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The impact of the tomato agroindustry on the rural poor in Mexico

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Abstract

This article addresses the issue of whether the tomato agroindustry (TAI) has been an effective instrument in the reduction of rural poverty. The TAI is by far the most important agroindustry in Mexico in terms of exports and employment creation. Most of the laborers employed by the TAI in northwest Mexico are temporary migrants coming from poverty-stricken regions in southern Mexico. Conditions of poverty-induced migration are explained. The characteristics and strategies of large, modern tomato enterprises are analyzed. The main conclusion is that migrant income earned in the tomato fields and packing plants, is fundamental for the bare survival in villages in poverty-stricken regions. However, this does not provide a solution to poverty alleviation because migrant income is not sufficient to contribute to capital formation in the migrating communities, or the to create the conditions for endogenous local development. © 2000 Published by Elsevier Science B.V.

Keywords: Tomato agroindustry; Employment; Migration; Poverty; Mexico

1. Introduction

This article analyzes the role of globalization and agroindustry in the generation of income and the improvement of living conditions in rural Mexico. The position one frequently encounters in the available literature as well as a position taken by various Latin American governments, is that the export agroindustry is a means of promoting equitable rural development. It is important therefore to pose the following question: has agroindustry in fact been an effective instrument in the reduction of rural poverty?

Unfortunately, there is a dearth of studies analyzing the effects of agroindustry on rural poverty. Most of the studies have concentrated on agroindustrial technology, financing, forms of association, and markets. These studies provide little information on the effects of agroindustry on incomes and employment in poverty-stricken regions. Some studies, however, have provided useful insights on the labor market (e.g., Wilcox-Young, 1993, for northern Mexico).

To address this gap in knowledge, we undertook a study of the tomato agroindustry (TAI) in Mexico, and its impact on employment in poverty-stricken rural areas. The TAI in particular, and the horticulture agroindustry in general, are interesting for several reasons.

In general, in terms of output, employment, processing/packing, and exports, horticulture agroindustry is the most important agroindustry in Mexico. According to data from the Ministry of Agriculture, horticulture constitutes 18% of Mexico's agricultural production and half of its agricultural exports. Due to the highly labor-intensive nature of horticulture and horticultural processing, it generates more than 20% of the total labor-days within the Mexican agricultural sector. Moreover, horticulture agroindustry has survived and flourished in the current climate of globalization, and has diversified exports to the US market and increased its scale of production.

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In particular, the TAI is the most important of the horticultural agroindustries. TAI has created a regional labor market to which workers are attracted from the country's poverty-stricken rural regions. Thousands of indigenous peasant workers leave these poor regions every year to labor in the tomato fields in the north of Mexico.

Our research question is whether the TAI is contributing to poverty alleviation in migrant-sending regions, in particular, in communities in Oaxaca, which send migrant workers yearly to TAI fields in Sinaloa and Baja California, in the northwest of Mexico.

We proceed as follows. First, we examine labor supply status and the migration caused by poverty in the Mixteca region and Valles Centrales, both regions being in Oaxaca. Second, we examine the labor market in northern regions where the TAI packers operate, including wages and working and living conditions of the workers' families. Finally, we assess the impact of the TAI on the living standards of the Oaxacan peasant families that send migrants to the TAI areas.

2. Labor supply generated in the poor regions exporting labor

We hypothesize that labor supply to Mexican agroindustry coming from marginal rural zones depends, among other things, on the degree of poverty and on the scarcity of jobs in the sending areas. If poverty aggravates and living conditions deteriorate, then the "push factor" to migrate will increase, or at least the incentive will increase to seek, outside of agriculture or outside the sending region, other sources of employment or income that are not to be found within the local economy.

As a result of the application of structural adjustment programs and rural reform programs, rural poverty in Mexico has deepened during the past decade. At the same time, both internal and external migration have increased significantly. The number of rural poor increased during 1984–1992, from 6.7 to 8.8 million living in extreme poverty (INEGI-CEPAL, 1993). Another study of the "social sector" of agriculture, both "ejidos" (tenant organizations) and other communities, concluded that rural poverty in ejidos is massive. 47.3% of ejido farmers were poor in 1994 (de Janvry et al., 1997). There is enough information available in Mexico to conclude that the principal response of rural families to worsening living conditions has been to seek an income outside agriculture on their own farm. This response is also common among agricultural field-workers in other countries. Three surveys have been carried out recently on ejido homes, providing information on sources of family income and change in those incomes over time. The first two surveys were carried out in 1990 and 1994, by the Ministry for Agrarian Reform. The third was carried out in 1997, by the Institute for Agrarian Development and the World Bank. Analyses of these data include de Janvry et al. (1997, 1998), Lanjouw (1998), CEPAL (1999), and Davis (1999).

Earnings outside own-farming are very important to the poorest rural families. For example in 1994, small farmers with holdings of less than 2 ha, whose little land placed them among the poorest, earned only 18% of their family income from own-farming and livestock husbandry, whereas their income from other sources (working outside the agricultural sector and working in wage-employment in the agricultural sector) amounted to 47% of their total income. Remittances from migrants to other areas within Mexico, and from emigrants to the US made up another third of their incomes. Yunez-Naude et al. (1998) reach the same conclusion using general equilibrium models applied to rural towns in Mexico. This demonstrates the great importance to poor rural families in Mexico of income from migration.

The regions with high rates of out-migration, such as our focal region, Oaxaca, are poor and very scarce in natural and human capital. They are dependent on low wages from unskilled jobs, and live in barely accessible, poverty-stricken regions that generate very little employment. Poverty rates in these regions are high and increasing. In 1970, 74% of the Mixteca population had an income level of less than twice the minimum wage, which placed them below the poverty line. In 1990, this percentage had grown to 80%. Faced with this precariousness and the lack of jobs, the response of many families has been to migrate towards the northwest to work in the vegetable fields.

Majority of the population migrates. There are whole villages of seasonal migrant workers. A survey carried out in Coatecas (Valles Centrales) indicates that 87% of the 217 families surveyed had family members who were migrants. Out of these migrants, 72% went to Sinaloa to work on the tomato and other vegetable fields. This demonstrates the great importance of employment created by the TAI for the poor of Oaxaca (Ortíz, 1998).

3. TAI, axis of the labor market

The high labor requirements demanded by the production and packaging of tomatoes and other vegetables has led to the creation of a wide regional market for labor. Estimates made by the Program of Agricultural Day-Workers of the Ministry of Social Development suggest that, in the State of Sinaloa alone, 135 000 migrant day-workers congregate from various regions of Mexico.

The demand for work depends on the dynamism of the horticultural business and their technology. The TAI companies, that participate in the labor markets of the northwest are modern, large and diversified. They operate in different regions, and in association with other national and foreign companies in both the agroindustrial and financial sectors. The largest companies control between 1000 and 2500 ha. These are owned or rented lands, on which they employ the most up-to-date technology. Their proprietors have become prosperous exporters. The largest are big businessmen, owners of warehouses in the wholesale markets of Mexico City and Guadalajara. Further details on the TAI can be found in Echánove (1999) and Lara and de Grammont (1999).

Recent trends in vegetable production and export indicate moderate growth. However, the TAI has increased its size and share of the horticulture sector. There is also evidence of concentration in the TAI. One also observes increasing diversification in horticultural production as part of a business strategy to boost penetration of Mexican produce into export markets. According to data from to the Ministry of Agriculture, 14 horticultural varieties were produced in Mexico in the early 1970s, while in 1994 there were more than 80 varieties, some of them exotic and ethnic vegetables.

The TAI, despite the continuing modernization of its technology, has always been, and continues to be, labor-intensive. All the tasks involved are done manually — seedling production either in greenhouses or in the fields, planting out cuttings, cultivation, and harvesting. This can be contrasted with the mechanized harvesting and packing of processed tomatoes prevalent across the US. Tomatoes are also much more labor-intensive than maize, the main cereal crop. The number of work days per hectare of tomato corresponding to the technology available previous to ferti-irrigation is calculated at about 122 days, as opposed to 29 days required for the production of maize.

The TAI operates within a context of fierce international competition for control of the final markets for horticultural produce, within the US and Canada. Technological modernization forms part of this commercial battle. In recent years, Mexican horticulturists have begun to close the technological breach that separates them from their competitors, and to introduce both plastic-culture (a technique requiring the planted land to be covered in plastic sheets) and ferti-irrigation. Both technologies raise labor requirements per hectare. This is particularly so since raising production rates from 30 to 60 or more tons per hectare, increases labor needs for the manual harvesting involved. The latter is an unskilled task performed by the migrant workers. Labor needs have also increased for produce-selectors to work in the packing plants.

In addition to use of new technology, flexible and ad hoc means of labor organization are being used. For example, more specialized labor is required in view of these new production techniques, in better-paid positions (engineers and technicians) for supervising production. Yet TAI firms continue to utilize unskilled seasonal migrant indigenous workers for harvesting, as well as local women in the packing plants. The greater volume of harvest (arising from use of new technologies and consequent increases in productivity) is handled by taking on more migrant workers and more women workers. The areas are still hired by the traditional hiring methods. The situation here is, therefore, one of combining modern production technology with old forms of labor organization.

It is a great advantage for the TAI to have access to cheap labor that it can employ entirely at the convenience of the industry's methods and production rhythms. Field and harvesting tasks are carried out by migrant indigenous workers. Often these are whole family groups, including the children. They are employed on a seasonal basis for the 6 months a year that an agricultural cycle lasts. They are hired for piecework or by the day, but with a stipulated minimum daily tonnage to be harvested. They are hired for low wages and with hardly any work-related benefits.

The basic strategy of the TAI consists of combining investment in the most up-to-date technology with the intensive use of cheap labor, and this constitutes the basis of the TAI's competitive advantage. The possibility of finding workers, at low cost and in the numbers and at the times required by the companies, is extremely important to these companies. Therefore they adopt hiring methods designed to ensure the supply of labor in the production process. Even though some day-workers arrive in these production regions under their own will, the majority of workers are hired by, or bound to, the companies from the workers' place of origin. As harvest approaches, the employer contracts middlemen who travel from Sinaloa to labor-exporting regions in the States of Oaxaca or Guerrero. Middlemen and buses arrive at a given site on dates known to everyone locally, and begin to select people. When they have assembled 50 or 60 workers, they transport them to Sinaloa.

Is the TAI an enterprise based on cheap labor? Without doubt, the existence of low-cost migrant work represents a huge advantage to, and benefit for, such a business. This industry benefits from the flow of poorly paid labor, because it keeps the business's labor costs low while keeping high its competitive level and profits. However, the competitiveness of the TAI does not depend solely on relatively low salaries, but also on a well-demonstrated capacity to modernize its technology and increase its productivity.

4. Recent trends in labor supply and living conditions

Recent trends in the northwest's labor market are marked by an important fact for migrant workers: labor supply has grown faster than labor demand. The existence of this new process was suggested by the noticeable increase in new entrants to this labor market in 1997 as compared to 1995. The group of day-workers migrating for the first time to San Quintín, in the State of Baja California, rose from 31 to 44% of the total number of migrating men between 1995 and 1997. The corresponding figures for migrating women showed an increase from 29 to 50% (Barrón, 1997). The rapid growth in labor supply is explained by the deterioration in peasant agriculture, and the accelerated growth in migration, in response to rural poverty. Although less rapidly than the labor supply, the TAI's labor demand has grown too. The latter is mainly the result of an increase in crop production, which means a greater volume for manual harvest, hence more labor demand.

This situation is equivalent to a trend towards saturation of the labor markets. This has significant negative effects on the real wages earned by day-workers, on the hiring methods used by the TAI, and on the living conditions of the day-workers. The TAI has taken advantage of the existence of a more abundant labor supply to give preference to workers with the most physical strength and experience, and has reduced the hiring of children. At the same time, it has also chosen labor-hiring methods that imply a more intensive use of the labor force (hiring by piecework). This means of hiring is convenient, in terms of income, to both parties. For the TAI, it signifies a reduction in the total labor cost. The stronger, more able, workers can harvest 100 baskets a day or more, thereby increasing their daily income but at the cost of considerable physical expense and of a premature exhaustion of their work capacity.

The situation is one of precarious work and living conditions. Migrant day-workers who reach San Quintín are lodged in camps that have earthen floors, walls of corrugated cardboard, and roofs of the same material or of corrugated metal, materials which make the accommodation terribly hot in summer and extremely cold in winter. They have no running water and no latrines. Working conditions are no better. Protective equipment is deficient, and cases of intoxication are frequent due to the inadvertent ingestion of toxic agricultural chemicals. However, the National Program for Agricultural Day-Laborers that operates in the area, has made significant headway in its attempts to improve the living conditions for migrant workers. It has established crèches, health-centers, and schools for very young children. In Sinaloa, the Program's presence has been even stronger, and living conditions have consequently improved.

5. Evaluation of the effects of the TAI

5.1. Effect on wages

Are day-laborers' wages low? The wages paid by the TAI are similar to rates in other regions of commercial agriculture within Mexico, and therefore they are not low in this respect. However, they are low compared to wages in the manufacturing industry, since industrial workers' wages usually include the legally established perquisites, such as Sunday pay, social security, holiday pay and pensions, none of which is included in the agricultural day-laborer's pay. On an international level, the Mexican agricultural day-laborer is at a clear disadvantage relative to his/her peer in US or Canada. The farmworker in US earns approximately US\$4.00 per an hour and in Canada CA\$6.95, in Mexico this amount would be paid for a day's work.

There is a homogeneity in wages in the regions studied. According to the responses from the 16 persons interviewed in Oaxaca, their wages fluctuate around 40 Mexican pesos. (There are 9.3 pesos to the US\$.) These figures coincide with those given in the Day-Laborers Program in Culiacan, Sinaloa and by a survey carried out in San Quintin, Baja California in 1997, where the wages fluctuated between 40 and 50 Mexican pesos (Barrón, 1997). Higher wages are paid for piecework but they do not compare with those paid for day-labor since they imply a greater work period. Similarity in wages over regions could be due to the tomato packers' following similar wage policies and that many tomato packing firms have operations in various regions. Besides, the day-workers work successively in different regions and know the wages paid in those regions and would not accept a lower wage than that paid in other regions.

5.2. The impact on employment

The main positive impact of the TAI on poverty is to be seen in employment creation. This is the TAI's principal contribution to the economy of poverty-stricken regions, where there is an endemic lack of natural resources and work. In the Valles Centrales outmigration region, there is a prevalence of small-holdings: 11% of families own less than 1 ha, 32% have up to 2 ha, and 24% have 3 ha. Most of the region has an unfavorable climate, so farm income is insufficient to satisfy the family's needs. 1

The families have to look for employment outside agriculture. One choice is craft work (the fabrication of articles using raw materials from palm trees). According to a survey, 97% of the families have at least one member working at this. However, the income from these manufacturing only covers the purchase of the family's daily maize consumption.² The most important off-farm income comes from migration labor. The latter is the most important source of family income. The 86% of the 217 families interviewed have members that are migrant workers. In 50% families with migrants, 1–3 members are migrants, in 35% of the families, 3–6 members are migrants. More than half of the population leaves these towns to work.

Previous information indicates that migration has accelerated since 1985, the year that marked the Mexican economic crisis. Before 1980, only 11% of the population interviewed had migratory experience, while starting from 1985 75% of those interviewed began to migrate.

The advantage of migrant workers have in the TAI is that they are able to find stable employment for many months of the year. That is impossible in the outmigration regions. It is not surprising that the migration period is long, because a longer period of migration means a higher corresponding income earned by the workers, and thus greater savings to be taken home.

The TAI has created a demand for labor that has exerted significant multiplier effects within the TAI regions. Many workers come from the Sinaloa Altos, a poorer area in the hills, but close to the irrigated plains, where the tomato crop is sown. The question is, does the flow of workers from Oaxaca displace the local Sinaloan workers? Apparently it does not. There are no records of unemployment in the rural areas of Sinaloa, a state that has a marked economic dynamism. If there were an excess of local labor, the TAI businessmen would not have to spend money employing

¹ This regional information and the following is to be found in Ortíz (1998), who studied a sample of 217 family units in Coatecas Altas, Valles Centrales.

 $^{^2}$ The daily income for an 8 h per day is 7 pesos, which is the equivalent of 2 kg of maize.

middlemen to hire labor from elsewhere, given that migrant workers receive the same wages as locally-hired day-workers.

Another issue is whether the migration has a negative effect in the outmigration regions, creating labor shortages there. This does not appear to be the case, since the demand for workers is very low there, where the economy is stagnant. Migrating peasant workers usually return home in time to plant their own subsistence plots.

5.3. Effects on income

The sample of 217 families analyzed by Ortíz does not provide enough information to analyze family income strategies nor the impact of income and savings from migration on poverty levels. To complement the sample, we interviewed 16 migrant families from Valles Centrales, Oaxaca, applying a more extensive questionnaire than that used by Ortiz. The sample size, though small, is adequate as a case study to generate hypotheses for further research. The results are laid out in Tables 1 and 2.

Table 1 Salary, income and income determinants^a

The interviews revealed that the minimum migration period is 3 months, the most frequent is 6 months, and there are even families who migrate for 1.5 years at a stretch. This information coincides with data from Ortiz's survey that, of 636 migrants interviewed, 27% migrated for a period of between 2 and 5 months, 66% migrated for between 6 and 9 months, and 7% migrated for more than 10 months.

What are the determining factors of the migrants' earnings, and of their savings? The most important factors, in this order, are the length of migration time, and the number of workers per family. Our data show a strong correlation (0.89) between income and duration of migration. Correlation between income and number of family workers is weaker and there is no correlation between income and salaries paid (Table 1).

The magnitude of these two factors has an impact on the amount of savings accumulated, as is shown in Table 2. The migration strategy consists of placing on the labor market the greatest possible number of family members, and of migrating for the longest time possible without abandoning cultivation of the family plot of land. This explains why entire families leave, and why they stay away for several months at a time.

Family income: pesos per year	Workers per family	Weeks of migration	Daily wage
1800.00	1	4	75 ^b
2160.00	1	8	45
9600.00	2	8	100 ^b
11520.00	2	24	40
16128.00	4	16	42
16128.00	4	16	42
16128.00	4	16	42
16560.00	3	23	40
16632.00	3	22	42
21120.00	4	22	40
23040.00	4	24	40
26460.00	5	21	42
34800.00	5	29	40
54000.00	4	50	45
54720.00	2	76	60 ^b
74880.00	4	52	60 ^b
Correlation of income			
No. of workers=0.41			
Weeks of migration=0.89			
Daily salary $=0.15$			

^a Source: Personal elaboration, based on interviews with families. Valles Centrales, Oaxaca, 1999.

^b Salaries paid by piecework.

Table 2 Savings of migrant families and their determining factors 1999^a

Family	Savings (pesos) ^b	No. of weeks they can feed themselves with savings ^c	Dependence coefficient ^d
A	37720	178	1
В	32032	151	1
С	23850	112	1.25
D	18060	85	1
Е	13420	63	1
F	12180	57	1
G	12118	57	1
Н	11808	56	1
Ι	10496	49	1.75
J	8928 ^e	42	1
К	7920	37	1
L	7750	36	2
М	6688	31	1
Ν	4876	23	1.3
0	2025	10	1

^a Source: Based on authors' interviews with families.

^b Savings are equal to the income minus the cost of the basic foodstuffs as reported by those interviewed.

^c Multiple of the weekly cost of basic foodstuffs for family members in the zone of origin.

^d Number of migrant families divided by number of migrant workers.

^e Income for 1998.

The day-workers who migrate for many months and are unable to return in May to plant their own land, enter into land agreements.

On the basis of this information it could be said that there exist at least two family subsistence strategies. The first is the most common and consists of the combination of migration and subsistence agriculture. Families migrate some months and come back in time to cultivate their plots with subsistence products. The second strategy is to migrate for a longer period and to accumulate more savings to be invested later in their community. In this case family plots are rented to relatives or trusted neighbors.

The savings accumulated by the migrant workers vary according to the migration strategy of each family. However, in all cases the total is substantial, when the following factors are taken into consideration. First, the economy of subsistence farming and the employment sources to be found locally in the workers' places of origin cannot guarantee any family sufficient income for survival. Second, family spending on food in their places of origin is relatively low, estimated at 212 Mexican pesos per week (US\$22.5), which is 5512 pesos per 6-month period for a family of five. Almost all the families interviewed saved more than 5512 pesos, which means that they can all live for 6 months back in their home communities without needing to earn any further income (Table 2). Thus, the accumulated savings of the migrant day-workers will cover all their basic needs, although at an elemental level of subsistence.

The final use to which the migrant families put their accumulated savings reveals the significance of those savings to the families. All of them stated that they spend their savings on food and household expenses, in other words they use their savings for survival. Some families mentioned that they invested in the redecoration of their homes, the purchase of animals, fertilizer, a yoke, but only one family mentioned having used their savings to buy land. The income of these latter families is obviously higher than the income of the families who spend their savings only on food. This establishes a clear relationship between the level of savings and the kind of spending.

The information gathered provides insights into the child labor issue. In the current context of intense commercial competition between Mexican and North American horticulturists, the US horticulturists are pressurizing the governments of the US and Mexico to implement and enforce regulations against child labor, because, according to them, child labor puts US horticulturists at a disadvantage. This argument is false, because the wages paid to the children are the same as wages to adults. On occasion, the adults even help the children fill the stipulated minimum daily requirements in order to warrant those daily wages. In this respect, the employment of children does not put Mexican tomato growers in a better competitive position. Moreover, child labor is diminishing due to the rapid growth in adult labor supply.

That the TAI agrees to hire minors explains the low level of the dependency coefficient for the families of migrating day-workers shown in Table 2. This represents a great advantage to these families in that they can thus substantially raise their earnings. Prohibiting child labor in the tomato fields would represent a severe blow to the economy of migrating families. The National Program of Agricultural Day-Laborers estimates that between 30 and 35% of family income is generated by children. However, the employment of children entails substantial costs to migrant families because they cannot attend school. There are no education programs in the working fields for migrant children. Besides, working conditions in the fields of Sinaloa and Baja California are hard for the children.

5.4. Implications for sustainability

Seasonal migration does not create conditions for sustainable economic development in the sending regions. The greater part of migration income is still destined just to ensure survival. Very little is invested in the natural, physical or human capital of these communities. Conditions for endogenous growth of sending-region have not been improved by the migration. For example, the extra income is not sufficient for the workers to buy land and fertilizer, except in a few cases. The prolonged absences also result in neglect of the workers' own land. Family plots are normally badly attended due to migration. The fact that children also migrate in order to work, means that they do not attend school in any regular manner, perpetuating the high levels of illiteracy prevalent in Oaxaca, and the low level of potential in human capital.

This last problem needs to be emphasized. Education is a fundamental instrument in the matter of access to better-paying jobs. Because of their deficient education, the day-workers are condemned to occupying the hardest, worst-paid positions. If the educational level of the children does not improve, they will continue working and earning just the same as their parents, thereby recreating these same conditions of poverty. To summarize, this agricultural scheme of infra-subsistence migratory work is being perpetuated. It is a non-sustainable means of livelihood, because it would enter into crisis if, for any reason, the migratory flow were interrupted.

6. Conclusions

First, the employment offered by the TAI is crucial to the survival of entire villages in Oaxaca, and to other settlements that find themselves trapped in conditions of unemployment and extreme poverty. These jobs offer them an income very difficult to obtain in their poverty-stricken, marginal villages in Oaxaca. Without these earnings, many of these people would already have abandoned their home villages, or would be living there under even worse circumstances.

Second, this positive impact is not the result of good wages and work-related benefits provided by the TAI, because, as discussed above, wages are low and benefits and working and living conditions are poor, and they represent a stark contrast to the earnings and prosperity of large, modern companies. The positive impact is more the result of the context of extreme poverty in which the migrant workers find themselves, and the lack of dynamism in the economy of the regions that they come from. Faced with this context of almost no local work alternatives, seasonal migration to the fields of Mexico's northwest is inevitable, and there is no viable substitute for this.

Third, discussions prior to the signing of NAFTA suggested that the fruit and vegetable production and export sector was going to bring enormous benefits to Mexico. While it is true to say that vegetable exports have proved to be an alternative to rural unemployment, they cannot resolve the problem of rural poverty and backwardness, related to deeper structural factors.

Fourth, migrant earnings allow the families to survive, but they contribute scarcely any capital to the local community. Consequently, this income does not contribute towards the creation of local conditions

fomenting endogenous development. It does not represent a synergetic development, which would raise the productive capacity of the labor-exporting regions in the same way as in the TAI regions.

Fifth, it would thus not be rash to suggest that the TAI, which makes substantial profits, assume a larger role in the war on poverty of these migrant communities, the very people who have made those profits possible. This would not compromise the TAI's competitiveness. This could be undertaken in any of the following ways: (1) collaborating more in educational programs; (2) construction of classrooms; (3) paying teachers who educate the children of migrant laborer; (4) improving the living and working conditions of the migrant day-workers in the TAI regions.

References

- Barrón, M.A., 1997. Empleo en la agricultura de exportación en México. Juan Pablos-UNAM, México.
- CEPAL, 1999. Efectos sociales de la globalización sobre la economía campesina en Honduras. México y Nicaragua, México.
- de Janvry, A., Gordillo, G., y Sadoulet, E., 1997. Mexico's second agrarian reform. Household and Community Responses, 1990–1994. Center for US–Mexican Studies, University of California, San Diego, La Jolla.
- de Janvry, A., Sadoulet, E., 1998. Agrarian heterogeneity and precision policies. In: Proceedings of the Latin American

Seminar on Agricultural Heterogeneity and Differentiated Policies, Mexico.

- Davis, B., 1999. The adjustment strategies of Mexican ejidatarios in the face of Neoliberal reform. In: World Bank, Mexico Ejido Reform: Avenues of Adjustment — Five years Later, Vol. II, Background Paper. Environment and Socially Sustainable Development Sector Management Unit.
- Echánove, F., 1999. Los empresarios hortícolas y sus procesos de integración y diversificación. In: Grammont, H. (Coord.), Empresas, Reestructuración Productiva y Empleo en la Agricultura Mexicana. Plaza y Valdés Editores, México, 1999.
- INEGI-CEPAL, 1993. Magnitud y evolución de la pobreza en México, 1984–1992, México.
- Lanjouw, P., 1998. Poverty and nonfarm economy in Mexico's Ejidos, 1994–1997. In: World Bank, Mexico Ejido Reform: Avenues of Adjustment — Five years Later, Vol. II, Background Paper. Environment and Socially Sustainable Development Sector Management Unit.
- Lara, S., de Grammont, H., 1999. Reestructuración productiva y mercado de trabajo rural en las empresas hortícolas. In: de Grammont, H. (Coord.), Empresas, Reestructuración Productiva y Empleo en la Agricultura Mexicana. Plaza y Valdés Editores, México.
- Ortíz, M., 1998. Familias campesinas en condiciones de muy alta marginación en Oaxaca. El caso de Coatecas Altas. Unpublished.
- Yunez-Naude, A., Taylor, J.E., Dyer, G.A., 1998. Farm-nonfarm linkages and agricultural supply response in Mexico: a villagewide modeling perspective. In: Proceedings of the IFPRI Workshop Strategies for Stimulating Growth of the Rural Farm Economy in Developing Countries. Airlie House, Virginia.
- Wilcox-Young, L., 1993. Labor demand and agroindustrial development: the evidence from Mexico. J. Dev. Stud. 30 (1), 168–189.