, and Flexible Accumulation Among African Peasantries', in Peter Little and Michael Watts (eds) *Peasants Under Contract: Contract Farming and Agrarian Transformation in Sub-Saharan Africa*. Madison: University of Wisconsin Press.

Watts, Michael and Little, Peter (forthcoming) 'Conclusion: Contracting and the Agrarian Question', in Peter Little and Michael Watts (eds) *Peasants Under Contract: Contract Farming and Agrarian Transformation in Sub-Saharan Africa*. Madison: University of Wisconsin Press.

Wells, Miriam (1984) 'The Resurgence of Sharecropping: Historical Anomaly or Political Strategy?', *American Journal of Sociology* 90(1): 1–29.

Jane L. Collins is Associate Professor, Departments of Sociology and Women's Studies, University of Wisconsin, Madison, WI 53706. Her previous publications include *Unseasonal Migrations: The Effects of Rural Labor Scarcity in Peru* (Princeton, 1988) and *Work Without Wages*, edited with Martin Gimenez (SUNY, 1990).

The Geography of Economic Development and Racial Discrimination in Brazil

Peggy A. Lovell

ABSTRACT

This study investigates the relationship between unequal resource and population distribution and racial wage inequality in Brazil. Using sample data from the 1980 Brazilian census, monthly wages were estimated for white and Afro-Brazilian men working in nine metropolitan areas. Estimates showed that racial disparities in wages existed across all regional labour markets. Regression-based decomposition analysis found that a substantial portion of the racial wage gap was due to discrimination (unequal pay), while estimates of the magnitude of labour market discrimination indicated considerable variation by geographical area. Discrimination was higher in the predominantly white and highly developed areas of the South than in the former slave and underdeveloped regions of the Northeast.

The similarities and differences in race relations in Brazil and the USA have commanded much scholarly attention.[1] A noted similarity in both contexts is the geographic concentration of persons of African descent in areas where social and economic opportunities are scarce. One-half of the United States' African-American population lives in the low-income South. In Brazil, the greatest part of the Afro-Brazilian[2] population resides in the underdeveloped, largely agrarian Northeast. Accordingly, aggregate measures in both countries indicate that workers of African descent earn substantially less than whites. Analysts attribute this wage gap to racial disparities in education, job experience, employment opportunities and other wage enhancing attributes.

Yet, locational disadvantages and the associated deficiencies in 'human capital' account for only part of the marked differences in wage. Studies in both the USA and Brazil find that employers pay

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