Article

Typology of corn producers in the municipalities of Villaflores and La Trinitaria, Chiapas

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Abstract

Given the importance of maize at the national level, the typification of the producers in the municipalities of greater importance on the participation of the productive system of the corn of the state of Chiapas, is transcendental for the specific design of public policies that favor the increase of the production and the achievement of agricultural development. Due to the complexity of agriculture in the country due to its diversification in terms of production process, behavior and trends. What it implies to envisage the actors in the rural scenario, in terms of their articulation in the territorial space, the availability of technologies and governmental support, as well as their scope and limitations. The objective of this research was to typify corn producers in the municipalities of Villaflores and La Trinitaria, by determining the production conditions, to establish the factors that strengthen the productive units in 2018. Sampling was applied stratified proportional affixation and multivariate analysis by conglomerates, using the hierarchical and grouping Wards methods. The results have identified three types of producers for each of the municipalities, where the variables that marked the differences between types were: age, education and experience of the producer, agricultural area, destination and production costs, type of seed, yields, among other. It is concluded that the production of corn continues to be a factor and central axis for farmers in the region.

Keywords: *Zea mays* L., producer differentiation, productive conditions.

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Introduction

Historically, the cultivation of corn (*Zea mays* L.) in Mexico has been of interest as one of the main agricultural systems of the country, because it is considered as the main food in Mexican society. It is then, that the production of this grain is carried out at the national level; however, the Central West and Southeast regions of the territory contribute more than 58% of the production (FIRA, 2016). In this sense, Chiapas is located in the southeast of Mexico, which is characterized as a state that devotes most of its territory to the cultivation of corn; generating an annual production of 750 094 tons for the year 2017, positioning itself in the sixth national producer state of corn grain under temporary conditions, as well as in the eleventh place for the two agricultural cycles of the same year (SIAP, 2018). The municipalities of Villaflores and La Trinitaria, contribute to the state 87 100 and 41 421 tons of grain corn, respectively (CEIEG, 2018), considering important regions for the participation in the production of this crop.

Derived from the relevance of corn at the national level, there is currently limited research due to the complexity of agriculture in the country due to its diversification in terms of production process, behavior and trends. Therefore, it is essential to characterize or classify agricultural producers (specifically corn), which contributes to the design of public policies for the formation of particular production conditions in the operation of production, provision of technologies and government support in aid. of the increase in production; as well as in the achievement of agricultural development. As held by Vilboa and Díaz (2009), where they emphasize that determining the characteristics of producers and production systems is important for the development of government policies. In this sense, according to Betancourt *et al*. (2005), the classification or classification based on management variables, productive and social, contributes to the decision-making process at the farm level, which allows developing differentiated policies in the production system.

Likewise, López (1996) points out that typologies are a form of abstraction expressed in qualifying terms that identify societies, social action, capital or employment, as well as the substantive nature of social phenomena. Likewise, Paz (1998) mentions that the typology is a construction or grouping of producers, farms or farms that have a certain similarity or similar characteristics; adding that it could also be defined as a methodological tool.

According to Escobar and Berdegue (1990), the typification seeks to group together producers with management characteristics, production and similar techniques; some producers are located in defined geographical areas. Additionally, the Economic Commission for Latin America (ECLAC, 1981) states that the typology of producers serves as a frame of reference for the design and evaluation of sectoral policy, or as an instrument that accounts for the structural factors that determine the behavior of agricultural producers and their probable reaction to various actions of the State.

On the other hand, Amador *et al*. (1995), mentions that the elaboration of typologies starts from identifying groups or types of production systems that present similar potentialities and restrictions to one or more selected elements. Therefore, the elaboration of typologies of agricultural producers is the basis for this purpose; Therefore, it implies to envision the actors in

the rural scenario in terms of their articulation of a specific territorial space, due to their specificity in the system of productive management, the use of natural resources and the transformations that they suffer as a consequence, the technological means employed; as well as its scope and limitations.

The objective of this research was to typify the corn producers in the municipalities of Villaflores and La Trinitaria, Chiapas, as important municipalities in the participation of the productive system, by characterizing the productive conditions, in order to establish the factors that strengthen the productive units.

Materials and methods

The research work was carried out in the municipalities of Villaflores and La Trinitaria, Chiapas, in which the producers are distinguished by engaging in the production of maize in rainy and irrigated water conditions. With respect to the sampling used for the investigation, it is stratified sampling since, in this type of sampling, the population is divided into strata and tends to be more precise than in comparison with simple random sampling. In this sense, according to Vivanco (2005) to determine the size of the sampling strata, they were assigned according to the stratum of belonging, particularly, taking into account the criterion of the concentration 80% of corn producers in the localities belonging to the municipalities of Villaflores and La Trinitaria, Chiapas.

In this order of ideas, it is relevant to indicate that the sample size was calculated based on the list of beneficiaries of Proagro Productivo of the 2017 agricultural cycle, for both municipalities. Hence, Kish (1972) establishes as a reference a range of 3 to 10 strata, given that the advantage offered by the grouping of elements is distorted. Therefore, for the municipality of Villaflores, the stratification of the population comprised of six localities, Villaflores, Jesús María Garza, Villa Hidalgo, Cuauhtemoc, Domingo Chanona and September 16, for the municipality of La Trinitaria for stratification, were considered five communities, with La Esperanza, Santa Rita, Trinitaria, Tziscao and El Progreso selected (Table 1).

Table 1. Stratification of the towns of the municipality of Villaflores and La Trinitaria, Chiapas.

Municipality	Stratus	Location	Ni	Total
Villaflores	1	Villaflores	212	844
	2	Jeses María Garza	189	
	3	Villa Hidalgo	174	
	4	Cuauhtémoc	97	
	5	Domingo Chanona	93	
	6	16 de Septiembre	79	
La Trinitaria	1	La Esperanza	236	992
	2	Santa Rita	235	
	3	Trinitaria	232	
	4	Tzicao	157	
	5	El Progreso	132	

Source: elaboration with data from the Beneficiaries Register of Proagro Productivo, 2017.

Regarding the affixation used for stratified sampling, proportional allocation was determined; since the size of each stratum in the sample is proportional to the size of the corresponding stratum of the population. According to Vivanco (2005), this affixation has the advantage that a self-weighted sample is generated, characterized by the same sampling fraction in all the strata. Subsequently, the following statistical formula that represents the stratified sampling proportional affixation was applied (Vivanco, 2005):

Total sample size.

$$n = \frac{\Sigma_{i=1}^{I} N_i PQ_i}{NE + \frac{1}{N}\Sigma_{i=1}^{I} N_i PQ_i} \qquad E = \frac{d^2}{Z_{1-\alpha/2}^2}$$

Size of each stratum.

$$n_i = n\left(\frac{N_i}{\Sigma_{i=1}^{I} N_i}\right) = n\left(\frac{N_i}{N}\right) = n(W_i)$$

The confidence percentage was 95% and an accuracy error of 10%. Where: N= size of the population is 844 producers for the municipality of Villaflores and 992 producers corresponding to the municipality of La Trinitaria; N_i= size of the stratum population; P_i= expected proportion 20%; Q_i= 1-P_i (1-0.2= 0.8); d= absolute error or accuracy of 10%; $Z_{1-\alpha/2}$= 95% confidence level, therefore $Z_{1-\alpha/2}$= 1.96^2; NE= product of the size of the population due to the estimation error; n= total sample size and n_i= size of each stratum. Then, the estimated sample size n in the case of the municipality of Villaflores and La Trintiaria was 57 and 58 surveys, respectively, which represents the total of the target population of the study area.

In another tenor, to determine the size of each stratum was made by the corresponding formula on proportional affixation, obtaining the sample for each stratum as shown in Table 2.

Table 2. Size of the sample by stratum of the towns of the municipalities of Villaflores and La Trinitaria, Chiapas.

Municipality	Stratus	Location	Ni	Total
Villaflores	1	Villaflores	14	57
	2	Jeses María Garza	13	
	3	Villa Hidalgo	12	
	4	Cuauhtémoc	7	
	5	Domingo Chanona	6	
	6	16 de Septiembre	5	
La Trinitaria	1	La Esperanza	14	58
	2	Santa Rita	14	
	3	Trinitaria	14	
	4	Tzicao	9	
	5	El Progreso	8	

Consecutively, in the selection of the producers to be interviewed, it was randomized by each stratum, for which a constant selection interval was determined. On the other hand, a semi-structured survey was prepared for the collection of information, which included questions related to general data on the agricultural surface area and distribution, yields, volume and destination of the production, ownership and possession of the land, availability of irrigation, cycle agricultural, origin of inputs, type of seed, technological package, time dedicated to production, experience and knowledge in production, production costs, income, agricultural work outside the production unit, non-agricultural complementary activity, government financing, availability of credit, labor force, and production objective.

Regarding the processing of the field data obtained, it was systematized in the Statistical Package for the Social Sciences (IBM SPSS) v25.0 program, in order to determine the typology of the producers of two municipalities. In addition, the information was analyzed using the multivariate statistical technique called cluster or clusters occupying the hierarchical method, which is characterized by starting with individual cases that are being classified to form a single conglomerate; likewise, the method of Wards grouping (minimum inertial loss method), the use of the Euclidean square distance and the 26 variables considered with significant correlation between some of them were carried out; given that it is sought to group variables trying to achieve maximum homogeneity in each group, similar sizes and the greatest difference between them (Bidogeza *et al*., 2009).

Yes, this analysis helps to determine the structural characteristics of a set of observations in order to group them in homogeneous sets, glimpsing the linearity and homoscedasticity of the same. In this regard, it is necessary to take into account the matrix of correlations before the cluster analysis. In which, the descriptive statistics were obtained as minimum, maximum, mean and standard deviation, to determine the average dispersion of all data points around their group mean (not the general average). From there, the grouping method was considered to measure the degree of similarity or difference that the selected cases have. The choice of the distance measure was chosen the Euclidean distance squared, as well as the method of grouping Ward, which minimizes the variance between each group.

Consequently, the average of all the variables in each conglomerate was calculated in the first place. Equally, the distance between each case and the average of the conglomerate, adding later the distances between all the cases. Subsequently, the clusters that generate less increases in the sum of the distances within each conglomerate were grouped.

Results and discussion

Typification of corn producers

The results indicate the existence of three types of producers for each of the municipalities of Villaflores and La Trinitaria. First, for the municipality of Villaflores, three types of producers were obtained, which are described below and are shown in Table 5.

Table 5. Characteristics of the types of corn producers in the municipality of Villaflores, Chiapas.

Name of the variable	Type I	Type II	Type III
Percentage over n (size of sample population)	24.6%	56.1%	19.3%
Age of the producer (years)	61-70	61-70	51-60
Schooling of the producer (years)	Primary	Primary	Primary
Production volume (t)	3.1-4	5.1-6	4.1-5
Destination of production (self-consumption, market, seed)	Market	Market	Market
Type of seed (creole, improved or hybrid)	Hybrid	Hybrid	Hybrid
Type of agricultural machinery and equipment (manual or technified)	Tecnified	Tecnified	Tecnified
Time dedicated to production (years)	36-40	Greater than 40	From 26 to 30
Production costs	$5 000 a $10 000	$10 001 a $15 000	$10 001 a $15 000
Annual income per sale of production	$10 001 a $15 000	$15 000 a $25 000	$10 001 a $15 000
Annual income for work outside the production unit	$1 000 a $5 000	$1 000 a $5 001	$5 001 a $10 000
Annual income per non-agricultural activity	$5 001 a $10 000	$10 001 a $15 000	$10 001 a $15 000
Government support (productive Proagro, Prospera, other programs, state support)	Procampo/Proagro Productivo	None	Agricultural promotion program

Source: elaboration with field data, 2018.

Type I

Producers with ages ranging from 61 to 70 years of age and primary school level. It comprises 24.6% of the population (14 farmers in the sample); they have been producing corn for 36 to 40 years, with a production volume of 3.1 to 4 t ha^{-1}. Product destined to the market with relative revenues of $10 001.00 to $15 000.00 pesos for the sale of production and with governmental support from Proagro Productivo.

Type II

Producers with ages ranging from 61 to 70 years of age and primary school level. It sees 56.1% of the population (32 farmers in the sample), has been engaged in the production of corn for more than 40 years, and considering production volume of 5.1 to 6 t ha^{-1}. The product is destined to the market with higher incomes that fluctuate between $15 000.00 to $25 000.00 pesos and without subsidies.

Type III

Producers with an age that fluctuates between 51-60 years of age and secondary school level. Considers 19.3% of the population (11 farmers in the sample), engaged in the production of corn for 26 to 30 years, with 4.1 to 5 t ha^{-1} of production volume. The product is destined to the market obtaining income of $10 001.00 to $15 000.00 pesos and with governmental support of the program of promotion to agriculture.

Regarding the important variables that determined the difference between types were: the age and schooling of the producer, volume of production, time dedicated to production, production costs, annual income from sales of production, annual income from work outside the unit of production, annual income from non-agricultural work and government support.

Regarding the variables age and schooling, type II producers are those that have between 61 and 70 years and more time dedicated to the production of corn, obtaining a volume of production of 5.1-6 t ha^{-1}. In contrast, type I producers have the same age and school level; however, with less experience in production than in comparison with type I producers, reflected in a lower volume of production. While type III producers have an age that fluctuates between 51 and 60 years, secondary school grade and time devoted to production from 26 to 30 years. So, they become a type of young producers that the producers of type I and II, observing that they have less experience in the production system, but with a moderate volume of production that the type of producer I, being this of 4.1-5 t ha^{-1}.

Which, the degree of education in this type of producers, is a determining factor that influences production, given that while longer years of study, less dedication to production and greater participation in non-agricultural work activities. Likewise, it coincides with Damián *et al*. (2007) and Vilboa and Díaz (2009), where the former states that age and schooling are factors that influence the way of cultivating and the availability of adoption of new technologies and the second, reaffirms that the older, lower producers schooling and greater experience, possess deep-rooted knowledge, regarding the way of producing.

Likewise, Vélez (2013) points out that age and the degree of studies are determining factors that directly influence production and the availability of adopting new technologies; so, the analyzes of these variables are relevant. On the other hand, the producers of this municipality indicate that they dedicate 100% to the production of corn, with an average experience of 36 to 40 years in the activity.

Regarding the volume of production, although the three types of producers have the same level of yields, being on average 2.1 to 3 t ha^{-1}, income from sales of production differ. This is due to the fact that the yield affects in relation to soil conditions, variability in the use of inputs, soil fertility and water availability.

On the other hand, it is observed that differences in production costs and annual income prevail due to the sale of production, among the types of producers. The types I, spend a production between $5 000.00 to $10 000.00 pesos per year with an income higher than $10 000.00 pesos and less than $15 000.00 pesos per year. According to producer types II and III, they pay the costs of $10 001.00 to $ 15 000.00 pesos per year for both cases. However, with regard to the income generated by the sale of the production, it is shown that those that obtain greater economic benefits are those of type II than III.

Yes, the discrepancy over the income related to the sale of the grain, lies in the volume of production and as mentioned above, the experience in production. In the same way, it is determined that with relation in the annual income for work outside the production unit it reaches a level relevant for type III, that in comparison to the types of producers I and II, because of age and strength of work, which gives success of inserting mainly as day laborers.

Additionally, producer type III generates a significant added income from non-agricultural activities, such as breeding and exploitation of animals, service provider (carpentry, maquila, masonry and blacksmithing), or commercial businesses (store, informal trade, nixtamal mills), which in relation to type I and II. Given that, the farmers of this group are younger and the higher educational level, which requires the management of basic operations, so that they contribute to having better possibilities to engage in a different activity than agriculture.

In addition to Arias (2009), where agricultural production is no longer sufficient, producers need to diversify their sources of income through pluri-active activities. In this sense, the idea is shared with other authors such as Ellis (2000), who argues that agriculture finds new ways of adapting to the new rural context, derived from activities subject to climatic uncertainty, the depletion of factors production and dependence on corn as the only activity; being insufficient aspects that contribute to the support of families in the rural sector. In this sense, as Barret *et al*. (2001), the diversification of non-agricultural survival strategies, allows producers to obtain better yields, improves food security, increases agricultural production, reduces capital constraints and improves the management of seasonality and climate risks.

Similarly, Carvalho and Moesch (2013) states the benefits of diversification of non-agricultural activities in rural areas, consist of the increase of economic resources, which encourages economic, social and environmental development. In addition, the diversification opportunities contemplate the added value to the agricultural production, the rescue of the traditions, techniques, productive processes, among others.

In the same way, it is emphasized that the government financing received by this group is through the Agriculture Promotion Program, in order to increase productivity through economic incentives with priority crops such as corn, and market potential. In comparison with the type of producer I, who receives subsidies through the Proagro Productivo program, where he receives an economic supplement for production; however, other investigations in this regard indicate that the resource is destined to other primary needs different from those intended. So, the production of corn is affected despite having such support.

While, the group of producers type II, do not receive any government support, on the contrary, they have higher income, derived from the volume of production and the time dedicated to the activity. In addition, it shows that, in this type of producer, despite not having any type of support, has the same performance as those of group I and III. Which, it has been found that government support does not impact yields, given that the financing they receive from the government for agriculture in their different programs are consigned as a way to reduce total production costs; and the producers, do not necessarily allocate this income for that purpose, but reserve it as a support to the family income.

The foregoing is explained in research conducted by Ayala *et al*. (2013), where it stands out that the support of Procampo (currently Proagro Productivo), reduces the total production costs, however; this resource is not always destined in the production process, or in its absence, the support does not always arrive on time, which does not allow them to occupy it in the productive process.

Secondly, regarding the typology of producers for the municipality of La Trinitaria, three types of producers were determined in the same way, as shown and shown in Table 6.

Table 6. Characteristics of the types of corn producers in the municipality of La Trinitaria, Chiapas.

Name of the variable	Type I	Type II	Type III
Percentage over n (size of sample population)	44.8%	36.2%	19%
Age of the producer (years)	61-70	61-70	51-60
Schooling of the producer (years)	None	None	Primary
Production yield (t ha^{-1})	1.1-2	2.1-3	1.1-2
Production volume (ton)	2.1-3	3.1-4	2.1-3
Destination of production (self-consumption, market, seed)	Self-consumption and seed	Self-consumption and market	Self-consumption and market
Type of seed (creole, improved or hybrid)	Creole	Improved	Creole
Type of agricultural machinery and equipment (manual or technified)	Manual	Manual	Manual
Time dedicated to production (years)	36-40	36-40	31-35
Production costs	$5 000 a $10 000	$10 001 a $15 000	$5 000 a $10000
Annual income per sale of production	$5 001 a $10 000	$10 001 a $15 000	$5 001 a $10 000
Annual income for work outside the production unit	$5 001 a $10 000	$1 000 a $5 000	$1 000 a $5 000
Annual income per non-agricultural activity	$1 000 a $5 000	$25 001 a $35 000	$10 001 a $15 000
Government support (productive Proagro, Prospera, other programs, state support)	None	None	State support dawn

Source: elaboration with field data, 2018.

Type I

The age of the producers fluctuated between 61 and 70 years of age and no schooling. It comprises 44.8% of the population (26 farmers in the sample); they are dedicated to the production of corn, with an agricultural surface of 1.1-3 ha, production yield between 1.1 and 2 t ha^{-1}, creole seed, with production costs of $5 000.00 to $10 000.00 pesos and income of $5 001.00 to $10 000.00 pesos for the sale of production and do not count on governmental support of any kind.

Type II

Producers with ages ranging from 61 to 70 years of age and without any degree of education. Distinguishes 36.2% of the population (21 farmers in the sample); are devoted to the production of corn, the agricultural area that farmers have is 3.1 to 5 ha, with production yield between 2.1-3 t ha^{-1}, improved seed, production costs ranging between $10 001.00- $15 000.00 pesos and with incomes between $10 001.00 to $15 000.00 pesos and without government financing.

Type III

Producers with an age that fluctuates between 51-60 years of age and primary school level. It includes 19% of the population (11 farmers in the sample); that incursionan in corn production, with agricultural land that farmers have from 1.1 to 3 ha, production yield between 1.1 and 2 t ha^{-1}, creole seed, production costs of $5 000.00 to $10 000.00 pesos, obtaining little income ranging from $5 001.00 to $10 000.00 pesos and with government support of the state dawn program.

With respect to the relevant variables such as production destination, yield of production, type of seed, production costs and annual income from production sales and government financing, divergences among the three types of producers are found.

Regarding the destination of the production, producer group I and III, is for self-consumption and a part as seed for the next agricultural cycle; as well as the exchange to other producers. For producer type II, it also allocates part of its production to self-consumption and to the market as surplus. In this sense, it is stated that the three types of producers of La Trinitaria, allocate part of the production for self-consumption, as a form of subsistence food in the family unit or food for the breeding and exploitation of animals.

In this way, as Viveros (2010) points out, producers articulate in a consistent way between agriculture and livestock. Therefore, producers such as type II, which part of the harvest is destined for sale, is due to the fact that they have surplus production. In this regard, Martínez *et al*. (2009), mentions that this type of producers is characterized by having a better technological level or type of seed; as well as a greater use of inputs.

In fact, it can be seen that the type of producer II, although it does not consider any technological package and technical assistance, if it has an improved type of seed compared to types I and III, that the use of seed is creole. What it achieves for type II, have higher yields and volume of production being 2.1-3 t ha^{-1} and 3.1 to 4 t, respectively. Because, the improved seed type is derived from the crossing of different varieties of the same species that seek to be more productive; but that require greater amounts of chemical inputs. In addition, it is reflected that the advantage of producer group II is that maize farmers have a larger size of cultivated land. According to Sangerman *et al*. (2009), the use of technologies is associated with other factors, such as cultivated land, tenure and land rent, as essential components for greater profitability.

As for the production costs of producer group II, they are higher than those of type I and III; being a cost for the first from $10 001.00 to $15 000.00 pesos, with respect to the second from $5 001.00 to $10 000.00 pesos. This is due to the fact that, in the structure of costs, the item with the greatest impact is the input of the improved seed. In this sense, the acquisition of improved seed provides higher yields per hectare and is where producers spend more, due to the high price of improved corn seed, since it is purchased in the domestic market as international, but it depresses the level of competitiveness of the production unit, in terms of cost benefit ratio.

Additionally, occupying improved seed with greater yield potential and intensive production system, incurs in requiring greater quantities of water and chemical fertilizers, which is a sign of affecting the economy of the producers in the disbursement of demand for these items. In addition to the high market prices of water resources fertilizers. In this tenor, as expressed by Borja *et al*. (2014) in the study of the management and profitability of vineyards in Aguascalientes, there are important differences in production costs as a result of the practices and agronomic management of the production system.

However, producers of type I and III who have Creole seeds for planting have an advantage because they are of different varieties for each of the farms in different agro-environment and that show greater resistance to face unfavorable climatic conditions such as atypical frosts or delays of rains. Without representing greater expenses to obtain it from the exchange between producers or selection of the previous harvest, except from the producers who buy the seed from other farmers. In this way, when using creole seed, it significantly reduces the cost of production in relation to the use of improved seed, as well as the expense in the requirement of more inputs. The foregoing converges with what Guillen *et al*. (2002), where the preference for local varieties is explained by its low cost, as well as its adaptation to climatic conditions, in addition to the producer knows the management of the seed and gives him the possibility of continuing to use his crop as seed.

Regarding the annual income from the sale of production, specifically for types I and III referred to the sale of seed, it is considered that on average they generate the same income as the cost to produce, so in real terms they do not generate any type of profit. On the other hand, there is talk about the sale of seed, with relative income margins and more product availability for self-consumption. In the case of type II, the margin of usury is greater than in comparison to types I and III, due to the yield and type of seed in production; generating higher production volumes. Regarding the income from work outside the property, the type of producers I and III, besides dedicating themselves to the sale of seed and production for self-consumption, participate in agricultural work outside the production unit, in tasks such as land rental or day laborers, obtaining producer type III modest economic inputs than type I. In contrast, producer group II expresses low income in this variable, given that it presents higher profits from non-agricultural activities.

On the other hand, it is envisaged that with regard to non-agricultural supplementary activities, type II producers are more remunerated than in type I and III. Given the economic possibilities of venturing into commercial businesses such as tortillerías, nixtamal mills, grocery store, among others; or in its defect, in breeding and livestock exploitation. In spite of this, type III producers also generate income from non-agricultural work, but receive lower remuneration than type I producers, derived from the conditions and opportunities in the economic sphere. Although with facilities to participate as a service provider of some trade such as carpentry, blacksmithing, masonry, etc., for being producers of younger age and higher level of studies. While, type I producers receive low income from non-agricultural work, but they obtain income through other means such as the sale of production and activities outside the productive units (day laborers or land rent).

Lastly, with regard to government support, it is pointed out that for both type I and II producers, they do not have any type of public financing. However, type III producers are favored with state support through the Amanecer program, which aims to improve the living conditions of the adult population in situations of poverty, vulnerability and social exclusion.

Conclusions

The agricultural activity is extremely important for the municipalities of Villaflores and La Trinitaria, Chiapas; it is identified that it is the production of corn. In this sense, the typification of corn producers in the territory, helps to distinguish the structure of agricultural production as a whole, according to the similarities or conditions in production; for the design of government policies aimed at strengthening production factors such as: increased production, government financing and availability of technological packages.

As it has been demonstrated, the production of corn continues being a factor and central axis of the productive units of the two municipalities. On the one hand, La Trinitaria is the basis of self-consumption and collection or exchange of seed. And on the other hand, in Villaflores the production of the corn crop is part of its strategy to obtain income through the sale or marketing of the product. Likewise, another strategic way to strengthen their production units is to complement agricultural activities with jobs outside the productive unit through land rental or day laborers; as well as with non-agricultural work through breeding and livestock exploitation, commercial businesses, among others.

Finally, it should be noted that government financing is reflected in the typology of producers in Villaflores and La Trinitaria, through support from Proagro Productivo, the Agriculture Development Program and state support for the Amanecer. Which, lead to lower production costs; however, producers do not always use it in production processes, destining family income. Therefore, it is essential that agriculture be more competitive, driven by the integration of small corn producers in value chains, linked to more profitable markets and innovation in the use of optimal technology for production, in order to promote agricultural development from the agricultural economy and food security of the producer.

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