6-6

Contract Farming in Costa Rica: A Case Study on Contracts in Pepper Farming

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Executive Summary

Contract farming is defined as an agreement, which may range from a simple verbal commitment to a written document, between a farmer and a firm, in which the farmer agrees to deliver fresh or partially processed products and the firm commits itself to purchasing the produce under certain agreed price and non-price conditions. Contract farming is usually considered a substitute for poorly functioning or absent markets. The literature on contract farming presents two opposite views of the potential of this alternative market institution as a bridge for trading between smallholders and agroprocessing firms. Some researchers argue that contracts are an adequate mechanism for integrating smallholders into dynamic markets by overcoming the constraints of a failing market. Others warn about the downside of contracting.

We present the rationales for different types of contractual regimes between small-scale pepper producers and agroprocessing firms in the northern region of Costa Rica under two market configurations—namely, a competitive market and a local monopsony. Three types of contractual agreements (written contracts, verbal commitments, and no agreement) are found. The analysis is based on a survey of pepper producers using a semi-structured questionnaire to obtain data on production systems and marketing arrangements.

Pepper is an attractive diversification activity for smallholders because it is a labor-intensive crop, does not require complex technologies or machinery, requires detailed attention and frequent disease control through the cropping cycle, and can reach high, fairly stable yields per hectare. A major drawback is the high entry cost during the start-up phase, stemming from the need for initial investments in crop establishment and the long maturation time before the first harvest. Contracts may help overcome these constraints and permit market entry at a reduced level of uncertainty.

A farmer's level and sources of income have a clear effect on his or her contract choice and bargaining power. Income diversification enables farmers to increase their asset specificity in pepper crops,[1] even without the insurance provided by contracts. Therefore, pepper companies prefer to offer contracts to less-endowed farmers who have some farming experience but limited income diversification. These farmers are likely to engage in contract farming owing to their limited bargaining power. Even though the enterprise operating in the monopsonistic market also maintains high asset specificity, it is able to buy from some farmers without any prior agreement, since the latter possess limited bargaining options for valuing their asset-specific investments.

Farmers with contracts definitely invest more inputs and time in soil maintenance activities on their pepper plots. Resource-providing contracts in the competitive market have a stronger effect on farmers' investments than simple market specification contracts in the monopsonistic market. This finding confirms the literature regarding the importance of resource-providing contracts and vertical integration for sustainable agricultural intensification (Kuyvenhoven and Ruben 2002). Budget-constrained farmers that intend to tailor their investment decisions in line with the designed technological package may substitute for the default level of fertilizer use with additional labor investments in soil maintenance activities.

Your assignment is to recommend a government policy to assure an acceptable level of competition and to facilitate increasing incomes and reduced risks for low-income pepper farmers in Costa Rica.

Background

Contract farming is frequently mentioned as a substitute for poorly functioning or absent markets. Contract farming is an agreement between a farm and a firm—either a simple verbal commitment or one based on written documents—through which the farmer produces a fresh or partially processed product and the firm is committed to buying it under certain stipulated conditions (Roy 1972; Glover and Kusterer 1990; Grosh

[1] Asset specificity means high specialization of investments for a near-unique commercial purpose (Key and Runsten 1999; Hobbs 1996; Williamson 1991). It has been argued that a higher level of asset specificity reduces the bargaining power of one party with respect to another party (Kusterer 1982; Glover 1987; Key and Runsten 1999).

1994). Contract farming serves as an economic institution operating between spot markets and vertical integration (Grosh 1994; Key and Runsten 1999) and arises as a response to selective or simultaneous market failures for credit, insurance, information, factors of production, or commodities (Key and Runsten 1999). Contracts are one of the various ways of coordinating economic activities between a farmer and a processing firm, enforcing a certain type of supply chain management for a given commodity (Hobbs 1996).

The effectiveness of contract farming can be considered from the perspective of the farmer or the trading firm. Firms can use a variety of institutional arrangements to obtain raw products for processing or marketing, relying on different degrees of vertical coordination and related governance structures. One extreme is the spot market, where the transaction takes place among several actors and the price is set during the transaction. The firm does not participate at all in the production process, and all other aspects of the transaction (that is, quality, quantity, and timing) are nonnegotiable. In this situation there is no real supply chain management (Hobbs 1996). At the other extreme, with full vertical integration, there is a continuous flow of products and information during different stages of a supply chain and transactions follow a corporate scheme rather a negotiating-parties scheme. Here, the firm has complete control over production.

Contract farming takes an intermediate position, allowing the firm to participate and thus exert different levels of control over the production process without formally owning or operating the farms. It is mainly a way to distribute activities in the supply chain and the corresponding risk between the firm and farmers. The farmer bears most of the production risk, and the firm, most of the processing and marketing risk. The exact allocation of risk depends on the specifications of the contract. The firm chooses an optimum contract considering transaction costs and profit (Key and Runsten 1999), depending on the prevailing market uncertainty related to the transaction, the degree of asset specificity (including its bargaining position), the frequency of the transactions (Hobbs 1996), and the monitoring costs surrounding the production process (Singh 2002).

Contracts have the potential to provide mechanisms for incorporating small and low-income farmers into the market economy (Glover 1984; Key and Runsten 1999). Several authors argue, however, that contracts could also lead to market segmentation and exclusion, thus generating more negative effects on farmers than positive ones (Glover and Kusterer 1990; Grosh 1994; Little and Watts 1994; Porter and Phillips-Howard 1995, 1997; Torres 1997; Siddiqui 1998).

In general, contracts can be classified into three categories that are not mutually exclusive: (1) market specification contracts, (2) production management contracts, and (3) resource-providing contracts (Minot 1986; Williamson 1991; Hobbs 1996; Key and Runsten 1999; Singh 2002). Market specification or procurement contracts are simple pre harvest agreements in which the firm commits to providing a market outlet for the farmer (Hobbs 1996). Such contracts usually stipulate conditions regarding price, quantity, quality, and timing (Singh 2002). The farmer gets reduced market and price uncertainty as he or she transfers the produce to the firm without losing control of the production process (Hobbs 1996). Production management contracts require the farmer to adopt specific growing practices, input regimes, and post harvest management practices under the technical supervision of the firm. Resource-providing contracts require the firm not only to provide a market outlet for the farmer's production, but also to deliver specialized input packages and supervision to the production process. Hence, the firm obtains full control of the farm and the farmer almost becomes an employee. Resource-providing contracts are the closest situation to full vertical integration (Hobbs 1996; Key and Runsten 1999; Singh 2002). Beyond these three main categories of contract, many other forms are possible.

The selection of any of these contractual forms varies according to the type of commodity, the characteristics of the agents, and the market conditions for a given period of time (Hill and Ingersent 1982; Key and Runsten 1999). Although the firm decides on its organizational strategy, the farmers, in turn, can choose to engage in a contract or to sell the harvest on another market.

Delivery contracts between smallholders and agroindustrial processing firms are usually considered a device for reducing risk and a strategy

for guaranteeing continuous supply (Glover 1987; Grosh 1994). For the start-up of nontraditional agro-export production, contracts provide farmers with security and facilitate necessary investments. In practice, however, a wide variety of contractual agreements coexist, and local farmers may be able to negotiate different delivery conditions that serve their particular interest (Key and Runsten 1999). Contractual arrangements can differ in the conditions of price and payment, the services provided, quality and production requirements, and input supply provisions (Grosh 1994). The aim of this case study is to illustrate that different contract forms may coexist. We present and analyze the contracts that pepper farmers engage in with pepper processors in Costa Rica.

Stakeholders

Pepper Production in Costa Rica

Pepper (*Piper nigrum* L.) production started in Costa Rica in the 1970s as an experimental crop for large plantations. The pioneer was the North American entrepreneur Charles Hunter, who started a plantation of about 15 hectares (ha) and a small processing facility in the northern region of Sarapiquí. The importance of pepper increased, and the crop expanded rapidly in the lowlands of Costa Rica and covered a maximum area of 500 ha in 1990 (Rojas Zúñiga 1994).

From the mid-1980s onward, small farmers from Sarapiquí also started to cultivate peppers. Laborers from the Hunter's pepper plantation took some seedlings home and started cultivating them in their own plots, selling the harvest to Hunter's enterprise, which had promised to buy it (Vega, personal communication). In 1987 another North American entrepreneur, Walter Kinsing, started a new production and processing company: Pimienta y Especias de Centro América S.A (PIMECA S.A.) and entered the market with his own 65-hectare plantation (Cubillo, personal communication)[2]. By 1988 the Costa Rican land reform agency, the Institute for Agrarian Development (IDA), started a promotion campaign for pepper as a nontraditional crop for small and medium-scale producers (Rojas Zúñiga 1989). This activity received strong support from the Coalición Costarricense de Iniciativas de Desarrollo (CINDE)—a nongovernmental organization (NGO) funded by the U.S. Agency for International Development (USAID)—in line with the export promotion activities within the framework of the structural adjustment program and trade reform policies.

The major share of Costa Rican pepper production is currently located in farmers' settlements in the Huetar Norte region. The current cultivated area is around 74 *manzanas* (52 hectares), the average plot is 1.22 mz, and production has increased to 2,458 kilograms (kg) per year, most of which is processed and sold in the domestic market.

The marketing chain for pepper is relatively short and uniform. Farmers sell their harvest individually and directly to wholesaler-assemblers that process it to produce dried black or white pepper and take care of packing. Processors can sell on both the national and the international market. For the international market, pepper is packed in sealed bags of 50 kg and sold either to a broker or directly to a wholesaler. The broker sells pepper on the spice market, and wholesalers repack and distribute the pepper to retailers. In the national market, pepper is sold directly to food industries that repack the pepper for retailers or use it as an input in processed food. A small fraction of the processed pepper is directly distributed to retailers or restaurants.

Methodology of Study

This study builds on data collected from 50 producers (representing about 65 percent of all pepper producers). Because a list of pepper producers was not available, farmers were found through snowball sampling. More information on the production zones was available through the IDA and the National Geographic Survey Institute. Three processing companies to whom the farmers supplied their pepper crop were identified.

The largest and most enterprise-oriented actor is Company A.[3] This company has been active in the pepper market for 12 years and owns the largest processing plant with an advanced technology level. The company specializes in the production of white

[2] Ing. Abdenago Cubillo and Ing. Carlos Vega are local experts who were interviewed in 2000.

[3] The names of the companies have been left out in order to respect the anonymity of the companies that provided information for the case study.

pepper,[4] and most of the production is sold to an international food processor based in San José, Costa Rica. Company A does not grow pepper itself but is exclusively a processing company that obtains the raw produce from smallholders. Its relationship with the farmers was initially based on verbal agreements, but since 1998 the company has also offered written contracts.

The other agroprocessor, Company B, operates a smaller plant with simple technology and is predominantly a producer-processor; it owns a large plantation of about 110 ha of pepper at different stages of growth. In the year 2000, Company B started to buy pepper from small producers to smooth its supply and keep the plant running at maximum capacity. Plant diseases have forced the company to renovate most of its own plantation. Company B processes black pepper and prefers to sell in the international market, but currently the processed pepper is sold domestically because the company claims that with its current low output, transportation costs are too high to allow for profitable sales abroad.

Company C is a small private producer/processor in the northern zone, owned by a former small pepper producer, that used to sell the harvest to Company A. Company C decided to start doing its own processing, however, when Company A refused its harvest several times owing to quality considerations. It is a very simple, small-scale plant and produces only whole-grain black pepper for the domestic market. By the year 2000, Company C started buying regularly from other farmers. Although this firm claims to work without any type of agreement, some farmers stated that they do have an informal agreement, in which the processor promises to buy their harvest on a fixed day and the payment is made in cash at the moment of the transaction.

Table 1 summarizes the characteristics of the three companies. Part of the pepper sales take place without any prior arrangement, especially when processing firms face limited supply. The contractual arrangements include various obligations for the farmer regarding the use of specified seedlings, input applications, and frequency and place of delivery. Obligations for the buyer refer to the price paid for pepper, the payment system and the provision of technical assistance.

Most important differences between the three buyers are related to the types of guarantees used for enforcing delivery, the procedures for price determination, and whether instantaneous or delayed payments are preferred.

In addition to these three processors, there are also an unidentified number of other intermediaries that buy directly from the farmers, but only sporadically (for instance, once or twice a year). They act mainly as middlemen between farmers and food-processing companies making emergency purchases when facing problems with their regular supplies of pepper.

Contract Types According to Region

In terms of the farmers selling pepper, we distinguish a region where only Company A is active (where Company A has a monopsonic market) and a region where all three companies procure pepper from farmers. Table 2 gives an overview of the distribution of farmers over contracting arrangements. Five contractual conditions are identified, namely: (1) farmers with written contracts in a monopsony market; (2) farmers with verbal contracts in a monopsony market; (3) farmers delivering without any contract in a monopsony market; (4) farmers with verbal contracts in the competitive market; and (5) farmers delivering without any agreement in the competitive market.

The essential difference between the contracts provided by the companies refers to product and process specifications. Written and verbal contracts by Companies A and B are defined as resource-providing arrangements that include input delivery and technical assistance. These contracts closely resemble quasi-vertical integration based on long-term co-investment activities (Hobbs 1996). For Company B, resource provision is part of a strategy of backward integration aimed at supplementing raw material delivery to the processing plant. On the other hand, verbal agreements provided by Company C are strictly market-specification contracts that are limited to provisions regarding price, delivery time and quantity. The latter types of arrangements refrain from any involvement in the production process and are limited to simple product delivery specifications.

[4] The company can also produce small amounts of black pepper at the request of its main customers.

Table 1: Main Characteristics of Processing Companies in the Study

Buyer/ Characteristics	Scale	Region of influence	Technology level	Years of experience	Years of relations with small farmers	Target market	Types of agreements with farmers
COMPANY A • Agroprocessor • Preferred supplier arrangements	Large	San Carlos, San Ramón, Sarapiquí	High	10	10	National and inter-national	Written contracts, verbal agreements
COMPANY B • Agro-processor-producer • Vertical integration	Medium	Grecia	Middle	12	Buyer: 9 Agreements : 5	National and inter-national	Verbal agreements
COMPANY C • Producer–small processor • Delivery dates	Small	Sarapiquí, Grecia	Low	Processor: 5 Producer: 10	2	National	Informal and verbal agreements
Intermediaries • Buying for Costa Rican or Nicaraguan processors	Very small	Guatuso, Chachagua	Low	1–2	1–2	National and inter-national	None, buy only sporadically

Table 2: Sample Size for Each Contractual Condition

	Contracting arrangement			
Type of market/main buyer	**Written contract**	**Verbal agreement**	**No agreement**	**Total**
Monopsony market				
Company A	9	11	3	23
Competitive market				
Company A		7	3	10
Company B		9	1	10
Company C		4	3	7
Total	9	31	10	50

It is hardly possible to establish a preference ranking between agreements on the basis of the differences described. Selection of specific agreements mainly depends on the needs and preferences of particular farmers. Poorer and less-endowed farmers may prefer a written contract to a verbal commitment or no commitment at all. In terms of input and service provision, farmers will generally be better off with an agreement from Company B. On the other hand, when farmers prefer flexibility, rapid payments, and few restrictions, they will probably choose Company C.

To identify what types of farmers typically engage in contractual delivery of pepper to local buyers, we compare the farm-household and production characteristics in each market segment in Table 3. Farmers with an agreement operating in the competitive market generally own smaller, less fertile farms on flatter land. More experienced and less educated farmers in this market segment prefer verbal agreements over no agreement. In addition, land is more intensively used, although their pepper production is lower than that of farmers with no agreements. Producers operating in the competitive market with verbal commitments own older pepper plantations but obtain a lower procurement price. Finally, these producers use more technical assistance than farmers with no agreements.

On the other hand, the monopsony market segment contains mostly younger farmers with smaller farms and more specialized farming systems. They operate more recently established plantations that are larger in size but have considerably lower productivity. Most farmers are affiliated with farmers' organizations in order to reinforce their bargaining position. Further analysis shows that farmers contracting with Company B depend the least on pepper production but achieve better yields, whereas farmers delivering to Company A are usually poorer and more engaged in off-farm activities, thus requiring additional technical assistance.

Comparing farm-household characteristics with different types of contracts reveals written contracts only among farmers in the monopsony region. Such contracts offer a guaranteed minimum price and assure a purchase commitment by the firm for a period of 15 years, which reduces the farmer's price and market risk. Young, better-educated producers who own small farms, have less farming experience, and have limited land endowment and investments in pepper usually prefer formal or written contracts. Moreover, farmers with contracts have lower incomes and rely more on other nonagricultural sources of income. Therefore, farmers relying on formal contracts are likely to have reduced risks during the initial establishment phase (two years without harvest). Producers engaged in pepper production under verbal agreements, on the other hand, are generally older, have less formal education, and have been farming for a considerably longer period of time. They operate more mature plantations and seek guaranteed market outlets. Finally, farmers without any contractual arrangement own the largest farms and the largest investment in new pepper plots. They achieve the highest pepper yields but prefer to remain independent in their marketing operations. Besides, they have a higher share of their income from other commercial crops and rely less on income from nonagricultural activities.

The comparison of market segments and contractual arrangements shows that especially less educated, poorer farmers with limited farming experience prefer a verbal contract. Since they own older plantations and are strongly dependent on pepper revenues, they have to rely on risk-minimizing marketing strategies (Magnusson and Ottoson 1996). On the other hand, larger farmers that maintain younger, high-yielding pepper plantations are more likely to rely on spot market exchange as part of their risk diversification strategy. Pepper prices are slightly higher in the competitive market, and farmers without a contract were even able to negotiate a more attractive price.

Table 3: Farm-Household Characteristics According to Type of Agreement

	Monopsony market			Competitive market	
Variable	Formal contract	Verbal agreement	No agreement	Verbal agreement	No agreement
Number of cases (N)	9	11	3	20	7
Farm characteristics					
Farm area (*manzana*; 1 mz = 0.7 ha)	12.30*	15.00	34.6*	27.2	73.10
Soil fertility (3 = high)	2.67	2.36	2.00	1.90*	2.14*
Drainage (1 = good)	.45	.36	.67	.25	.14
Soil erosion (1 = yes)	.56	.18	.33	.25	.29
Mountainous land (1 = yes)	.78*	.36*	.67	.70**	1.00**
Household characteristics					
Household size (number of persons)	4.70	4.50	5.00	4.50	3.40
Age of head of household (years)	39.70**	48.00**	37.00	50.60	47.90
Education level (secondary = 1)	.78***	.18***	.67	.45*	.57*
Farming experience (years)	17.20***	33.50***	20.30	32.90*	21.00*
Off-farm employment (1 = yes)	.67	.36	.33	.60	.43
Gross household income (US$/year)	4,231*	5,205	16,054*	6,752	4,344
Income from other nonagricultural activities (share of gross household income)	39.02**	32.50**	3.02**	24.02	41.52
Production system characteristics					
Share of arable farm land (%)	52.9	45.80	84.40	40.90***	9.40***
Experience in pepper production (years)	5.60	7.00	9.30	6.80	8.60
Area of pepper in production (mz)	.91	.79	.83	.64	.52
Area of pepper not in production (mz)	.27***	.67	1.87***	.47	.63
Age of plantation (years)	3.80	6.30*	3.0*	6.5*	4.6*
Degree of specialization (share of arable land under pepper)	29.20	36.00	25.40	31.00	24.10
Pepper yield (kg/ mz per year)	3.64	3.22	3.65	7.25	8.43
Output index[a]	.80	.61**	1.44**	1.07*	1.42*
Mean price of pepper sold (US$)	.90	.90	.90	.92***	.94***
% of income from commercial crops (share of gross household income)	21.00	17.50*	25.76*	13.50	8.04
% of income from cattle production (share of gross household income)	3.00	11.05	5.82	20.66	17.28
% of income from pepper (share of gross household income)	30.20	31.50	22.30	34.76	33.12
Institutional characteristics					
Use of technical assistance (1 = yes)	1.00	.91	1.00	.80**	.57**
Use of credit (1 = yes)	.56	.55	.67	.35	.14
Member of farmers' organization (1 = yes)	.67	.55	1.00	.30	.43

Note: T-test and ANOVA test of significant differences of means: *** significant at 1% level; ** significant at 5% level; * significant at 10% level.

[a] The output index is calculated by considering the yield reached by the farmers compared with the attainable yield for the corresponding age of the plantation, as published in technical manuals for pepper production. An index of less than 1 indicates that yield is below the prescribed value.

Policy Issues

Contracts as Insurance Devices

This analysis has revealed that younger and better-educated farmers with limited land endowments and investments in pepper prefer written contracts rather than verbal agreements. Farm households with nearly 40 percent of their income derived from nonagricultural activities follow a risk-management strategy to cope with liquidity constraints. Although this strategy might have negative effects on production efficiency, for low-income farmers it tends to be the preferred option for smoothing consumption (Key and Runsten 1999). Therefore, these households opt for the insurance provided by a written contract before engaging in the production of specialized nontraditional crops. Contracts offer insurance against price fluctuations and the uncertainties related to finding appropriate market outlets. Income-constrained farmers are willing to accept the conditions imposed by a written contract simply because they do not have enough sources of income to cope with market and price uncertainty, even when the price conditions stated in the contract are less favorable than those offered in the spot markets.

On the other hand, farmers without agreements are far less dependent on single agricultural activities. They derive income from other commercial crops that enable them to cope with uncertainties related to the pepper market. In summary, the more farmers rely on pepper production for their income generation, the more they need a stable contractual arrangement with a buyer.

Another interesting result of the analysis is that income diversification has a direct effect on contract choice. Income from other commercial crops provides farmers with bargaining power that enables them to refrain from contractual ties, whereas income derived from nonagricultural activities seemingly does not generate the same effect. A possible explanation is that the latter income is composed of several sources, ranging from non-agricultural wage labor to remittances from relatives outside the household. This income composition may restrict its use for production purposes. Conversely, income from other commercial crops is entirely under the farmer's control and can be applied according to his or her own criteria. In addition, off-farm activities restrict farmers' labor availability in critical periods and could thus reduce the labor intensity required for critical crop management practices in pepper production.

Contracts as Incentives

This analysis has shown that contracts provide an important incentive for more intensive input use, but also tend to induce a shift toward hiring wage labor to replace family labor (see Sáenz-Segura 2006, 50, for details on the impact of contracts on pepper production systems). This finding only partly confirms the hypothesis that contracts improve certainty for small-scale producers and hence increase their willingness to invest. The fact that mainly less-endowed farmers choose contracts points in the same direction. Contracts clearly improve access to inputs and information, thus reducing existing market failures. Consequently, contracts could complement policies aiming at more efficient land use systems. Even when farmers are equally informed about suitable land management technologies, those with contracts are likely to implement more soil conservation practices.

It has been argued that different types of contracts may have adverse effects on the adoption of soil conservation measures (Rickson and Burch 1996). Short-term production goals imposed by the processing firms may restrain farmers from adopting soil conservation practices, which usually demand large amounts of labor time. Moreover, markets for specialized inputs and services are usually inaccessible to low-income farmers (Key and Runsten 1999). In the pepper case, products such as organic fertilizers and calcium not only contribute to maintaining good soil conditions, but also help prevent fungi attacks. Farmers facing budget constraints often cannot maintain the whole technical package (that is, fertilizing regimes) designed for export crops and rely more on the exploitation of their soil nutrient stocks.

In the monopsonistic market segment, the buyer offers resource-providing contracts, which mostly focus on seedling provision and technical assistance. Therefore, resource-constrained farmers would look for the insurance of contracts before investing in disease prevention and soil maintenance practices that increase their asset specificity. Actually, the contract functions as a catalytic vehicle to entice

these farmers toward risk-taking behavior. In the competitive market segment, one of the buyers offers a resource-providing contract that includes fertilizer and pesticide supply, resulting in higher use of biocides and soil maintenance inputs by contracting farmers. On the other hand, farmers with no agreement pay little or no attention to these practices. A possible explanation is that this category of farmers is younger, has less farming experience, and has more land availability. Even though they achieve higher yields in pepper production, they consider the crop a second-best option from which they derive some additional income while spending little time and limited investments on crop maintenance and soil conservation activities. Farmers without contracts thus sidestep the early nonproductive phases of pepper production and use idle land with good soil nutrient stocks rather than investing in soil maintenance activities.

Contracts for Market Information

The effects of contracts under different market situations show that local monopsonies might generate rather perverse incentives for making fixed investments in pepper plantations compared with situations where competition between buyers exists. Recorded per hectare yields in the monopsony region are substantially lower than in the competitive market region, even when farmers use more inputs. Local monopsonies could favor a transition toward more capital-intensive production systems, especially when relying on resource-providing contractual regimes that temporarily reduce input costs. This situation points to close complementarities between decisions about technology choice and the type of market organization.

Farmers with no contractual arrangements have less access to market information, use less credit, and are more willing to deviate from a potential agreement with the buyer. Providing accurate information about the required amounts and desired quality characteristics is crucial for efficient product coordination between farmers and buyers (Key and Runsten 1999). Information about the structure of the market is also important to prevent false expectations and adverse selection problems. This need is especially relevant for less-experienced farmers operating in the rather closed and specialized pepper market. Farmers who produce pepper only as a diversification crop can accept the risks associated with missing market information. Hence, they will not allocate many resources to obtaining this information on their own. On the other hand, farmers with contracts are usually better informed and more committed to the agreement with the buyer. Resource-providing contracts are likely to encourage input intensification, particularly in the competitive market segment. Similarly, contracting farmers are less likely to deviate from delivery arrangements, mainly because they are aware of their limited bargaining power in relation to the buyer.

Although asymmetric information is always present between buyers and sellers in developing countries, contracts can provide an appropriate mechanism to cope with market information problems. The loyalty of farmers is likely to be more related to their lack of bargaining power, however, than to the availability of market information. The fixed cost of obtaining accurate market information may be prohibitive for income-constrained farmers, and they are therefore fully dependent on the information provided by the processing firms.

Policy Options

Public and Private Roles for Contract Development

Although contracts are essentially private, there is still an important place for public action to safeguard the efficiency, equity, and sustainability of supply chain cooperation. Contract farming can become an integral part of agrarian policy, where the government, together with the farmers and firms, joins in the effort to create a conducive local production environment. This strategy should include public interventions to regulate market access (that is, to define a framework for legal enforcement and legal resources), to promote farmers' organizations, and to provide information and control (that is, to define minimum public grades and standards). Through these interventions, a framework can be implemented to enhance bargaining power and reduce the institutional risk for smallholder producers willing to participate in contract farming.

With regard to the definition of public grades and standards, it is important to note that in the pepper supply chain, small- and medium-scale

processors are dealing with smallholder producers. None of these actors usually has the capital and human capacity to create and implement private grades and standards (G&S), but the implementation of formal grades and standards is key to the future development of the supply chain. Clear rules of measurement defined by a recognized authority and a clear system of classification could improve chain coordination and reduce distrust between contracting parties. In the case of pepper, product quality has been determined by simple visual inspection. These "rules" are informally transmitted to producers by technicians and other experienced producers, and disputes over rejection rates are frequent. Owing to the absence of G&S, this study could not establish a positive relationship between contractual arrangements and quality performance. This situation suggests large inefficiencies in quality assessment procedures and lack of agreement on G&S. The government and local university can play an important role in defining minimum G&S and providing information on new market opportunities and characteristics, while forming a consensus on desired behavior along the supply chain. One strategy for promoting local sustainable production could be to facilitate a variety of contractual terms that are all based on well-established G&S. This strategy would require private-public alliances in pursuit of agreements on product and processing standards.

The government also has a role to play in providing research and development in order to create opportunities for product innovation and differentiation, which tend to be steered by agents close to the retail sector. Therefore governance structures in the production chain could contribute significantly to the government's R&D and thus play an important role in successful innovation and differentiation.

In general, the government (and voluntary agencies, like NGOs) could strive for greater integration of small-scale producers in the supply chain as part of a strategy of integrated rural development. In the case study presented, the degree of integration is limited and highly dependent on contract terms. Pepper is processed upstream in the chain, and the limited number of processors leads to a quasi-monopsonistic market environment. The level of upgrading is limited to simple compliance with the standards of the domestic processor. All in all, pepper is an attractive nontraditional crop for farmers who wish to diversify, if the contract arrangements provide them an honest price. Pepper can be produced in Costa Rica at relatively low prices, and there is still some unsatisfied domestic demand. Moreover, there is potential for export, but local production is still insufficient for processors to offset the export costs.

Assignment

Your assignment is to recommend a government policy to assure an acceptable level of competition and to facilitate increasing incomes and reduced risks for low-income pepper farmers.

Additional Readings

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