

COLLABORATIVE WORK IN THE LABOR (ARM) IN THE PRODUCTION OF HARD CORN IN THE PROVINCE OF LOJA

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Abstract: In Ecuador, the province of Loja is located in third place in the production of hard corn, characterized by being cultivated in winter, only once a year in the cantons of Celica, Pindal and Zapotillo. For the most part, they are family crops that follow the process of sowing, cultural work and harvest, three agricultural activities that use labor, qualified by experience or training; a stratified random sampling was applied to the producers of hard corn with the use of surveys and checklists in focus groups considering the centers of activity such as planting where the work of clearing the forest, burning brush and, with the first winter rain, we proceed to sow without tilling the land, resulting in a decrease in the cost of labor; in cultural work: fumigation and fertilization; and, in the harvest: the collection, stacking and shelling of ears, activities that affect the cost; To reduce labor costs, the sectors of influence carry out a task called arm, which consists of organizing the help of one to four people to develop agricultural activities in a barter between neighbors, all depending on the extension of the cultivated hectares. The agricultural work carried out by the small, medium and large producer called arm is not recognized in Ecuadorian legislation regarding the work modalities stipulated in article 11 of the Labor Code; In order to avoid contractual problems in the workplace, article 3 regarding the exceptionality of paying remuneration to the members of the arm must be reformed.

Keywords: Arm, labor, cost, hard corn, Loja.

INTRODUCTION

The production of hard corn in the cantons of Celica, Pindal and Zapotillo in the province of Loja, are mostly family crops and is done largely manually, they are established as productive phases, Sowing, *Cultural Labor and Harvest*; three centers of agricultural activity that use labor, qualified by experience or training.

Porter (2006) argues that the value chain serves as an analytical means to examine and understand primary and support activities and thus identify potential sources of differentiation and costs. The value chain established in the production of hard corn has as a priority to reduce labor costs in the aforementioned centers of activity, in the sectors of influence an agrarian work called *arm* is carried out, which consists of the support between neighbors and relatives who They are organized in groups of one to four people, optimize economic resources and influence the standardization of labor costs within the value chain.

Considering that no work is free, the employer will be obliged to pay a remuneration for the work done, except in cases of extraordinary urgency or need for immediate assistance.

Ecuadorian legislation does not recognize the *arm* as a modality of agricultural work according to article 11 of the Labor Code (2005): “a) Express or tacit, and the first, written or verbal; b) Paid, daily, in participation and mixed”. The modalities that apply in agricultural work are wages and tasks.

METHODOLOGY

The descriptive research with a mixed approach was developed in the period from August 2021 to September 2022, on a population of 4,100 hard corn producers, studied from a stratified random sampling model with the use of surveys and lists. of comparison that were applied to 100 maize producers in focus groups of 41 producers in Celica, 24 producers in Pindal and 34 producers in Zapotillo, considering the sectors with the highest productivity of the grass and a minimum extension of five hectares of cultivation.

The variables that directly affect agricultural labor were identified: the qualitative variables

correspond to the *Planting, Cultural Works and Harvest* activity centers with their main and auxiliary activities; In the quantitative variables, unit costs per labor day and total labor costs per hectare are considered. The information obtained was processed through SPSS 26 and Microsoft Excel 2019.

RESULTS

Hard corn producers in the province of Loja are classified as: (1) small producer with five hectares; (2) medium producer with an area greater than five to ten hectares; (3) large producer, who cultivates extensions greater than ten hectares (GAD Zapotillo, 2020). In the cantons of Celica, Pindal and Zapotillo, they carry out a productive process that is structured as a value chain with three activity centers: *Sowing, Cultural Work and Harvesting*, made up of main and auxiliary activities that constitute the cost generators and consume the farmer's resources (Celi et al., 2022), define these centers of activity as:

1. In the Sowing activity center, auxiliary activities are carried out such as clearing the forest, burning weeds and the main activity is sowing. According to the technical observations of agronomy, the land must be tilled and prepared (Zambrano et al., 2021, p.33), In the areas of influence, the use of machinery is restricted due to the irregular relief and bridle paths, proceeding to sow directly without tilling the land with the first winter rain, resulting in a decrease in the cost of labor in this activity.
2. Auxiliary fertilization and fumigation activities are carried out at the Labores culturales activity center.
3. During the Harvest, the auxiliary activities of collecting, piling and shelling the corn cobs are carried out.

In the centers of activity, manual labor is

used to develop agricultural activities that have a direct impact on the cost of labor.

In agricultural work, a cost of USD20.00 per day is established, which corresponds to the labor of the small, medium and large producer, which significantly makes the production processes of hard corn more expensive in the centers of activity of: (1) Sowing, which is carried out in a short cycle, and uses certified seed and two days of labor costs are used for the number of hectares; (2) Cultural tasks, the most extensive in time, of seven days of labor for the number of hectares and, therefore, the one that accumulates the highest costs for labor since it corresponds to the development and maintenance of the crop; (3) Harvest, three days of labor cost for the number of hectares, here the drying of the ears in the plant is presented and its collection must be done in a short time to ensure a good product, obtain profits and reduce the losses, the number of hectares will depend on whether it is a small (5 ha), medium (10 ha) or large producer (15 ha) of hard corn (see Table 1).

To achieve economic gains from cultivation, one must start from maximizing yields with reducing costs, which can be achieved by developing good planning of the work and costs incurred. (Antúnez et al, 2013). With the aim of reducing the impact of the monetary cost of labor, the arm was born as an agricultural work used during the agricultural process in the area of influence and constitutes help between neighbors, family and friends without generating any cost because if receives help, returns with work when the neighbor needs it.

By contrasting the collaborative agricultural work between neighbors and family members carried out in the production of hard corn called brazo and the analysis of the Ecuadorian Labor Code regarding the modalities of work, the legislation must be modified and recognize the brazo as agrarian

work, since at the moment It is not found in this body of law.

Encouraging collaborative work will make it possible to establish agreements between small, medium and large producers; practice that would guarantee the continuity and permanence of the cultivation of hard corn in the area under study.

The concentration of savings in the centers of activity with the use of the arm, is established through the value chain for the production of hard corn in the province of Loja, it includes the main activities (prime costs) and support activities (costs indirect), these are used in sowing activity centers with a duration of 63 days, cultural work 177 days and harvest 5 days, the savings in production in labor costs are 12 days in the cultivation process hard corn from the province of Loja.

The theory of general application of the concentration of costs in the production of hard corn can be established, which proposes that the application of the theory of the arm allows the cultural tasks related to the phenological process and the value chain to be optimized in such a way that labor costs are standardized, having significant savings.

DISCUSSION

In the production of hard corn in the province of Loja, due to its productive characteristics, three centers of activity were established: Planting, Cultural tasks and Harvest, composed in turn by main and auxiliary tasks that require the use of labor, which influences directly in the accumulation of costs for the payment of wages that these agricultural activities require.

The arm breaks the theory and the principle of cost because they are agricultural works with no record of monetary value. In the area of influence the arm is used as a form of work. Under the premise of exchanging work for work, a commitment is made between

Activity centers	Agricultural activities	Number of days	Unit cost	Cost per hectare	Number of hectares		
					Small producer (5 ha)	Medium producer (10 ha)	Large producer (15 ha)
SOWING	clearing of mount	1	20,00	20,00	100,00	200,00	300,00
	brush burning	1	20,00	20,00	100,00	200,00	300,00
	land tillage	0	20,00	0,00	0,00	0,00	0,00
CULTURAL WORKS	Fertilizations	3	20,00	60,00	300,00	600,00	900,00
	Fumigations	4	20,00	80,00	400,00	800,00	1.200,00
HARVEST	Collected	1	20,00	20,00	100,00	200,00	300,00
	Heaped	1	20,00	20,00	100,00	200,00	300,00
	Shelled	1	20,00	20,00	100,00	200,00	300,00
Labor cost savings				240,00	1.200,00	2.400,00	3.600,00

Table 1 Savings in the cost of labor with the use of the arm in the production of hard corn in Celica, Pindal and Zapotillo year 2022

Taken from: surveys applied to hard corn farmers in Celica, Pindal and Zapotillo.

neighbors to carry out agricultural work, which must be typified in article 11 of the Labor Code, which encourages collaborative work within the agricultural sectors, especially those of difficult access and rugged geography.

Camacho et al. (1998), carried out a study in Mexico where they established that by involving local collaborators: (1) the cost of labor is reduced, which optimizes and motivates corn production; (2) permanent monitoring of production costs is required; (3) it is important to improve the quantities to satisfy the needs in the markets; (4) there must be a profit to improve the quality of life of the producers. Research that, keeping the distance, could well be the case of the production that is carried out in Loja.

On the other hand, in the study cited, the divergences were found in the elements that participate in the reduction of cost in the production process of hard corn, where technology and the use of machinery with mechanical plowing and animal traction mediate, reducing the number of wages; In contrast, in the area of influence where the terrain is irregular and steep, the manual work of a greater number of people is required, which is improved when it is organized as

collaborative work called arm, generating a decrease in production costs.

CONCLUSIONS

So that durum corn producers in the province of Loja who have crops: small producer (5 ha), medium producer (10 ha) and large producer (≥ 15 ha), reduce their production costs in agricultural labor, by 54%: in the centers of activity in Sowing, 9%; in cultural work, 31.5%; and in Harvest, 13.5%; they must apply collaborative work. The Ecuadorian Labor Code does not classify agricultural labor called arm, knowing that it is currently used in the production of hard corn.

In order for the producer to reduce production costs in labor or not have contractual problems in the workplace, article 3 referring to the exceptionality of paying a remuneration would have to be reformed, since it has the purpose of contributing to non-profit production. only in particular but to all the members of the arm and thus the cultivation of corn could be sustainable by generating profits that improve the quality of life of the producers.

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