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Classifying agricultural holdings in Nicaragua: Proposal of a typology based on the IV Agricultural Census

IXMATI - CIRAD



Managua, May 2014



Food and Agriculture Organization
of the United Nations



Investing in rural people



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POUR LE DÉVELOPPEMENT



RÉPUBLIQUE FRANÇAISE

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Acknowledgment and authors

This report presents the main results of a research study that was conducted in the framework of an initiative called World Agriculture Watch (English Acronym: WAW). The aim of WAW is to provide quality analysis on agricultural dynamics in terms of agricultural production and the contribution of agriculture to economic, social and environmental sustainability at various levels. These levels include the assessment of performances of different existing forms of agricultural production in the world, with order to bring the results of the research to the public debate. WAW functional objectives are:

- (1) Documenting the diversity of agricultural sectors, the changes that have occurred in the last decades -which have translated into the conformation of the current national agricultural structures and value chains-, the adaptability of the different forms of agricultural production to current global challenges (climate change, globalization, economic and demographic structural change, employment, etc. .), and their contributions to sustainable development;
- (2) Producing socio-economic analysis, including spatial and temporal perspectives, at various levels (local , national , regional), with a common methodological framework, which can therefore possibly be compared at the global level ;
- (3) Producing tools for action to possibly monitor potential crises and to characterize the vulnerability of forms of agricultural production in the agricultural sectors, drafting tailor-made recommendations to decision makers and key stakeholders in terms of national agricultural and rural development;
- (4) To strengthen the capacity of groups of interests at the local, national, and regional levels, in terms of analysis of relevant information regarding agrarian dynamics, with appropriate methodologies.

WAW proposes a common conceptual and methodological framework, based on a systematic approach that takes into account both the sectoral dimensions of agriculture as well as the social forms of production. Therefore, it seeks to develop typologies of agricultural holdings to better characterize and provide key social, environmental and economic indicators, covering three scales:

- Production units (farms) characterized by their structures (type of labor, farm size, land tenure, financial capital, etc.) and activities (on-farm and off farm, agricultural and non-agricultural activities);
- Agricultural regions characterized by their agro-ecological conditions, which are closely linked to the development of specific production systems,
- Agro-food and agro-industrial markets and value chains, but also land, labor, services, etc. markets.

Classifying and elaborating typologies of agricultural holdings respond to the necessities of agricultural and rural policies objectives. This process will allow a better identification of the socio-productive sectors that are affected by production constraints. It also allows targeting socio- productive sectors involved in commercial high value chains for domestic markets and exports, which contribute to agricultural growth. Finally, a typology of agricultural holdings is a key instrument to identify and geographically locate these different socio-productive sectors, in order to design differentiated policies for different target groups, based on a territorial approach and of planning public resources distribution.

The present investigation presents the results of developing a typology of agrarian farms based on the IV CENAGRO. Its aims is to contribute to the national debate and policy making in Nicaragua. This typology is an academic exercise, but it also mobilized the empirical knowledge of the researchers who conducted it. There are marked differences in the types of farms that have been established, mainly due to the variability of local conditions (ecosystem, biophysical endowments, infrastructure, and social networks). Nevertheless, the typology developed assumes that the local variability and consequent variations in local production systems, generates no significant differences in the socio- productive logic of identified types.

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The research study received contributions from other researchers that were involved in a scientific Committee. This committee has been consulted at different steps of the research process, and it included Peter Marchetti¹, Patrick Dumazert², Arthur H. Grisgby³, Tomas Rodriguez Alas⁴ and Ligia I. Gomez⁵.

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I. Introduction

Historically, economic development and growth in Nicaragua have strongly relied on agriculture. Depending on the periods, different value chains mostly oriented toward exports, have played a major role in agricultural growth and in the Nicaraguan economy: cattle and indigo before 1890, coffee from 1890 onward, agro-industrial crops (banana, cotton, and sugar) in the 1950-70s, cattle and agro-industrial crops (sugar cane, banana, oil palm, groundnut, etc.) from the 1980s up to date. In that context, contrasting political and economic models have been developed by the different governments, to promote agriculture: a model based on modernization paradigms for the development of agro-exports (1950-79), a state-centered model combining the promotion of agro-exports and food production for the internal market (1980-89), and a free-market economy model promoting agro-exports (1990-2006). Recently, the government has oriented the agricultural policy to meet several goals: on the one hand, some public program continue to promote agricultural exports, the value chains being currently controlled by strong oligopolistic companies, which are also well inserted into regional and international markets, to sustain economic growth at the national level; on the other hand, newly designed transversal programs propose to target and enhance family agriculture and marginalized forms of agricultural production (indigenous communities, small scale cooperatives, women producers, etc.), in order to reduce rural poverty and inequality. In that context, classifying agricultural holdings to better target the beneficiaries of the differentiated policies and programs in a core strategic issue for the government.

With 59,000 km² (8.5 million Nicaraguan manzanas) dedicated to agriculture, where more than 4.2 million of heads of cattle are grazing and where nearly 2 million hectares of agricultural land are used for cropping, including grains and agro-industrial crops (INIDE 2011), the agricultural sector is viewed as a key strategic sector in Nicaragua. According to the Central Bank of Nicaragua (BCN, 2013) and the World Bank (WB 2013), agriculture is still the most important economic sector given its contribution to GDP (18.6 per cent), employment (31 per cent) and share of total exports (89 per cent of exports)⁶. It was stated recently in the headlines of one of the two major newspapers in the country in a special analysis of the national economy, Nicaragua is "proudly a huge farm" (El Nuevo Diario 2013).

However, the analysis of the agrarian structure at the macro-economic level allows characterizing a core aspect of the agricultural sector. Since the 1960s, evidences based on agricultural censuses show that in Nicaragua, the vast majority of agricultural holdings are small to medium-size farms, more than half of them own less than 7 ha, and 75 % of total farms own less than 35 ha (Table 1). This situation has changed over time. In the case of agricultural holdings with less than 35 ha, it has been increasing their weight in the agrarian structure, from 78.2 % by 1971, to 80.4 % by 2001 and 85 % by 2011. However, land access have not developed similar path, there was an important land distribution between 1971 (14 % of agricultural land), to 24.8 % in 2001, and in the last ten year a small increment up to 25.5 %. There is a difference of 4.6 percentage points in terms on number of farms, but only 0.7 percentage points in terms of land access.

⁶ The share of agriculture in total exports in the period 2009-12 (88 per cent) evidences the important role of agriculture in Nicaragua's economy.

Table 1 – Evolution of the number of agricultural holdings in Nicaragua (1963 – 2011)

| Census year | 1963 | | 1971 | | 2001 | | 2011 | |
|--------------|------|----------------|------|----------------|------|----------------|------|----------------|
| | # | % of farm land | # | % of farm land | # | % of farm land | # | % of farm land |
| 0-7 ha | 50.8 | 3.5 | 44.3 | 2.2 | 47.4 | 4.3 | 59.4 | 5.6 |
| 7.1-35 ha | 27.4 | 11.2 | 31.5 | 10.9 | 33 | 20.5 | 25.6 | 19.9 |
| 35.1-70 ha | 10.7 | 12.4 | 12.1 | 11.5 | 10.9 | 18.7 | 8.1 | 17.9 |
| 70.1-140 ha | 6.2 | 14.1 | 6.5 | 12.2 | 5.4 | 18.1 | 4.2 | 18 |
| 140.1-350 ha | 3.5 | 17.6 | 3.7 | 15.6 | 2.6 | 18.4 | 2.1 | 19.4 |
| + 350 ha | 1.5 | 41.2 | 1.9 | 47.6 | 0.8 | 19.8 | 0.6 | 19.2 |

Sources: authors

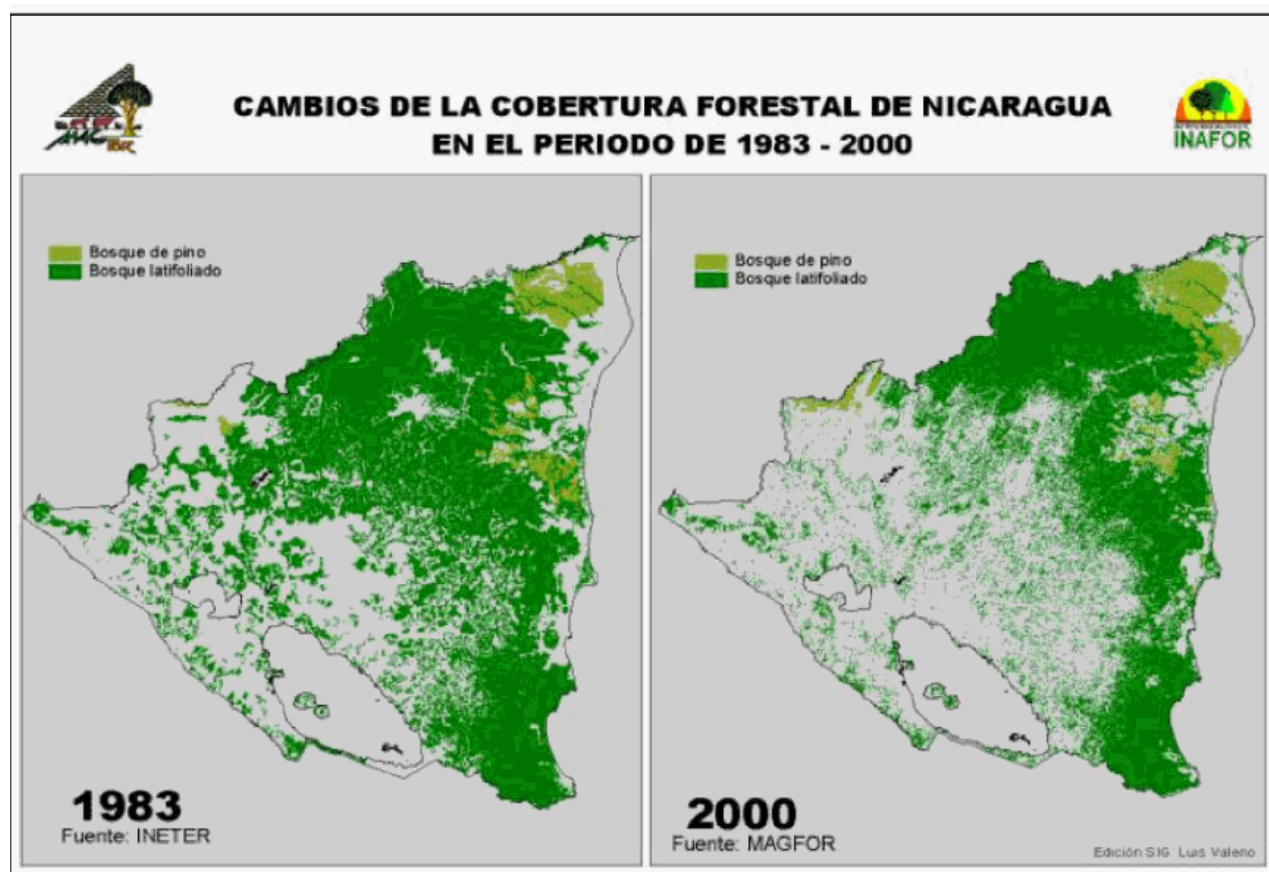
This situation results from the historical conditions in which the development of agriculture in Nicaragua has occurred, based on the advance of the agricultural frontier from the Pacific to the Atlantic Coast⁷ and processes of land concentration in the hands of an agricultural bourgeoisie and an agro-business elite over the time (Perez and Fréguin-Gresh, under review). Up to 1890s -and except in the Atlantic Coast where indigenous people⁸ had developed a relatively small scale agriculture adapted to the “*humid tropical ecosystem, combining crop production with hunting, fishing, and the harvesting of extensive jungle territories, within a dispersed settlement pattern and population densities much lower than in the Mesoamerican zone*” (Pérez Brignoli 2003)-, agricultural production in Nicaragua was mostly centered in the fertile plains of the Pacific (Maldidier and Marchetti, 1996) where various forms of agricultural productions coexisted, from small scale peasant agriculture base on grain production up to large-scale cattle and indigo producers, which were early linked to export markets; between, 1890s and the 1970s, the Central region of the country was progressively colonized in a context of the boom of the coffee production in the country (by both coffee entrepreneurs, small-scale-farmers and landless peoples, the latter being progressively moved from the plains of the Pacific where land concentration in the hands of the agricultural bourgeoisie oriented toward agro-industrial crops for exports was particularly intense). The armed conflicts during the 1980s stopped during a decade the advance of the agricultural frontier, as the Central region and the Atlantic Coast were also the places of serious violence; With the post-conflict reconciliation in the 1990s, the agricultural frontiers moved forward to the East (see map 1), and land concentration continued, even if the processes have changed due to the new international and globalization context.

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⁸ In Nicaragua, according to the 2005 Census, indigenous populations are found throughout the national territory: people with Chorotega-Nahua/Mange, Cacaopera/Matagalpa, Ocanxiu/Sutiaba, Naho-Nicarao/Náhuatl origins in the Pacific and Central-North Regions; people with Miskitu, Sumu-Mayangna, Rama, Garífuna origins and Afro-descendants/Kriols in the Atlantic Coast of the country. However, although the whole population of Central America has indisputably strong indigenous origins, “*a myth of intermixing [‘Mestisaje’ in Spanish] was created as a way of denying the existence of indigenous people in the Pacific, Central, and Northern regions, with the idea [that] the trend towards exclusion and extermination and inferior treatment of indigenous people was heightened, something which is reflected in the different legal frameworks*” (Soto Quirós and Diaz Arias 2007). In this way, the ‘Mestisaje’ which had been particularly strong in the Pacific and Central regions of Nicaragua and Honduras in particular, had resulted in the creation of a population of ‘mestizos’ that have for decades been considered as peasants, excluded from being either Spanish or indigenous, and deprived of rights over NR (Merlet 2002; Mendoza-Vidaurre 2012).

By 2011, the process of consolidation of former (1960s) and new (2000s) agricultural frontier have advance up to concentrate most of the land in few hands. New agricultural fronts are linked to the development of large-scale holding oriented toward cattle production for exports to regional markets (both for meat and dairy) or toward oil palm (for processing and exports) and rapidly expand from east to west and form north to south.

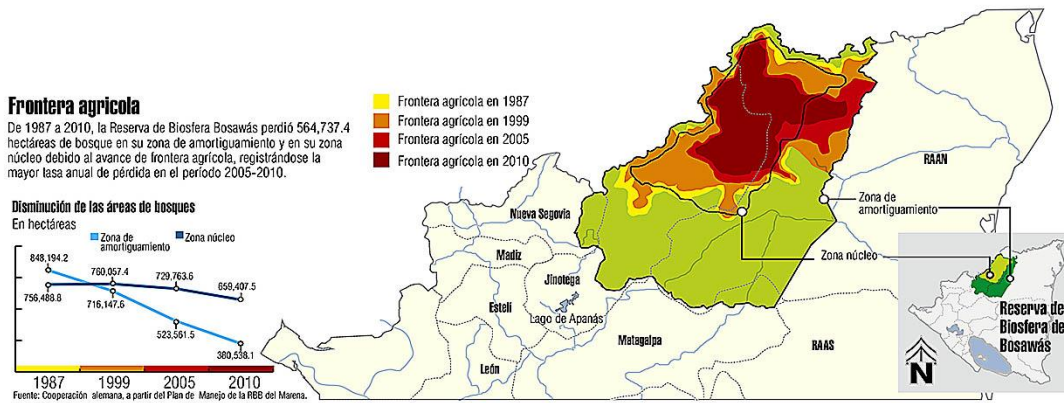
Map 1 - Nicaragua: Changes on Forest cover between 1983 and 2000



Source: INETER, MAGFOR INAFOR

According to the National System of Environmental Information (2011), virgin primary forests are only remaining in the two biosphere Reserves of Bosawas and Indio Maiz, which are also the home of various indigenous groups, who have legally recognized rights over the land (see Map 2). This situation raises the hypothesis that the whole national territory has currently been completely colonized by agriculture or that land in Nicaragua is nowadays fully subject to rights holders and cannot be colonized anymore to expand agriculture. Consequently, it is expected than land concentration will continue, but at the expense of the medium-scale and small-scale agriculture.

Map 2 – the advance of the agricultural frontier in Nicaragua between 1987 and 2010

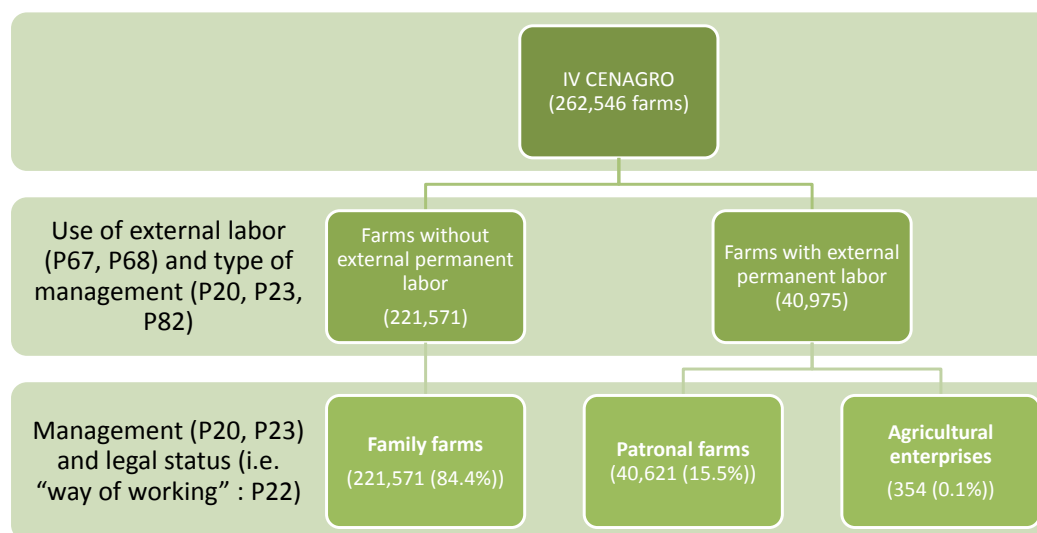


Source: http://www.elnuevodiario.com.ni/files/info/1365390968_Frontera%20Agricola.jpg

II. Key findings

Using variables relating to labor, type of management and way of working (a proxy for legal status – see below), the universe of the IV CENAGRO⁹ was classified into three groups. The first group is the family farms, defined as farms that do not use permanent workforce. The second is the patronal farms, which use both permanent and family workforce. The third group includes agricultural enterprises that not use family labor at all, which legal status is defined as corporate.

Figure 1 – Methodology to classify three groups of socio-productive agricultural holdings in Nicaragua



Source: authors

Assessing the other important dimensions of the WAW approach: level of income and integration into value chains, it was decided to split these three groups of agricultural holdings into 19 key production systems' types, 14 of them being common to the three core groups of agricultural holdings (family/patronal/enterprises)

⁹ which counts for 262,546 agricultural holdings

Table 2 - Variables used on segmenting farms of the 2011 Agrarian Census from Nicaragua

| Dimension | Variable used in the IV CENAGRO | Criterion used in the classification |
|---|---|--|
| Labor | <p>Hired permanent labor, defined as external laborers working during at least 6 months per year in the farm</p> <p>This dimension was crossed with the nature of respondents (family members or relatives versus others), the type of management (the head of the farm versus managers/administration/production supervisors, etc.) to check (and correct the inconsistencies).</p> <p>As the variable referring to the characteristics of family workforce in the farm (P82) showed too many inconsistencies to be used as a differentiation criterion, we used the “way of working” in the farm (a proxy for legal status) as the discriminant criterion to identify agricultural enterprises. It a</p> | <p>Dichotomous variables:</p> <ol style="list-style-type: none"> 1) use/not use of permanent labor in the farm to differentiate between family and patronal farms 2) corporate “way of working” to differentiate agricultural enterprises from family/patronal farms |
| Management type and legal status | <p>“way of working” in the farm (agricultural enterprises versus other types of farms, such as individual, family collective, cooperatives, etc.)</p> | <p>Dichotomous variable to identify corporate farms</p> |
| Commercialization | <p>Construction of production system</p> <p>From the combination of the different types of agricultural products in each farms, and then, the identification of the major agricultural product in each farm (crossing the land size of each products or the number of heads of cattle AND the spatial localization of the farm regarding the different agro-ecological regions of the country)</p> | <p>Differentiation of products types, based on assumption regarding their destinations:</p> <ol style="list-style-type: none"> 1) Exports value chains 2) Urban value chain 3) Local markets and self-consumption. |

Table 3 - Summarizing results of the typology of agricultural holdings and production systems in Nicaragua.

| Definitions and support variable | Categories proposed (hereby examples combining different results) | | |
|---|---|---|---|
| It is based on legal status. However, it make emphasis on the way the land is working. For instance: a group of producer might be part of a cooperative, however if they works their land individually, they will be reported as individual farm. | Familiar farms: those which includes familiar labor force and they might hire temporary and/or permanent labor force. | | Corporate business. Those defined by the national statistic institute, based on their production and lack of familiar labor force and with a professional team for management |
| Who perform the production activities in the farm. Familiar and/or hired labor force | Mostly family labor with no permanent hired labor. The key threshold considered is hiring permanent labor, since that will demand capital flows | Patronal family farms with at least one permanent hired labor. Most of them includes temporary workers for specific seasons and production activities | Only hired labor; they do not report familiar labor. They also reports a hired manager for the farms |
| | 1 | 2 | 3 |
| Definitions and support variable | Categories proposed (hereby examples combining different results) | | |
| Items in the farms production system, classified on those integrated to export and industrial Value chains, those integrated to urban value chains and self-consumption | Familiar Farms (19 sub types; 84.39 % of total farms) | Patronal Farms (18 subtypes, 15.47 % of total Farms) | Corporate Business (14 subtypes; 0.13 of total firms) |
| | Familiar Coffee Producer | Patronal Coffee Producer | C Business Coffee Producer |
| | Familiar Cocoa Producer | Patronal Cattle Producer | C Business Cattle Producer |
| | Familiar Sesame Producer | Patronal Sesame Producer | C Business Sesame Producer |
| | Familiar Peanut Producer | Patronal Peanut Producer | C Business Peanut Producer |
| | Familiar Sugar Cane Producer | Patronal Sugar Cane Producer | C Business Sugar Cane Producer |
| | Familiar Tobacco Producer | Patronal Tobacco Producer | C Business Tobacco Producer |
| | Familiar Cotton Producer | Patronal Cotton Producer | C Business Cotton Producer |
| | Familiar Soybean Producer | Patronal Soybean Producer | C Business Soybean Producer |
| | Familiar African Palm Producer | Patronal African Palm Producer | C Business African Palm Producer |
| | Familiar Cattle Producer | Patronal Cocoa Producer | C Business Cocoa Producer |
| | Familiar Banana and plantains Producer | Patronal Banana and plantains Producer | C Business Banana and plantains Producer |
| | Familiar Horticulture Producer | Patronal Horticulture Producer | C Business Horticulture Producer |
| | Familiar Fruit Producer | Patronal Fruit Producer | C Business Fruit Producer |
| | Familiar Grains Producer | Patronal Grains Producer | C Business Grains Producer |
| | Familiar forestry producer | Patronal forestry producer | C Business forestry producer |
| | Familiar fishery producer | Patronal fishery producer | |
| Familiar Patio (horticulture and animal) producer | Patronal poultry producer | | |
| Familiar Patio (animal) producer | Patronal Patio (horticulture and animal) | | |
| Familiar Patio (horticulture) produce | | | |

Source: authors, based on IV CENAGRO

III. Selection of criteria for classifying the agricultural holdings of the IV CENAGRO

3.1 Labor: a central criterion for classifying agricultural holdings from a socio-productive perspective

The IV CENAGRO includes variables related to labor, in particular the use of family and hired (permanent and temporary) workforce in farms. Using these variables allow segmenting the universe of the agricultural Census into three socio-productive sectors, which respond to three different logics or rationales.

Based on previous research works (see Perez and Grigsby, 2007 and 2009), the authors acknowledge that hiring temporary labor can be associated to peak workloads in the production cycle (growing, harvesting). Consequently very dependent from the type of production developed in the farm. While hiring permanent labor respond to another logic and rational behavior, which is discriminant among farmers. A producer who is able to employ permanently external workforce, she is also capable to generate over time a certain level of income and cash flow. Consequently, hiring permanent labor can be seen as a proxy of the level of total income and the weight of agriculture in total income to the extent that labor, both family and/or hired labor, is invested in agriculture.

In addition, research antecedents also show different patterns of distribution of the percentage of on-farm income in total income (which is also dependent of the level of on-farm agricultural diversification) with two extremes: on the one hand, are found farms that are diversified in terms of economic activities (on-farm versus off-farm), but specialized in the production of staple food, which do not allow them to generate important on-farm income and oblige them to engage in off-farm labor, particularly as agricultural laborers or poorly paid off-farm jobs; on the other hand, are found farms which can be diversified in terms of economic activities (in particular off-farm activities generating high returns), but specialized in the production of higher value agricultural production, which allow them to generate higher agricultural incomes but also oblige them to hired permanent labor. In between those two groups of farms, are found a large bunch of agricultural holdings where there is a strong correlation between the level of on-farm-specialization, the diversification of agricultural production, which is more oriented toward cash crops as the income increase and which oblige producers to employ permanent workforce as they access more assets (land in particular), and the income. The authors designed the typology of agricultural holdings in Nicaragua, based on these assumptions, which are summarized in Table 2.

NB: The set of variables in the IV CENAGRO do not allow estimating neither agricultural income nor total income, which could have permitted to assess the importance of agriculture in total income. However, it was decided to build a proxy indicator, using a categorization of production systems (see below).

Table 4 - General approach retained for elaborating the typology of agricultural holdings in Nicaragua,

| Income level | Labor Source | Farm Diversification | Off Farm specialization |
|------------------------------------|-------------------------------|--|---|
| Low, below extreme poverty line | Family | Low level, mostly specialized on staple food production for self-consumption (or diversified in small scale patio gardening) | High level, rural Labor Markets, with low returns |
| Low, below poverty line | Family | Medium level, specialized in staple food production for consumption and in a limited number (1 or 2) of cash crops for domestic markets or exports | High level, rural Labor Markets, with low returns |
| Middle Income (above poverty line) | Family + Temporary | Medium level, specialized in staple food production for consumption or local markets and cash crops for exports or local markets | Medium to low level, rural Labor Markets: off farm activities with medium returns |
| Middle Income (above poverty line) | Family + Temporary+ Permanent | High level, specialized in cash crops or exports or local markets | Medium to low level, off farm activities with medium returns |
| High Income | Temporary+ Permanent | Low level, specialized on specific export crop | High level, off farm activities with higher returns |

Source: authors, based Grigsby and Perez (2007 and 2009) and Losch et al. 2012.

Based on these assumptions, and according to the theoretical and conceptual framework of WAW, three primary groups of agricultural holdings were identified:

- **Family farms.** In this group, family labor is the only source of workforce, and therefore, family farms do not hire any permanent worker. This primary socio-productive group of farms can be divided into two sub-groups: one sub-group of farms in which family members participate in rural labor market (as agricultural laborers or engaged in other off-farm activities); another sub-group in which family members only rely on the farm and agricultural production to sustain their livelihoods. This group can also be divided into two other sub-groups: one which is formed by farms which are specialized in staple food production for self-consumption (which are also usually those who work outside the farm), another group of farms, which is more diversified in terms of on-farm agricultural production and therefore, can be obliged to hire temporary labor;
- **Patronal farms.** In this group, family labor combines with external labor, which can be temporary and/or permanent, depending on the production systems. In these farms, the analysis of production systems is necessary to understand the logics or external workforce requirements along the year. However, this group is expected to be more specialize in agriculture and on-farm activities.
- **Corporate farms or agricultural enterprises.** In this group, farms only employ external labor, both temporary and permanent laborers. In these farms, permanent staff is in charge of managing production in specialized tasks (inputs, sales, financial management, etc.) and family labor is not reported, even if financial capital can contribute to investing in agricultural operations.

In order to proceed to the segmentation of the universe of the Census, a core variable of the IV CENAGRO relating to labor was used, referring to permanent labor, which was defined in the agricultural Census defines

labor as following: "permanent workers are the hired persons, whose services are used regularly and continuously for six months and more; temporary workers are the hired persons whose services are used during a certain time, i.e. during a fixed duration of less than six months "(INIDE, 2012, p.50).

To differentiate the family/patronal farms groups from the corporate/agricultural enterprises group, the criterion of non-use of family workforce was supposed to be sufficient, in particular as in the IV CENAGRO, is found a variable (P82) relating to the characteristics of households/family of the head of the farm, which, in theory, was supposed to be documented "only when the informant is the producer, relative or family", allowing to identify farms that do not use family labor, which, following our definition, refer to corporate or agricultural enterprises.

However, inconsistencies in the answers to this question (see Table 3) and the amount of missing values in the database obliged the authors to abandon the idea of calculating a percentage of use of family labor, forcing them to find another way to identify a proxy to identify agricultural enterprises.

Table 5 –Inconsistencies found in the database referring to P82

| | | Without external workforce | | With external workforce | |
|-------------------|------------------------------------|----------------------------|-------|-------------------------|-------|
| | | n | % | n | % |
| Type of informant | Not a family member nor a relative | 644 | 0,2% | 2,027 | 0,8% |
| | Family member or relative | 150,262 | 57,2% | 109,613 | 41,8% |

Source: authors based on IV CENAGRO

3.2 Legal status and type of management: two complementary and necessary indicators allowing the differentiation of farms

To identify the group of agricultural enterprises, it was decided to use a combination of dimensions, including the legal status of the farm and the type of management.

First, while the National Institute of Statistics (INIDE) provide a clear definition of agricultural enterprises, which are defined as "large companies (with the corresponding legal status), mainly associated with export products, which are clearly managed by a professional team", it appeared that the legal status would allow differentiating corporate farms from others.

However, the IV CENAGRO does not include a specific question on legal status, by only differentiate several categories of “way of working”, defined as the following:

- Individual “way of working” are defined as farms in which a single person works and makes decisions regarding agricultural production in the farm, which can receive the help from family members or hire external workers.
- Cooperatives¹⁰ relate to an agricultural holding formed by ten or more persons legally constituted and registered in accordance with formal legislation. Farms that should not be considered as “cooperative” relates to farms owned by individual producers who are associated in order to obtain benefits such as inputs, credit, machinery, equipment, etc. In that case should be considered as individual producers;
- “family collective” way of working refers to farms owned by two or more individuals from the same family, which work and make decision regarding agricultural production in the farm, ; in that case, decision –are made jointly and profits are shared between all family members;
- Agricultural enterprises are defined as "economic unit under a single management, which can consist in one or more farm units”;
- Farms in indigenous community should in theory refer to farms falling under the jurisdiction and/or administration of indigenous communities, and which are led by a council of elders¹¹.
- Public administrations¹² are defined as farms which are administered by a public entity, both at the central and local levels, and which are declared of public utility.

¹⁰ The category of “cooperative” only includes a small portion of the farms under status of cooperatives that can be found in the country. Since the key definition is “the way of working” (and not the legal status), several farms that were classified as individual farms can have the legal status of cooperative, but as peoples work individually and/or at the family level, respondents considered that they were falling under the individual” way of working”. Consequently, the total number of cooperatives IV CENAGRO does not match the total number of cooperatives registered at the National Institute of Cooperatives.

¹¹ Farms located at indigenous communities in the Atlantic region, where there are situations of customary rights of indigenous communities over land (mostly in the RAAN) are not reflected in the category of indigenous communities. As the IV CENAGRO explained during an interview, this situation reflect the fact that the “way of working” in farms in indigenous communities (there is no question explicitly referring to rights over resources) is individual or organized at family level. The only farm with the status of “indigenous community” in the Census was found in the Department of León (probably referring to the indigenous community of Sutiaba) was relocated into the category of cooperatives as it management related to cooperative, in order to avoids having a single case of indigenous community, which could not be analyzed alone. Consequently, CENAGRO IV does not count any farm with the status of indigenous community.

¹² Farms included in the category of public administrations refer to state enterprises (such as such a forest plantations that belong to the Natural Resources and Environment Ministry). They became companies, since their “way of working” is the same than any other private company.

In addition, since several inconsistencies were observed when analyzing descriptive statistics of the three socio-productive groups of farms¹³, it was also considered necessary to incorporate the type of management and the nature of the respondent to the census interview in order to validate the classification.

After correcting some inconsistencies found in the IV CENAGRO database and recoding some variables, it was confirmed that 100 % of the agricultural holdings with a “way of working” associated to “agricultural enterprises” were hiring external labor, and 98 % of them were hiring permanent labor. The largest proportion of farms (70 %) and cooperatives (62.5 %) also hired external workforce. However, the weight of these forms of work is relatively small in terms of number of agricultural holdings, since farms with an individual “way of working” represent 99.5 % of farms in the country.

Table 6 – Legal status “Way of working” and labor allocation in the agricultural holdings censused in the IV CENAGRO

| | Without external labor | | With external labor | | | | | |
|--------------------|------------------------|--------|-------------------------|--------|-------------------------|--------|----------------------|-------|
| | | | Without permanent labor | | With permanent labor | | | |
| | | | With temporary labor | | Without temporary labor | | With temporary labor | |
| | n | % | n | % | n | % | n | % |
| Individual | 150,657 | 57,4% | 70,527 | 26,9% | 10,020 | 3,8% | 2,5947 | 9,9% |
| Cooperative | 113 | 0,04% | 55 | 0,02% | 22 | 0,01% | 108 | 0,04% |
| Family collectives | 131 | 0,05% | 74 | 0,03% | 29 | 0,01% | 202 | 0,08% |
| Enterprises | 0 | - | 0 | - | 92 | 0,04% | 235 | 0,09 |
| Others | 5 | 0,002% | 9 | 0,003% | 15 | 0,006% | 99 | 0,04% |

Source: authors, based on IV CENAGRO

While relevant, this indicator relating to "ways of working" was not considered as a sufficient criterion for segmenting agricultural holdings, as the category of “individual way of working” counts for 99.5% of the total number of agricultural holdings. However, using this criterion allows to identifying farms considered as agricultural enterprises, which cannot be done only using labor, as previously stated.

¹³ For instance, inconsistencies were found between the type of management and the use of external workforce: it is not possible to find farms reporting a manager/administrator/production supervisor, without them reporting any hired labor; in the same way, if the position of the respondent to the Census interview was a farm worker, the farm should report at least a hired worker. Therefore, it was necessary to recode some variables.

Based on the descriptive statistics of the three groups and in a first attempt to classify agricultural holdings, it was decided not to differentiate cooperatives, as all cooperatives were not identified as such in the Census (see previous remark on that topic). However, at the time of in-depth analyzing the results of the typology, it will be possibly relevant to distinguish cooperatives within the family farms and the patronal farms.

Table 7 - Distribution of the three types of agricultural holdings in the IV CENAGRO

| Typology | Individual | Collective | Corporates | Total |
|--------------------------|-----------------|--------------|------------|------------------------|
| Familiar | 221,184 (84.6%) | 387 (31.4%) | | 221,571 (84.4%) |
| Patronal | 40,129 (15.4%) | 492 (39.9%) | | 40,621 (15.5%) |
| Agricultural enterprises | 0 | | 354 (100%) | 354 (0.1%) |
| Total | 261,313 | 1,233 | 354 | 262,546 |

Source: authors, based on data from the IV CENAGRO

3.3 Constructing production systems as a proxy for assessing agricultural income level and insertion into output produces markets

To build on the core assumptions that lead the establishment of the typology, it was decided to go further and integrate two other dimensions into the classification of agricultural holdings. As there is no variable in the IV CENAGRO dataset that allow estimating the agricultural income and assessing the integration of farms into output produce markets through commercialization, it was decided to use the combination of types of agricultural productions¹⁴, as a proxy.

However, the IV CENAGRO showed many issues and inconsistencies. For instance, a core variable which could have been used regarding the main destination of agricultural products in terms of “sales / human consumption / animal consumption / seed production” presented an important proportion of missing values (between 10 up to 15% of missing values per type of agricultural production¹⁵), as illustrated in Table 7.

Table 8 – Missing values for different types of agricultural products in the IV CENAGRO

| Grains | # of farms | Weight of missing values (%) | Vegetables | # of farms | Weight of missing values (%) | Fruits | # of farms | Weight of missing values (%) |
|---------------------|---------------|------------------------------|--------------|--------------|------------------------------|--------------|---------------|------------------------------|
| Maize | 16,284 | 9.8 | Cassava | 3,043 | 8.3 | Avocado | 7,819 | 9.7 |
| Red Beans | 13,627 | 10.3 | Quequisque | 969 | 8.6 | Pawpaw | 1,521 | 7.4 |
| Rice | 3,517 | 15.0 | Malanga | 788 | 9.0 | Pineapple | 1,410 | 9.5 |
| Traditional Sorghum | 2,090 | 11.7 | Zucchini | 755 | 11.6 | Sugar Cane | 1,120 | 9.4 |
| Black Beans | 1,804 | 12.9 | Tomato | 456 | 8.8 | Dragon fruit | 1,032 | 6.7 |
| White Sorghum | 1,734 | 12.9 | Bell pepper | 417 | 9.6 | Banana | 312 | 14.9 |
| Red Sorghum | 196 | 13.6 | Onion | 88 | 7.2 | Cocoa | 2,104 | 9.5 |
| Total | 39,252 | | Total | 6,516 | | Total | 15,318 | |

¹⁴ At that stage, we only used the combination of types of production and did not assess the agricultural practices related to different crops or livestock.

¹⁵ In the case of grains, 39,252 farms did not report any information regarding these productions.

Source: IV CENAGRO

To illustrate the issue of data inconsistency, the case of coffee over 4 years (productive coffee) is presented. For such farms, self-consumption of productive coffee should normally concern farms which produce only small quantity of coffee, which could have been possible following our expertise, for farms with less than 0.35 ha of productive coffee. Nevertheless, the Census indicated that farms producing productive coffee in plots ranging from 2.1 ha and 621.1 ha declared that their coffee production was mainly for self-consumption, which is obviously not possible. In the same way, some farms declared that their coffee production (including on plots larger than 7 ha) used their coffee for animal consumption, which is definitely not plausible. A hypothesis for these inconsistencies is that enumerators misunderstood the meaning of the response “human consumption” (which was supposed to translate into self-consumption).

Table 9 –Inconsistencies in the database: Destination of coffee production

| | Sales | Human consumption | Animal consumption | Seed production | Total |
|--------------------|--------|-------------------|--------------------|-----------------|--------|
| less than 0.35 ha | 6,304 | 4,872 | 8 | 10 | 11,194 |
| 0.351 - 0.7 ha | 7,196 | 2,287 | 4 | 7 | 9494 |
| 0.71 ha - 2.11 ha | 10,170 | 1,821 | 2 | 1 | 11,994 |
| 2.12 - 3.51 ha | 3,211 | 422 | 4 | 2 | 3,639 |
| 3.52 - 7 ha | 2,318 | 281 | 2 | 4 | 2,605 |
| 7.01 - 14.05 ha | 938 | 88 | 1 | 0 | 1,027 |
| 14.06 - 35.13 ha | 541 | 47 | 0 | 0 | 588 |
| 35.14 a 70.26 ha | 185 | 13 | 0 | 0 | 198 |
| more than 70.26 ha | 133 | 5 | 0 | 0 | 138 |

Source: IV CENAGRO

Consequently, it was decided to build an index of agricultural production diversification based on the combination at each farm level of the different types of products censused. However, the number of different agricultural production (both vegetal and animal) made it very complicated, as all kind of combination was in theory possible (see Table 9). In fact, the most diversified farm counted with 31 different types of products.

Table 10 –Crops reported by the IV CENAGRO

| Annual crops (P40) - Cenagro 2011 P42-Cultivos Anuales | | | Temporal agro-industrial crops (P42) - BDD Cenagro 2011 P40-Cultivos Anuales Oleaginosas | | | |
|--|-----------------|---------------------|---|-------------------|----------------|----------------|
| Irrigated rice | | | Sesame | | | |
| Rain-fed rice | | | Cotton | | | |
| Black bean | | | Groundnut | | | |
| Red bean | | | Soybean | | | |
| Maize | | | Tobacco | | | |
| White sorghum | | | | | | |
| Traditional sorghum (millón) | | | | | | |
| Red sorghum | | | | | | |
| Annual horticultural crops (P43) - BDD Cenagro 2011 P43-Cultivos Otros Temporales | | | Semi-perennial or perennial crops (P44) - BDD Cenagro 2011 P44- Cultivos Permanentes y Semipermanentes | | | |
| Acelga | Culantro | Ñame | Achiote | Cúrcuma | Mamey | Palma pacena |
| Ajo | Diciplina | Ocra | Aguacate | Durazno | Mamon | Papaya |
| Albahaca | Escoba | Papa | Anona | Fresa | Mamon chino | Pera |
| Apio | Espárragos | Pepino | Araza | Fruto de pan | Mango | Pijibaye |
| Ayote | Espinaca | Pepino Chino | Banano de consumo | Granadilla | Manzana | Pimienta |
| Berenjena | Flor de Jamaica | Perejil | Banano de exportacion | Grosella | Marañón | Piña |
| Brócoli | Flores | Pipián | Borojo | Guaba | Matasano | Pithaya |
| Calabaza | Frijol Alacin | Plantas Medicinales | Cacao | Guanabana | Melocoton | Plama |
| Camote, Batata | Frijol Bayo | Quequisque | Café mayor de 4 años | Guandul | Menta | Plama africana |
| Cebolla | Frijol de Vara | Rábano | Café menor de 4 años | Guayaba | Mimbros | Plama real |
| Cebollin | Frijol Pinpin | Remolacha | Caimito | Guayaba china | Mora | Platano |
| Chayote | Girasol | Repollo | Calala | Guayaba de fresco | Nancite | Pulasan |
| Chía | Hierbabuena | Repollo Morado | Caña de azúcar | Helecho | Naranjilla | Raicilla |
| Chile | Lechuga | Sandía | Canela | Henequén | Níspero | Rosas |
| Chile Jalapeño | Linaza | Zukini | Cardamomo | Higo | Noni | Tamarindo |
| Chilote | Lirios | Tabaco | Cítricos | Ícaro | Ojoche | Tempate |
| Chiltoma | Malanga | Tomate | Clavo de olor | Jengibre | Ornamentales | Uva |
| Coliflor | Manzanilla | Vainica | Coco | Jícaro | Otras musáceas | Vainilla |
| Crisantemo | Melón | Yampi | Cultivo exótico | Jocote | Otros frutales | Zapote |
| | | Yuca | | | | Zungano |
| | | Zanahoria | | | | |

Source: IV CENAGRO

Keeping in mind that production systems aimed at (1) establishing a proxy to address integration into agricultural output product markets, and (2) establishing a proxy of estimate of agricultural income level , it was decided not only to combine the different types of products present in each farm, but also to classify products according to their probable role in the production system, in order to identify the “leading” product in the farm, combining the probable destination of the product (for instance sales for agro-industrial/export crops), the geographical location of the farm (regarding the agro-ecological macro-regions of the country), and the relative importance of the crop or herd (surface or number of heads of livestock).

This situation was possible as in the IV CENAGRO, a farmer could report not only a physical area of production (in ha), but also an amount of plants (and of cattle heads for livestock). Therefore, a farmer with sugarcane, which could be a farmer with two plants of sugarcane or a farmer with 25,000 ha, was classified as a sugarcane producer in the case he had 25,000ha, but the sugarcane production was put aside if he only had two plants. This proceeding was mandatory as the IV CENAGRO did not include information on production neither on sales, and as previously mentioned, there were not way to correctly differentiate self-consumption and sales.

In addition, it was needed to make assumption using the meaning of each value-chain in the agricultural sector. For instance, in Nicaragua, some products are clearly export of agro-industrial products (such as coffee, sesame, groundnut, soybean, black bean, cotton, tobacco, cocoa, oil palm, sugarcane, and meat): others are strategic agricultural produces for domestic markets, in particular urban markets (such as horticulture, red beans, rice, and dairy). For cattle, the number of heads was a decisive criterion, and it was decided to establish a threshold to identify if farmers were oriented toward cattle production or not. In the same way, a threshold of production area for was used, to identify market grains production.

The application of this methodology allowed to classifying 98.97% of the agricultural holdings of the IV CENAGRO. In the case of the remaining 1.03% of farms, the analysis of the dataset showed that they were characterized by the lack of information regarding their production (missing values). This unclassified group accounts for 47 agricultural enterprises and 548 patronal farms.

Table 11 - Number of production systems per types of agricultural holdings

| Typology | # of production systems | # of agricultural holdings | % of agricultural holdings |
|-------------------------|-------------------------|----------------------------|----------------------------|
| Family | 19 | 219,459 | 83.6 |
| Patronal | 18 | 40,072 | 15.26 |
| Agricultural enterprise | 14 | 307 | 0.12 |
| Total Classified | 51 | 259,838 | 98.97 |
| Total IV CENAGRO | | 262,546 | |

Source: authors, based on IV CENAGRO

IV. Descriptive statistics of the three types of agricultural holdings

The descriptive statistics of three types of agricultural holdings are consistent with the expected trends observed in the Nicaragua agriculture.

Family farms account for 84.39 % of total agricultural holdings. These farms own 14.2 ha in average and hire 2.2 temporary workers in average (they don't hire any permanent worker as it was the discriminating criteria to identify that group). Land use is centered around pastures (48 % of farm land in average) and annual crops, but annual crop production areas are limited with only 2.2 ha.

Patronal Farms represent 15.47 of total agricultural holdings. These farms own 65.7 ha in average and hire 3.3 permanent and 11.6 temporal workers in average. Land use is centered around pastures (63 % of land in average) and annual crops (8 %).

Agricultural enterprises represent only 0.13 % of total agricultural holdings. These farms own 529.1 ha in average, hire around 46 permanent and 112 temporal workers in average. Their land use is centered around pastures (30.1 % of land) and perennial crops (38.4 % of land). Forest areas reach 45 hectares, while annual crops areas reaches 65.1 ha.

Table 12 – Descriptive statistics of structural variables regarding natural and human capital.

| Management type (based on Status) | Different types | | | Analysis per variable and way forward |
|--|------------------------------------|---|----------------------|---|
| | Household (HH) management | | Corporate management | |
| Labor (permanet worker) | Family labor and temporary workers | Mixed and / or at least 1 permanent hired labor | Only hired labor | There is an adjustment of the legal status based on "way of working". There is a chance of segmentation of the familiar estratum with those who hire temporary workers, those who participate in labor markets, and those who neither hire labor, nor participate on labor markets |
| Type names / number | Familiar Farms | Patronal Farms | Corporate Business | It might create two more types: rural workers, subsistence families |
| % of holdings | 84.39 | 15.47 | 0.13 | |
| K-Human Total of Permanent Labor force (average) | 0.00 | 3.30 | 45.26 | |
| K-Human Total of Temporal Labor force (average) | 2.06 | 11.60 | 117.34 | |
| K-Human Total of Family Members (average) | 5.42 | 5.03 | 0.00 | |
| K-Natural Total Land (ha, average) | 14.3 | 65.76 | 529.13 | |
| K-Natural Total Annual Crops area (ha, average) | 2.2 | 5.28 | 65.13 | |
| K-Natural Total Perennial Crops area (average) | 0.7 | 3.30 | 203.12 | |
| K-Natural Total Natural Pastures (ha, average) | 4.9 | 29.09 | 111.43 | |
| K-Natural Total Improved Pastures (ha, average) | 2.0 | 12.15 | 51.01 | |
| K-Natural Total Forestry area (ha, average) | 2.2 | 7.38 | 45.04 | |
| Commercialization (based on market integration) Farms | 219459 | 40072 | 307 | Total Farms per item |
| Basic Grains Producer | 91.3 | 8.7 | 0.0 | 82955 |
| Cattle producer | 73.2 | 26.6 | 0.2 | 54770 |
| Coffee Producer | 79.9 | 19.9 | 0.2 | 49842 |
| Plantain Producer | 82.1 | 17.8 | 0.1 | 18342 |
| Patio Producer (Animals) | 98.8 | 1.2 | 0.0 | 14451 |
| Fruit Producer | 87.5 | 12.3 | 0.1 | 11248 |
| Horticulture Producer | 88.1 | 11.8 | 0.1 | 10528 |
| Cocoa Producer | 88.9 | 11.0 | 0.1 | 6492 |
| Patio Producer (horticulture) | 90.1 | 9.9 | 0.0 | 3862 |
| Sesame Producer | 85.1 | 14.7 | 0.2 | 3810 |
| Patio Producer (horticulture and animal) | 100.0 | 0.0 | 0.0 | 1216 |
| Sugar Cane Producer | 76.2 | 21.4 | 2.3 | 686 |
| Forestry Producer | 74.9 | 22.6 | 2.5 | 686 |
| Peanut Producer | 50.8 | 46.4 | 2.8 | 504 |
| African Palm Producer | 68.8 | 29.2 | 2.1 | 192 |
| Tobbaco Producer | 61.3 | 33.5 | 5.2 | 191 |
| Soybean Producer | 85.4 | 14.6 | 0.0 | 48 |
| Fishery Producer | 88.9 | 11.1 | 0.0 | 9 |
| Cotton Producer | 66.7 | 16.7 | 16.7 | 6 |

Source: authors, based on the IV CENAGRO

In order to validate the typology, an Analysis of Variance Test, with a post hoc test with Duncan criteria with an alpha of 0.05 was implemented. In this report, the coffee producer comparison is part of the main text, and the case of cattle producers and grains producer are located as annexes 6.1 and 6.2. The types were validated within their key cash crop, in order to reduce variability generated by the requirements of each production system. For instance, in a same sector such as corporate business, grain producers own an average of 79.7 ha, while cattle producers owns 974.5, which is 12 times larger. In the case of labor, coffee producers demand an average of 212 temporary workers, while grains producers demand only eight. Same trend is found in the Patronal farms, in the case of grains production they owns 35.1 ha, while cattle producers owns 112 ha.

In the three cases, the three types are statistical different in terms of total land and labor force. In the coffee producers, they are different in total land and total perennial area, which is expected since coffee is a perennial

crop. In terms of natural pastures, only the Corporate Business is different which is also expected, since they tend to invest in cattle production, while the accumulation process in familiar and patronal is less dynamic. In the case of temporary and permanent worker, the three categories are clearly different.

In the case of cattle producers (annexes 6.1), the three types of farms are different in terms of total area, natural and improved (managed) pastures, which is expected since pastures is the key resource for cattle production. Familiar and Patronal farms are similar in terms of annual and perennial production areas, which is understood, since the emphasis is animal production, thus the grains production areas tend to be relatively a small proportion. In the case of temporary and permanent workers, the three categories are clearly different.

Finally, in the case of grains producers, the three types of farms are different in terms of total area and annual crops that is expected since all grains are produced annually, even three times in a year. Familiar and Patronal farms are similar in perennial crops and pastures (natural and improved) areas. This is expected as well, since the driver of the production system is located on annual crops production. In terms of labor force, the three types are different in terms of permanent worker, but Familiar and Patronal farms are similar in terms of use of temporary workers.

Table 13 – Validation of Subtypes: Coffee Producers

| ANOVA: K. Natural Coffee Producers Subtypes | | | | | | |
|---|--------------|-------------------|-------|------------------|----------|-------|
| | | Suma de cuadrados | gl | Media cuadrática | F | Sig. |
| K natural - Total Area of Farms | Inter-grupos | 19065606.487 | 2 | 9532803.243 | 1852.372 | 0.000 |
| | Intra-grupos | 256484846.427 | 49839 | 5146.268 | | |
| | Total | 275550452.914 | 49841 | | | |
| K natural - total Area of annual crops | Inter-grupos | 33355.929 | 2 | 16677.965 | 137.984 | .000 |
| | Intra-grupos | 6023983.341 | 49839 | 120.869 | | |
| | Total | 6057339.271 | 49841 | | | |
| K natural - total Area of perennial crops | Inter-grupos | 1702703.067 | 2 | 851351.533 | 3444.599 | 0.000 |
| | Intra-grupos | 12317983.190 | 49839 | 247.156 | | |
| | Total | 14020686.256 | 49841 | | | |
| K natural - total Area of pastures | Inter-grupos | 412652.105 | 2 | 206326.052 | 299.808 | .000 |
| | Intra-grupos | 34298918.621 | 49839 | 688.194 | | |
| | Total | 34711570.726 | 49841 | | | |

| Duncan Test: K natural - Total Area of Farms | | | | |
|--|-------|------------------------------|-------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | | |
| | | 1 | 2 | 3 |
| Familiar Coffee Producer | 39833 | 14.8 | | |
| Patronal Coffee Producer | 9933 | | 51.7 | |
| C. Business Coffee Producer | 76 | | | 351.8 |
| Sig. | | 1.000 | 1.000 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | | |
| a. Usa el tamaño muestral de la media armónica = 225.841. | | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los | | | | |

| Duncan Test K natural - total Area of perennial crops | | | | |
|--|-------|------------------------------|-------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | | |
| | | 1 | 2 | 3 |
| Familiar Coffee Producer | 39833 | 2.6 | | |
| Patronal Coffee Producer | 9933 | | 11.8 | |
| C. Business Coffee Producer | 76 | | | 120.7 |
| Sig. | | 1.000 | 1.000 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | | |
| a. Usa el tamaño muestral de la media armónica = 225.841. | | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los | | | | |

| Duncan Test K natural - total Area of pastures | | | |
|--|-------|------|-------|
| SubtipoB | N | 0.05 | |
| | | 1 | 2 |
| Familiar Coffee Producer | 39833 | 1.2 | |
| Patronal Coffee Producer | 9933 | 5.7 | |
| C. Business Coffee Producer | 76 | | 59.8 |
| Sig. | | .069 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos | | | |
| a. Usa el tamaño muestral de la media armónica = 225.841. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media | | | |

| ANOVA: K. Human Coffee Producers Subtypes | | | | | | |
|---|--------------|-------------------|-------|------------------|----------|-------|
| | | Suma de cuadrados | gl | Media cuadrática | F | Sig. |
| K human - Total Permanent Workers | Inter-grupos | 245082.595 | 2 | 122541.297 | 2874.852 | 0.000 |
| | Intra-grupos | 2112806.048 | 49567 | 42.625 | | |
| | Total | 2357888.642 | 49569 | | | |
| K human - Total Temporary Workers | Inter-grupos | 5217462.590 | 2 | 2608731.295 | 1157.929 | 0.000 |
| | Intra-grupos | 111278897.933 | 49393 | 2252.929 | | |
| | Total | 116496360.523 | 49395 | | | |
| K human - Total Family Members | Inter-grupos | 212.602 | 1 | 212.602 | 15.554 | 0.000 |
| | Intra-grupos | 631372.104 | 46192 | 13.668 | | |
| | Total | 631584.706 | 46193 | | | |

| Duncan Test K humano - Total Permanent Workers | | | | |
|--|-------|------------------------------|-------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | | |
| | | 1 | 2 | 3 |
| Familiar Coffee Producer | 39833 | 0.00 | | |
| Patronal Coffee Producer | 9661 | | 4.37 | |
| C. Business Coffee Producer | 76 | | | 36.49 |
| Sig. | | 1.000 | 1.000 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | | |
| a. Usa el tamaño muestral de la media armónica = 225.793. | | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los | | | | |

| Duncan Test K humano - Total Temporary Workers | | | | |
|--|-------|------------------------------|-------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | | |
| | | 1 | 2 | 3 |
| Familiar Coffee Producer | 39833 | 4.4 | | |
| Patronal Coffee Producer | 9489 | | 21.1 | |
| C. Business Coffee Producer | 74 | | | 211.6 |
| Sig. | | 1.000 | 1.000 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | | |
| a. Usa el tamaño muestral de la media armónica = 219.877. | | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los | | | | |

| K humano - Total Family Member | | | | | | |
|--------------------------------|-------|------|-------------------|--------------|-----------------|-----------------|
| SubTypes | N | Mean | Desviación típica | Error típico | la media al 95% | |
| | | | | | Límite inferior | Límite superior |
| Familiar Coffee Producer | 38964 | 5.71 | 3.685 | .019 | 5.68 | 5.75 |
| Patronal Coffee Producer | 7230 | 5.53 | 3.764 | .044 | 5.44 | 5.61 |
| C. Business Coffee Producer | 0 | | | | | |
| Total | 46194 | 5.68 | 3.698 | .017 | 5.65 | 5.72 |

V. Conclusion and perspectives

The results of the present research study show that using WAW conceptual and methodological framework is relevant to establish a typology of farms based on the Nicaraguan Agricultural Census. The IV CENAGRO includes all the needed variables to establish a typology based on social sectors, including with two and even three levels of segmentation.

A first segmentation of the Census universe was based on variables related to labor and juridical status (“the way of working”). Combined with a production systems ‘approach mobilizing expertise of the researchers and the destination of the production, the research study could differentiate various types of farms that are consistent with the local knowledge of the researchers. However, in this exercise, the database showed many inconsistencies. There should be a clear relationship among labor force nature and legal status and production systems, and there were several cases with inconsistencies (9.9 %) and missing information (1.1 %). Consequently, labor is the key variable for the first level of segmentation. The allocation of family labor on agricultural activities is a key proxy variable to picture the role of agriculture in the family economy. Hiring labor force permanently is an indicator related to positive cash flow and then related to a different social stratum. In this exercise, labor was divided in two groups: those farms hiring permanent labor force and those who don’t. As information related to family workforce was of poor quality, a variable referring to juridical status (“the way of working”) was combined to labor to identify corporate farms. As result, three social segments were identified: those who do not contract permanent labor and use mainly familiar labor (considered in the WAW framework as family farms); those who hire permanent labor and still allocate familiar labor and do not have an enterprise status (referred in the WAW framework as patronal farms), and corporate farms that only reports hired labor with a status of enterprise.

Further analysis might incorporate another level of segmentation. Using the basic division, every segment reports a wide range on other variables. In order to reduce this heterogeneity some possible paths could be:

- Segmenting farms that hire temporal labor and combine with familiar labor force could allow identifying a fifth group formed by farms who do not hire labor at all. A complementary variable could be participate proxy related to the participation in rural/urban labor markets and migration; this could generate a new segment: farms that neither participate on labor markets, nor hire labor force at all.
- An important variable to analyze consistency after applying these segmentations could be the amount of hired labor force.

A key piece of missing information in the Census is related to rural labor markets and migration. In Nicaragua, migration is a key phenomenon, which explains labor force allocation in agricultural activities and even production system decision (such as what and amount of sowing and the fact of hiring or not temporary labor). A possible combination with the Living Standard Measure Survey (LSMS) could be explored to resolve this issue, with the limitation that individual cases (farms) in the Census cannot be matched with individual cases in LSMS database.

A second key variable for the segmentation was the Management type. As key variable, the census includes “legal status”. However, the instructions on how to apply the options give to the enumerator decision power. The enumerator should identify the way in which famers works the land”, and based in her/his perception decide if the farm is cooperative, family business, corporate business, individual farm producer. When the answers are crosschecked with assets and production areas, there are many inconsistencies. For these

exercises, the only legal status accepted was the corporate farms, since the National Institute of Statistics ensured that they were correct criteria to identify agri-business. An important amount of time was developed to differentiate farms managed by a member of the family. In this case, it was checked with the family information, just to differentiate cases in which management was done by someone else with no "hired labor force"

In the case of market access, the key challenge was having no data on sales, thus it impossible to estimate the percentage of production for self-consumption and market. The Census included a variable relating to the destination of production that firstly was considered potential for being proxy. However, too many answers were missing (10 – 15 %) or inconsistent (10 -20 %). Thus, this variable was not used.

Based on these key indicators, three social segments were identified: Family farms with 84.4 % of total farms in the Census; Patronal Farms with 15.5 % of total farms and 0.13 % of farms were corporate farms. However, the heterogeneity was quite high; the ranges of land tenure, cattle, even production areas were hardly untestable. In this level, it was decided to use a production system approach based on a combination of agro-ecological zoning, of combination of production types and of amount of crops and animal production present in the farm. As result a second level of segmentation (sub types) were generated.

The first attempt was using the level of diversification as proxy. Based on previous studies, a close relationship between specialization and types of farms was established. Family farms, which are little inserted on output markets but rather inserted in rural labor markets tend to specialize on grain production. At the opposite, corporate farms tend to be specialized as well in one or two different products in the farm, but controlling a value chain. However, the index was quite complex, and the range were from 1 to 35 different kind of products and since the census record all crops with same level (even when the farm have only one plant or 100 hectares), this variable was not used.

An alternative was to combine results with a value chain approach. Based on this, families tend to produce a key product (grains, cash crops, cattle, etc.) which is often very specific of the agro-ecological zone where the farm is located. This key product might be sold in export or domestic markets. Thus, segmented farms were classified based on their type of dominant crops: export, cash product and self-consumption, segmented by sowing areas and amount of animal. At the end, the subtypes were constructed by both approaches: the WAW conceptual and methodological framework, which was complemented with a Value Chains' approach.

As result, 51 subtypes were identified, 14 crops are part of the production system in the three stratum. Family farms are the most diversified (19 Subtypes) followed by (18) and Corporate farms (14). All the subtypes were validated using a variance analysis in order to identify if they were statistically different in terms of assets (a selection of variables referring to physical, natural capital and human capital). Further analysis should include a consistency analysis based on agricultural indicators, for instance the amount of animals that can be managed/the amount of land under production that can be managed without contracting labor force, etc.. This would create an intermediate segment between patronal and the corporate farms.

The key limitation in this research study was the quality of the database and the real possibility of revising the surveys. However, the Census has enough variables for farm typology and its validation.

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VII. Statistical Annexes

7.1 Characteristics of the types of household (social sector level)

7.1.1 Familiar Farms

Human Capital

| Variables sobre el Capital Humana Explotaciones Familiares | N | Media | Desv. típ. |
|---|--------|-------|------------|
| Total Trabajadores Permanentes | 221571 | 0.00 | 0.0 |
| Total Trabajadores Temporales | 221571 | 2.06 | 8.5 |
| Nb hombres hogar | 215615 | 2.68 | 1.6 |
| Nb mujeres hogar | 215615 | 2.42 | 1.6 |
| Total personas hogar | 215615 | 5.42 | 3.6 |
| Numero de personas entre 5-64 hogar | 215615 | 3.22 | 1.9 |
| Numero de personas de -15 hogar | 215615 | 1.61 | 1.6 |
| Numero de personas de +65 hogar | 215615 | 0.28 | 0.6 |
| Nb personas que trabajaron en la finca con relacion de parentesco | 207227 | 2.98 | 1.9 |
| Numero de personas entre 16-64 hogar | 215615 | 3.54 | |
| Relacion de Dependencia | 215615 | 1.53 | |

Natural Capital

| Variables sobre el Capital Natural en Explotaciones Familiares | N | Media (Ha.) | Peso | Desv. típ. |
|--|--------|-------------|-------|------------|
| Superficie total de la finca (mz) S428 | 221571 | 14.3 | 100.0 | 63.1 |
| Superficie de la finca en cultivos anuales (mz) | 221571 | 2.2 | 15.7 | 7.4 |
| Superficie de la finca en cultivos perenes (mz) | 221571 | 0.7 | 4.8 | 3.8 |
| Superficie de la finca en pastos sembrados (mz) | 221571 | 2.0 | 13.8 | 15.8 |
| Superficie de la finca en pastos naturales (mz) | 221571 | 4.9 | 34.3 | 29.1 |
| Superficie de la finca en tierras en descanso/tacotales (mz) | 221571 | 1.8 | 12.9 | 15.1 |
| Superficie de la finca en bosque (mz) | 221571 | 2.2 | 15.3 | 31.8 |
| Superficie de la finca en instalaciones (mz) | 221571 | 0.2 | 1.5 | 1.4 |
| Superficie de la finca en pantanos/otra tierra (mz) | 221571 | 0.3 | 1.8 | 6.8 |
| Superficie de la finca con riego (mz) | 221571 | 0.0 | 0.3 | 1.8 |

| Producción de Granos | Fincas Familiares | Peso Familiar | Peso CENAGRO |
|----------------------|-------------------|---------------|--------------|
| Maíz Blanco | 142663 | 64.4 | 54.3 |
| Frijol Rojo | 114074 | 51.5 | 43.4 |
| Arroz de Secano | 21160 | 9.5 | 8.1 |
| Sorgo Millón | 15944 | 7.2 | 6.1 |
| Frijol Negro | 12060 | 5.4 | 4.6 |
| Sorgo Blanco | 11671 | 5.3 | 4.4 |
| Sorgo Rojo | 974 | 0.4 | 0.4 |
| Arroz de Riego | 451 | 0.2 | 0.2 |

| Cultivos de Exportación | Fincas Familiares | Peso Familiar | Peso CENAGRO |
|-------------------------|-------------------|---------------|--------------|
| Ganado Vacuno | 109297 | 49.3 | 41.6 |
| Café | 40707 | 18.4 | 15.5 |
| Plátano | 32700 | 14.8 | 12.5 |
| Cacao | 18078 | 8.2 | 6.9 |
| Caña de Azúcar | 9314 | 4.2 | 3.5 |
| Ajonjolí | 3262 | 1.5 | 1.2 |
| Banana Ex | 1577 | 0.7 | 0.6 |
| Palma Africana | 533 | 0.2 | 0.2 |
| Maní | 256 | 0.1 | 0.1 |
| Tabaco | 138 | 0.1 | 0.1 |
| Soja | 42 | 0.0 | 0.0 |
| Algodón | 8 | 0.0 | 0.0 |

| Cultivos | Fincas Familiares | Peso Familiar | Peso CENAGRO |
|------------|-------------------|---------------|--------------|
| Papaya | 16986 | 7.7 | 6.5 |
| Piña | 12782 | 5.8 | 4.9 |
| Pitahaya | 12718 | 5.7 | 4.8 |
| Ayote | 5022 | 2.3 | 1.9 |
| Tomate | 3978 | 1.8 | 1.5 |
| Yuca | 3427 | 1.5 | 1.3 |
| Chiltoma | 3340 | 1.5 | 1.3 |
| Sandia | 1809 | 0.8 | 0.7 |
| Quequisque | 1082 | 0.5 | 0.4 |
| Malanga | 964 | 0.4 | 0.4 |
| Cebolla | 895 | 0.4 | 0.3 |
| Repollo | 874 | 0.4 | 0.3 |
| Pepino | 859 | 0.4 | 0.3 |
| Melón | 381 | 0.2 | 0.1 |
| Papa | 338 | 0.2 | 0.1 |
| Lechuga | 244 | 0.1 | 0.1 |

Access to Services (Technical Assistance, Training and Finance)

| Servicios | Familiar | Peso Familiar | Peso CENAGRO |
|--------------------|----------|---------------|--------------|
| Asistencia Tecnica | 30057 | 13.6 | 11.4 |
| Capacitacion | 31927 | 14.4 | 12.2 |
| Financiamiento | 31257 | 14.1 | 11.9 |

| Acceso a Servicios de Asistencia Tecnica | Familiar | Peso Familiar | Peso CENAGRO |
|--|----------|---------------|--------------|
| K humano/social - Asistencia MAGFOR | 11271 | 5.1 | 4.3 |
| K humano/social - Asistencia INTA | 5781 | 2.6 | 2.2 |
| K humano/social - Asistencia Cooperativa/Gremio/Asoc | 5606 | 2.5 | 2.1 |
| K humano/social - Asistencia ONG | 5394 | 2.4 | 2.1 |
| K humano/social - Asistencia Privada | 1123 | 0.5 | 0.4 |
| K humano/social - Asistencia IDR | 1024 | 0.5 | 0.4 |
| K humano/social - Asistencia Propia EA | 577 | 0.3 | 0.2 |
| K humano/social - Asistencia Banco/Microfinacieras | 721 | 0.3 | 0.3 |

| Acceso a Servicios de Capacitacion | Familiar | Peso Familiar | Peso CENAGRO |
|--|----------|---------------|--------------|
| K humano/social - Capacitación MAGFOR | 11027 | 5.0 | 4.2 |
| K humano/social - Capacitación ONG | 6619 | 3.0 | 2.5 |
| K humano/social - Capacitación INTA | 6320 | 2.9 | 2.4 |
| K humano/social - Capacitación Cooperativa/Gremio/Asoc | 6108 | 2.8 | 2.3 |
| K humano/social - Capacitación IDR | 1128 | 0.5 | 0.4 |
| K humano/social - Capacitación Privada | 855 | 0.4 | 0.3 |
| K humano/social - Capacitación INAFOR | 590 | 0.3 | 0.2 |
| K humano/social - Capacitación Banco/Microfinacieras | 728 | 0.3 | 0.3 |
| K humano/social - Capacitación Propia EA | 399 | 0.2 | 0.2 |

| Acceso a Servicios Financieros | Familiar | Peso Familiar | Peso CENAGRO |
|---|----------|---------------|--------------|
| K financiero - Recibió Préstamo de Banco/Microfinanciera | 13507 | 6.10 | 5.1 |
| K financiero - Recibió Préstamo de Cajas Rurales y Cooperativas AyC | 7894 | 3.56 | 3.0 |
| K financiero - Recibió Préstamo de ONG | 2331 | 1.05 | 0.9 |
| K financiero - Recibió otro tipo de Préstamo | 1699 | 0.77 | 0.6 |
| K financiero - Recibió Préstamo de Prestamista | 1486 | 0.67 | 0.6 |
| K financiero - Recibió Préstamo de Acopiador | 1184 | 0.53 | 0.5 |
| K financiero - Recibió Préstamo de Proyectos/Programas de Gobierno | 1179 | 0.53 | 0.4 |
| K financiero - Recibió Préstamo de Empresa/Casa Comercial | 1174 | 0.53 | 0.4 |
| K financiero - Recibió Préstamo de Banco Produzcamos | 421 | 0.19 | 0.2 |
| K financiero - Recibió Préstamo Forestal | 119 | 0.05 | 0.0 |
| K financiero - Recibió Préstamo Acuícola | 44 | 0.02 | 0.0 |

Assets

| Activos de Equipos | Familiar | Peso Familiar | Peso CENAGRO |
|--|----------|---------------|--------------|
| K fisico - bombas de fumigacion manual | 118473 | 53.5 | 45.1 |
| K fisico - silos para foraje o granos (S1376H y S1376E corr) | 30278 | 13.7 | 11.5 |
| K fisico - arado tradicional | 23657 | 10.7 | 9.0 |
| K fisico - carretas, carreton, carretillas | 21270 | 9.6 | 8.1 |
| K fisico - despulpadora | 12662 | 5.7 | 4.8 |
| K fisico - motosierra | 10102 | 4.6 | 3.8 |
| K fisico - arado mejorado | 4304 | 1.9 | 1.6 |
| K fisico - camioneta | 3950 | 1.8 | 1.5 |
| K fisico - tractor | 2955 | 1.3 | 1.1 |
| K fisico - picadora | 2930 | 1.3 | 1.1 |
| K fisico - bote | 2004 | 0.9 | 0.8 |
| K fisico - desgranadora manual | 1843 | 0.8 | 0.7 |
| K fisico - herramienta de implementacion para tractor | 1353 | 0.6 | 0.5 |
| K fisico - desgranadora mecanizada | 1003 | 0.5 | 0.4 |
| K fisico - motocicleta | 881 | 0.4 | 0.3 |
| K fisico - camion | 824 | 0.4 | 0.3 |
| K fisico - cosechadora | 251 | 0.1 | 0.1 |
| K fisico - descortezadora | 151 | 0.1 | 0.1 |
| K fisico - trilladora de arroz | 81 | 0.0 | 0.0 |

| Activos de Infraestructura | Familiar | Peso Familiar | Peso CENAGRO |
|---|----------|---------------|--------------|
| K fisico - pozo (S537F y S537G corr) | 55457 | 25.0 | 21.1 |
| K fisico - Gallinero/Gallera/Galerones (S1376N) | 38540 | 17.4 | 14.7 |
| K fisico - pilas para agua (S1376O y S1376P corr) | 27767 | 12.5 | 10.6 |
| K fisico - Chiqueros/Porquerizas (S1376O) | 16735 | 7.6 | 6.4 |
| K fisico - paneles solares | 13380 | 6.0 | 5.1 |
| K fisico - Trojas | 9889 | 4.5 | 3.8 |
| K fisico - Recolección agua lluvia | 5993 | 2.7 | 2.3 |
| K fisico - tanques de Agua (S1376Q corr) | 5031 | 2.3 | 1.9 |
| K fisico - Establos Comedero | 3076 | 1.4 | 1.2 |
| K fisico - motor electrico, gasolina/diesel | 2591 | 1.2 | 1.0 |
| K fisico - patio de secado | 2042 | 0.9 | 0.8 |
| K fisico - Salas de Ordeño | 2026 | 0.9 | 0.8 |
| K fisico - Bañaderos | 1312 | 0.6 | 0.5 |
| K fisico - generadora electrica | 1147 | 0.5 | 0.4 |
| K fisico - secadora | 820 | 0.4 | 0.3 |
| K fisico - beneficio seco | 737 | 0.3 | 0.3 |
| K fisico - trapiche | 400 | 0.2 | 0.2 |
| K fisico - beneficio humedo | 182 | 0.1 | 0.1 |

| Activos de Infraestructura de Riego | Familiar | Peso Familiar | Peso CENAGRO |
|---|----------|---------------|--------------|
| EA conectada a una Red de agua pública | 46202 | 20.9 | 17.6 |
| K fisico - Tiene Sistema de riego en EA | 7552 | 3.4 | 2.9 |
| K fisico - Riego por Gravedad | 3024 | 1.4 | 1.2 |
| K fisico - bomba de riego | 2567 | 1.2 | 1.0 |
| K fisico - Riego por Goteo | 978 | 0.4 | 0.4 |
| K fisico - Riego por Aspersión | 1637 | 0.7 | 0.6 |
| K fisico - Riego Manualmente | 2021 | 0.9 | 0.8 |

7.1.2 Patronal Farms

Human Capital

| Variables sobre el Capital Humano en Explotaciones Patronales | N | Media | Desv. típ. |
|---|-------|-------|------------|
| Total Trabajadores Permanentes | 35425 | 3.30 | 7.98 |
| Total Trabajadores Temporales | 36442 | 11.60 | 526.62 |
| Nb hombres hogar | 27568 | 2.53 | 1.54 |
| Nb mujeres hogar | 27568 | 2.17 | 1.53 |
| Total personas hogar | 27568 | 5.03 | 3.57 |
| Numero de personas entre 5-64 hogar | 27568 | 3.17 | 1.85 |
| Numero de personas de -15 hogar | 27568 | 1.24 | 1.45 |
| Numero de personas de +65 hogar | 27568 | .28 | 0.57 |
| Nb personas que trabajaron en la finca con relacion de parentesco | 26596 | 2.70 | 1.78 |
| Numero de personas entre 16-64 hogar | 27568 | 3.50 | |
| Relacion de Dependencia | 27568 | 1.44 | |

Natural Capital

| Variables sobre el Capital Natural en Explotaciones Patronales | N | Media (Ha.) | Peso | Desv. típ. |
|--|-------|-------------|-------|------------|
| Superficie total de la finca (mz) S428 | 40621 | 65.8 | 100.0 | 230.1 |
| Superficie de la finca en cultivos anuales (mz) | 40621 | 5.3 | 8.0 | 50.1 |
| Superficie de la finca en cultivos perenes (mz) | 40621 | 3.3 | 5.0 | 30.3 |
| Superficie de la finca en pastos sembrados (mz) | 40621 | 12.2 | 18.5 | 67.5 |
| Superficie de la finca en pastos naturales (mz) | 40621 | 29.1 | 44.3 | 122.5 |
| Superficie de la finca en tierras en descanso/tacotales (mz) | 40621 | 6.8 | 10.4 | 62.5 |
| Superficie de la finca en bosque (mz) | 40621 | 7.4 | 11.2 | 58.9 |
| Superficie de la finca en instalaciones (mz) | 40621 | 0.5 | 0.8 | 3.9 |
| Superficie de la finca en pantanos/otra tierra (mz) | 40621 | 1.2 | 1.8 | 27.0 |
| Superficie de la finca con riego (mz) | 40621 | 1.1 | 1.7 | 36.7 |

| Producción de Granos | Patronal | Peso Patronal | Peso CENAGRO |
|----------------------|----------|---------------|--------------|
| Maíz Blanco | 23864 | 58.7 | 9.1 |
| Frijol Rojo | 18664 | 45.9 | 7.1 |
| Arroz de Secano | 2403 | 5.9 | 0.9 |
| Frijol Negro | 1905 | 4.7 | 0.7 |
| Sorgo Millón | 1881 | 4.6 | 0.7 |
| Sorgo Blanco | 1779 | 4.4 | 0.7 |
| Sorgo Rojo | 452 | 1.1 | 0.2 |
| Arroz de Riego | 363 | 0.9 | 0.1 |

| Cultivos de Exportación | Patronal | Peso Patronal | Peso CENAGRO |
|-------------------------|----------|---------------|--------------|
| Ganado Vacuno | 27255 | 67.1 | 10.4 |
| Café | 9898 | 24.4 | 3.8 |
| Plátano | 7769 | 19.1 | 3.0 |
| Cacao | 3937 | 9.7 | 1.5 |
| Caña de Azúcar | 2572 | 6.3 | 1.0 |
| Ajonjolí | 574 | 1.4 | 0.2 |
| Banana de Exportación | 507 | 1.2 | 0.2 |
| Maní | 233 | 0.6 | 0.1 |
| Palma Africana | 158 | 0.4 | 0.1 |
| Tabaco | 65 | 0.2 | 0.0 |
| Soja | 33 | 0.1 | 0.0 |
| Algodón | 3 | 0.0 | 0.0 |

| Cultivos | Patronal | Peso Patronal | Peso CENAGRO |
|------------|----------|---------------|--------------|
| Papaya | 3470 | 8.5 | 1.3 |
| Pitahaya | 2694 | 6.6 | 1.0 |
| Piña | 2127 | 5.2 | 0.8 |
| Tomate | 1204 | 3.0 | 0.5 |
| Ayote | 1051 | 2.6 | 0.4 |
| Chiltoma | 969 | 2.4 | 0.4 |
| Yuca | 780 | 1.9 | 0.3 |
| Sandía | 491 | 1.2 | 0.2 |
| Repollo | 394 | 1.0 | 0.2 |
| Cebolla | 330 | 0.8 | 0.1 |
| Quequisque | 300 | 0.7 | 0.1 |
| Pepino | 291 | 0.7 | 0.1 |
| Malanga | 244 | 0.6 | 0.1 |
| Papa | 169 | 0.4 | 0.1 |
| Melón | 124 | 0.3 | 0.0 |
| Lechuga | 80 | 0.2 | 0.0 |

Access to Services (Technical Assistance, Training and Finance)

| Servicios | Patronal | Peso Patronal | Peso CENAGRO |
|--------------------|----------|---------------|--------------|
| Asistencia Tecnica | 8249 | 20.3 | 3.1 |
| Capacitacion | 7357 | 18.1 | 2.8 |
| Financiamiento | 9045 | 22.3 | 3.4 |

| Acceso a Servicios de Asistencia Tecnica | Patronal | Peso Patronal | Peso CENAGRO |
|--|----------|---------------|--------------|
| K humano/social - Asistencia MAGFOR | 2501 | 6.2 | 1.0 |
| K humano/social - Asistencia Cooperativa/Gremio/Asoc | 1893 | 4.7 | 0.7 |
| K humano/social - Asistencia Privada | 1301 | 3.2 | 0.5 |
| K humano/social - Asistencia INTA | 1139 | 2.8 | 0.4 |
| K humano/social - Asistencia ONG | 858 | 2.1 | 0.3 |
| K humano/social - Asistencia Propia EA | 570 | 1.4 | 0.2 |
| K humano/social - Asistencia IDR | 370 | 0.9 | 0.1 |
| K humano/social - Asistencia Banco/Microfinancieras | 377 | 0.9 | 0.1 |

| Acceso a Servicios de Capacitacion | Patronal | Peso Patronal | Peso CENAGRO |
|--|----------|---------------|--------------|
| K humano/social - Capacitación MAGFOR | 2142 | 5.3 | 0.8 |
| K humano/social - Capacitación Cooperativa/Gremio/Asoc | 1856 | 4.6 | 0.7 |
| K humano/social - Capacitación INTA | 1127 | 2.8 | 0.4 |
| K humano/social - Capacitación Privada | 927 | 2.3 | 0.4 |
| K humano/social - Capacitación ONG | 897 | 2.2 | 0.3 |
| K humano/social - Capacitación Propia EA | 380 | 0.9 | 0.1 |
| K humano/social - Capacitación IDR | 373 | 0.9 | 0.1 |
| K humano/social - Capacitación Banco/Microfinancieras | 297 | 0.7 | 0.1 |
| K humano/social - Capacitación INAFOR | 173 | 0.4 | 0.1 |

| Acceso a Servicios Financieros | Patronal | Peso Patronal | Peso CENAGRO |
|---|----------|---------------|--------------|
| K financiero - Recibió Préstamo de Banco/Microfinanciera | 4707 | 11.6 | 1.8 |
| K financiero - Recibió Préstamo de Cajas Rurales y Cooperativas A y C | 1898 | 4.7 | 0.7 |
| K financiero - Recibió Préstamo de Empresa/Casa Comercial | 557 | 1.4 | 0.2 |
| K financiero - Recibió Préstamo de Acopiador | 432 | 1.1 | 0.2 |
| K financiero - Recibió Préstamo de ONG | 328 | 0.8 | 0.1 |
| K financiero - Recibió otro tipo de Préstamo | 316 | 0.8 | 0.1 |
| K financiero - Recibió Préstamo de Prestamista | 315 | 0.8 | 0.1 |
| K financiero - Recibió Préstamo de Proyectos/Programas de Gobierno | 189 | 0.5 | 0.1 |
| K financiero - Recibió Préstamo de Banco Producers | 165 | 0.4 | 0.1 |
| K financiero - Recibió Préstamo Forestal | 63 | 0.2 | 0.0 |
| K financiero - Recibió Préstamo Acuicola | 12 | 0.0 | 0.0 |

Assets

| Activos de Equipos | Patronal | Peso Patronal | Peso CENAGRO |
|---|----------|---------------|--------------|
| K fisico - bombas de fumigacion manual | 31220 | 76.9 | 11.9 |
| K fisico - carretas, carreton, carretillas | 9250 | 22.8 | 3.5 |
| K fisico - motosierra | 7477 | 18.4 | 2.8 |
| K fisico - silos para foraje o granos | 7294 | 18.0 | 2.8 |
| K fisico - camioneta | 6094 | 15.0 | 2.3 |
| K fisico - arado tradicional | 5645 | 13.9 | 2.2 |
| K fisico - despulpadora | 5233 | 12.9 | 2.0 |
| K fisico - picadora | 5046 | 12.4 | 1.9 |
| K fisico - tractor | 2309 | 5.7 | 0.9 |
| K fisico - arado mejorado | 2121 | 5.2 | 0.8 |
| K fisico - herramienta de implementacion para tractor | 1391 | 3.4 | 0.5 |
| K fisico - camion | 1350 | 3.3 | 0.5 |
| K fisico - desgranadora manual | 724 | 1.8 | 0.3 |
| K fisico - bote | 460 | 1.1 | 0.2 |
| K fisico - motocicleta | 444 | 1.1 | 0.2 |
| K fisico - cosechadora | 391 | 1.0 | 0.1 |
| K fisico - desgranadora mecanizada | 344 | 0.8 | 0.1 |
| K fisico - descortezadora | 155 | 0.4 | 0.1 |
| K fisico - trilladora de arroz | 84 | 0.2 | 0.0 |

| Activos de Infraestructura | Patronal | Peso Patronal | Peso CENAGRO |
|---|----------|---------------|--------------|
| K fisico - pozo (S537F y S537G corr) | 13422 | 33.0 | 5.1 |
| K fisico - pilas para agua (S1376O y S1376P corr) | 13188 | 32.5 | 5.0 |
| K fisico - Gallinero/Gallera/Galerones (S1376N) | 8605 | 21.2 | 3.3 |
| K fisico - paneles solares | 5988 | 14.7 | 2.3 |
| K fisico - Chiqueros/Porquerizas (S1376O) | 5653 | 13.9 | 2.2 |
| K fisico - Establos Comedero | 4763 | 11.7 | 1.8 |
| K fisico - tanques de Agua (S1376Q corr) | 3721 | 9.2 | 1.4 |
| K fisico - Salas de Ordeño | 3335 | 8.2 | 1.3 |
| K fisico - motor electrico, gasolina/diesel | 2963 | 7.3 | 1.1 |
| K fisico - Trojas | 2450 | 6.0 | 0.9 |
| K fisico - patio de secado | 1544 | 3.8 | 0.6 |
| K fisico - Recolección agua lluvia | 1339 | 3.3 | 0.5 |
| K fisico - generadora electrica | 1291 | 3.2 | 0.5 |
| K fisico - Bañaderos | 1139 | 2.8 | 0.4 |
| K fisico - beneficio seco | 758 | 1.9 | 0.3 |
| K fisico - secadora | 459 | 1.1 | 0.2 |
| K fisico - trapiche | 201 | 0.5 | 0.1 |
| K fisico - beneficio humedo | 145 | 0.4 | 0.1 |

| Activos de Infraestructura de Riego | Patronal | Peso Patronal | Peso CENAGRO |
|---|----------|---------------|--------------|
| EA conectada a una Red de agua pública | 7260 | 17.9 | 2.8 |
| K fisico - Tiene Sistema de riego en EA | 3949 | 9.7 | 1.5 |
| K fisico - bomba de riego | 2475 | 6.1 | 0.9 |
| K fisico - Riego por Gravedad | 1872 | 4.6 | 0.7 |
| K fisico - Riego por Aspersión | 1086 | 2.7 | 0.4 |
| K fisico - Riego Manualmente | 665 | 1.6 | 0.3 |
| K fisico - Riego por Goteo | 581 | 1.4 | 0.2 |

7.1.3 Corporate Farms

Human Capital

| Variables sobre el Capital Humano en Explotaciones Empresariales | N | Media | Desv. típ. |
|--|-----|-------|------------|
| K humano - Total Trabajadores Permanentes | 347 | 45.3 | 180.302 |
| K humano - Total Trabajadores Temporales | 334 | 117.3 | 418.821 |

Natural Capital

| Variables sobre el Capital Natural en Explotaciones Empresariales | N | Media (Ha.) | Peso | Desv. típ. |
|--|-----|-------------|-------|------------|
| K natural - Superficie total de la finca (mz) S428 | 354 | 529.1 | 100.0 | 2545.3 |
| K natural - superficie de la finca en cultivos anuales (mz) | 354 | 65.1 | 12.3 | 534.1 |
| K natural - superficie de la finca en cultivos perenes (mz) | 354 | 203.1 | 38.4 | 2287.6 |
| K natural - superficie de la finca en pastos sembrados (mz) | 354 | 51.0 | 9.6 | 354.5 |
| K natural - superficie de la finca en pastos naturales (mz) | 354 | 111.5 | 21.1 | 560.6 |
| K natural - superficie de la finca en tierras en descanso/tacotales (mz) | 354 | 37.6 | 7.1 | 234.2 |
| K natural - superficie de la finca en bosque (mz) | 354 | 45.1 | 8.5 | 178.9 |
| K natural - superficie de la finca en instalaciones (mz) | 354 | 3.0 | 0.6 | 10.1 |
| K natural - superficie de la finca en pantanos/otra tierra (mz) | 354 | 12.8 | 2.4 | 158.6 |
| K natural - superficie de la finca con riego (mz) | 354 | 124.4 | 23.5 | 1485.8 |

| Producción de Granos | Empresarios | Peso Empresarial | Peso CENAGRO |
|----------------------|-------------|------------------|--------------|
| Maíz Blanco | 63 | 17.8 | 0.02 |
| Frijol Rojo | 51 | 14.4 | 0.02 |
| Arroz de Secano | 15 | 4.2 | 0.01 |
| Sorgo Rojo | 10 | 2.8 | 0.00 |
| Arroz de Riego | 8 | 2.3 | 0.00 |
| Sorgo Blanco | 7 | 2.0 | 0.00 |
| Frijol Negro | 4 | 1.1 | 0.00 |
| Sorgo Millón | 4 | 1.1 | 0.00 |

| Cultivos de Exportación | Empresarios | Peso Empresarial | Peso CENAGRO |
|-------------------------|-------------|------------------|--------------|
| Ganadería Vacuna | 135 | 38.1 | 0.05 |
| Café | 77 | 21.8 | 0.03 |
| Plátano | 56 | 15.8 | 0.02 |
| Caña de Azúcar | 26 | 7.3 | 0.01 |
| Cacao | 23 | 6.5 | 0.01 |
| Maní | 14 | 4.0 | 0.01 |
| Tabaco | 14 | 4.0 | 0.01 |
| Palma Africana | 8 | 2.3 | 0.00 |
| Ajonjolí | 7 | 2.0 | 0.00 |
| Banano de Exportación | 3 | 0.8 | 0.00 |
| Algodón | 1 | 0.3 | 0.00 |

| Cultivos | Empresarios | Peso Empresarial | Peso CENAGRO |
|------------|-------------|------------------|--------------|
| Papaya | 29 | 8.2 | 0.01 |
| Tomate | 20 | 5.6 | 0.01 |
| Chiltoma | 17 | 4.8 | 0.01 |
| Ayote | 15 | 4.2 | 0.01 |
| Pitahaya | 14 | 4.0 | 0.01 |
| Pepino | 12 | 3.4 | 0.00 |
| Yuca | 10 | 2.8 | 0.00 |
| Piña | 9 | 2.5 | 0.00 |
| Sandia | 5 | 1.4 | 0.00 |
| Cebolla | 5 | 1.4 | 0.00 |
| Malanga | 4 | 1.1 | 0.00 |
| Papa | 2 | 0.6 | 0.00 |
| Repollo | 2 | 0.6 | 0.00 |
| Melon | 2 | 0.6 | 0.00 |
| Lechuga | 2 | 0.6 | 0.00 |
| Quequisque | 1 | 0.3 | 0.00 |

Access to Services (Technical Assistance, Training and Finance)

| Servicios | Empresarial | Peso Empresarial | Peso CENAGRO |
|--------------------|-------------|------------------|--------------|
| Asistencia Tecnica | 226 | 63.8 | 0.09 |
| Capacitacion | 203 | 57.3 | 0.08 |
| Financiamiento | 69 | 19.5 | 0.03 |

| Acceso a Servicios de Asistencia Tecnica | Empresarial | Peso Empresarial | Peso CENAGRO |
|--|-------------|------------------|--------------|
| K humano/social - Asistencia Propia EA | 91 | 25.7 | 0.03 |
| K humano/social - Asistencia Privada | 80 | 22.6 | 0.03 |
| K humano/social - Asistencia MAGFOR | 54 | 15.3 | 0.02 |
| K humano/social - Asistencia ONG | 16 | 4.5 | 0.01 |
| K humano/social - Asistencia INTA | 13 | 3.7 | 0.00 |
| K humano/social - Asistencia Cooperativa/Gremio/Asoc | 4 | 1.1 | 0.00 |
| K humano/social - Asistencia Banco/Microfinacieras | 3 | 0.8 | 0.00 |
| K humano/social - Asistencia IDR | 1 | 0.3 | 0.00 |

| Acceso a Servicios de Capacitacion | Empresarial | Peso Empresarial | Peso CENAGRO |
|--|-------------|------------------|--------------|
| K humano/social - Capacitación Propia EA | 80 | 22.6 | 0.03 |
| K humano/social - Capacitación Privada | 67 | 18.9 | 0.03 |
| K humano/social - Capacitación MAGFOR | 53 | 15.0 | 0.02 |
| K humano/social - Capacitación ONG | 14 | 4.0 | 0.01 |
| K humano/social - Capacitación INTA | 13 | 3.7 | 0.00 |
| K humano/social - Capacitación INAFOR | 12 | 3.4 | 0.00 |
| K humano/social - Capacitación Cooperativa/Gremio/Asoc | 4 | 1.1 | 0.00 |
| K humano/social - Capacitación Banco/Microfinacieras | 3 | 0.8 | 0.00 |
| K humano/social - Capacitación IDR | 1 | 0.3 | 0.00 |

| Acceso a Servicios Financieros | Empresarial | Peso Empresarial | Peso CENAGRO |
|---|-------------|------------------|--------------|
| K financiero - Recibió Préstamo de Banco/Microfinanciera | 41 | 11.6 | 0.02 |
| K financiero - Recibió Préstamo de Empresa/Casa Comercial | 14 | 4.0 | 0.01 |
| K financiero - Recibió otro tipo de Préstamo | 4 | 1.1 | 0.00 |
| K financiero - Recibió Préstamo de ONG | 3 | 0.8 | 0.00 |
| K financiero - Recibió Préstamo Forestal | 2 | 0.6 | 0.00 |
| K financiero - Recibió Préstamo de Proyectos/Programas de Gobierno | 2 | 0.6 | 0.00 |
| K financiero - Recibió Préstamo de Acopiador | 2 | 0.6 | 0.00 |
| K financiero - Recibió Préstamo de Cajas Rurales y Cooperativas A y C | 1 | 0.3 | 0.00 |

Assets

| Activos de Equipos | Empresarial | Peso Empresarial | Peso CENAGRO |
|--|-------------|------------------|--------------|
| K fisico - bombas de fumigacion manual | 262 | 74.0 | 0.10 |
| K fisico - tractor | 133 | 37.6 | 0.05 |
| K fisico - carretas, carreton, carretillas | 119 | 33.6 | 0.05 |
| K fisico - camioneta | 119 | 33.6 | 0.05 |
| K fisico - motosierra | 108 | 30.5 | 0.04 |
| K fisico - herramienta de implementacion para tractor | 78 | 22.0 | 0.03 |
| K fisico - silos para foraje o granos (S1376H y S1376E corr) | 74 | 20.9 | 0.03 |
| K fisico - camion | 67 | 18.9 | 0.03 |
| K fisico - picadora | 63 | 17.8 | 0.02 |
| K fisico - despulpadora | 45 | 12.7 | 0.02 |
| K fisico - arado tradicional | 28 | 7.9 | 0.01 |
| K fisico - cosechadora | 25 | 7.1 | 0.01 |
| K fisico - arado mejorado | 22 | 6.2 | 0.01 |
| K fisico - bote | 15 | 4.2 | 0.01 |
| K fisico - motocicleta | 11 | 3.1 | 0.00 |
| K fisico - desgranadora mecanizada | 11 | 3.1 | 0.00 |
| K fisico - desgranadora manual | 9 | 2.5 | 0.00 |
| K fisico - trilladora de arroz | 6 | 1.7 | 0.00 |
| K fisico - descortezadora | 3 | 0.8 | 0.00 |

| Activos de Infraestructura | Empresarial | Peso Empresarial | Peso CENAGRO |
|---|-------------|------------------|--------------|
| K fisico - pozo (S537F y S537G corr) | 196 | 55.4 | 0.07 |
| K fisico - tanques de Agua (S1376Q corr) | 148 | 41.8 | 0.06 |
| K fisico - pilas para agua (S1376O y S1376P corr) | 146 | 41.2 | 0.06 |
| K fisico - motor electrico, gasolina/diesel | 108 | 30.5 | 0.04 |
| K fisico - generadora electrica | 92 | 26.0 | 0.04 |
| K fisico - Gallinero/Gallera/Galerones (S1376N) | 78 | 22.0 | 0.03 |
| K fisico - Establos Comedero | 61 | 17.2 | 0.02 |
| K fisico - paneles solares | 49 | 13.8 | 0.02 |
| K fisico - patio de secado | 45 | 12.7 | 0.02 |
| K fisico - Chiqueros/Porquerizas (S1376O) | 40 | 11.3 | 0.02 |
| K fisico - Salas de Ordeño | 37 | 10.5 | 0.01 |
| K fisico - Bañaderos | 29 | 8.2 | 0.01 |
| K fisico - Recolección agua lluvia | 24 | 6.8 | 0.01 |
| K fisico - beneficio seco | 12 | 3.4 | 0.00 |
| K fisico - secadora | 11 | 3.1 | 0.00 |
| K fisico - beneficio humedo | 3 | 0.8 | 0.00 |
| K fisico - trapiche | 1 | 0.3 | 0.00 |
| K fisico - Trojas | 1 | 0.3 | 0.00 |

| Activos de Infraestructura de Riego | Empresarial | Peso Empresarial | Peso CENAGRO |
|---|-------------|------------------|--------------|
| K fisico - Tiene Sistema de riego en EA | 98 | 27.7 | 0.04 |
| EA conectada a una Red de agua pública | 88 | 24.9 | 0.03 |
| K fisico - bomba de riego | 82 | 23.2 | 0.03 |
| K fisico - Riego por Aspersión | 50 | 14.1 | 0.02 |
| K fisico - Riego por Gravedad | 33 | 9.3 | 0.01 |
| K fisico - Riego por Goteo | 27 | 7.6 | 0.01 |
| K fisico - Riego Manualmente | 13 | 3.7 | 0.00 |

7.2 Characteristics of the Proposed Sub-types and Its statistical validation

7.2.1 The Cattle producers

Natural Capital

| ANOVA K. Natural Cattle Producers Subtypes | | | | | | |
|---|--------------|-------------------|-------|------------------|----------|-------|
| | | Suma de cuadrados | gl | Media cuadrática | F | Sig. |
| K natural - Total Area of the Farm | Inter-grupos | 347503207.627 | 2 | 173751603.814 | 4728.059 | 0.000 |
| | Intra-grupos | 2012634460.780 | 54767 | 36749.036 | | |
| | Total | 2360137668.407 | 54769 | | | |
| K natural - Total area of annual crops | Inter-grupos | 4756138.444 | 2 | 2378069.222 | 1025.957 | 0.000 |
| | Intra-grupos | 126944661.355 | 54767 | 2317.904 | | |
| | Total | 131700799.799 | 54769 | | | |
| K natural - Total area of perennial crops | Inter-grupos | 1339317.162 | 2 | 669658.581 | 896.454 | 0.000 |
| | Intra-grupos | 40911413.021 | 54767 | 747.008 | | |
| | Total | 42250730.183 | 54769 | | | |
| K natural - Total area of improved pastures | Inter-grupos | 13585273.809 | 2 | 6792636.904 | 1715.997 | 0.000 |
| | Intra-grupos | 216790827.340 | 54767 | 3958.421 | | |
| | Total | 230376101.149 | 54769 | | | |
| K natural - Total area of natural pastures | Inter-grupos | 75717998.649 | 2 | 37858999.325 | 3046.754 | 0.000 |
| | Intra-grupos | 680535435.068 | 54767 | 12426.013 | | |
| | Total | 756253433.718 | 54769 | | | |

| Duncan Test: K natural - Total Area of the farm | | | | |
|--|-------|------------------------------|-------|--------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | | |
| | | 1 | 2 | 3 |
| Familiar Cattle producer | 40101 | 39.5 | | |
| Patronal Cattle Producer | 14578 | | 173.2 | |
| C. Business Cattle Producer | 91 | | | 1387.0 |
| Sig. | | 1.000 | 1.000 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | | |
| a. Usa el tamaño muestral de la media armónica = 270.696. | | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los | | | | |

| Duncan Test : K natural - Total area of annual crops | | | |
|---|-------|------------------------------|----------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | |
| | | 1 | 2 |
| Familiar Cattle producer | 40101 | 3.3151 | |
| Patronal Cattle Producer | 14578 | 7.1191 | |
| C. Business Cattle Producer | 91 | | 229.3834 |
| Sig. | | .358 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 270.696. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica | | | |

| Duncan Test : K natural Total area of perennial crops | | | |
|---|----------|-------------------------------------|----------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | |
| | | 1 | 2 |
| Familiar Cattle producer | 40101 | .4844 | |
| Patronal Cattle Producer | 14578 | 1.6175 | |
| C. Business Cattle Producer | 91 | | 121.5804 |
| Sig. | | .630 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 270.696. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica | | | |

| Duncan Test : K natural - Total area of improved pastures | | | | |
|--|----------|-------------------------------------|----------|----------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | | |
| | | 1 | 2 | 3 |
| Familiar Cattle producer | 40101 | 7.7 | | |
| Patronal Cattle Producer | 14578 | | 37.5 | |
| C. Business Cattle Producer | 91 | | | 226.8 |
| Sig. | | 1.000 | 1.000 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | | |
| a. Usa el tamaño muestral de la media armónica = 270.696. | | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los | | | | |

| Duncan Test : K natural - Total area of natural pastures | | | | |
|--|----------|-------------------------------------|----------|----------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | | |
| | | 1 | 2 | 3 |
| Familiar Cattle producer | 40101 | 19.0 | | |
| Patronal Cattle Producer | 14578 | | 89.9 | |
| C. Business Cattle Producer | 91 | | | 530.8 |
| Sig. | | 1.000 | 1.000 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | | |
| a. Usa el tamaño muestral de la media armónica = 270.696. | | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los | | | | |

Human Capital

| ANOVA: K. Human Cattle Producers Subtypes | | | | | | |
|---|--------------|-------------------|-------|------------------|----------|-------|
| | | Suma de cuadrados | gl | Media cuadrática | F | Sig. |
| K human - Total Permanent Workers | Inter-grupos | 205874.101 | 2 | 102937.050 | 7687.791 | 0.000 |
| | Intra-grupos | 719561.308 | 53740 | 13.390 | | |
| | Total | 925435.408 | 53742 | | | |
| K human - Total Temporary Workers | Inter-grupos | 417475.158 | 2 | 208737.579 | 1021.634 | 0.000 |
| | Intra-grupos | 10874995.414 | 53226 | 204.317 | | |
| | Total | 11292470.572 | 53228 | | | |
| K human - Total Family Members | Inter-grupos | 1953.390 | 1 | 1953.390 | 157.795 | 0.000 |
| | Intra-grupos | 593921.830 | 47977 | 12.379 | | |
| | Total | 595875.221 | 47978 | | | |

| Duncan Test K humano - Total Permanent Workers | | | | |
|--|-------|------------------------------|-------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | | |
| | | 1 | 2 | 3 |
| Familiar Cattle producer | 40101 | 0.00 | | |
| Patronal Cattle Producer | 13554 | | 2.81 | |
| C. Business Cattle Producer | 88 | | | 38.56 |
| Sig. | | 1.000 | 1.000 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | | |
| a. Usa el tamaño muestral de la media armónica = 261.726. | | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los | | | | |

| Duncan Test K humano - Total Temporary Workers | | | | |
|--|-------|------------------------------|-------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | | |
| | | 1 | 2 | 3 |
| Familiar Cattle producer | 40101 | 1.52 | | |
| Patronal Cattle Producer | 13038 | | 4.14 | |
| C. Business Cattle Producer | 90 | | | 64.54 |
| Sig. | | 1.000 | 1.000 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | | |
| a. Usa el tamaño muestral de la media armónica = 267.553. | | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los | | | | |

| K humano - Total Family Member | | | | | | |
|--------------------------------|-------|-------|-------------------|--------------|-----------------|-----------------|
| SubTypes | N | Media | Desviación típica | Error típico | la media al 95% | |
| | | | | | Límite inferior | Límite superior |
| Familiar Cattle producer | 38699 | 5.29 | 3.553 | .018 | 5.26 | 5.33 |
| Patronal Cattle Producer | 9280 | 4.78 | 3.368 | .035 | 4.71 | 4.85 |
| C. Business Cattle Producer | 0 | | | | | |
| Total | 47979 | 5.20 | 3.524 | .016 | 5.16 | 5.23 |

7.2.2 Grains Producers

Natural Capital

| ANOVA K. Natural Grains Producers Subtypes | | | | | | |
|---|--------------|-------------------|-------|------------------|----------|-------|
| | | Suma de cuadrados | gl | Media cuadrática | F | Sig. |
| K natural - Total Area of the Farm | Inter-grupos | 6053648.351 | 2 | 3026824.176 | 512.213 | 0.000 |
| | Intra-grupos | 490188557.792 | 82952 | 5909.304 | | |
| | Total | 496242206.144 | 82954 | | | |
| K natural - Total area of annual crops | Inter-grupos | 223595.865 | 2 | 111797.932 | 883.055 | 0.000 |
| | Intra-grupos | 10502022.791 | 82952 | 126.604 | | |
| | Total | 10725618.656 | 82954 | | | |
| K natural - Total area of perennial crops | Inter-grupos | 4422.367 | 2 | 2211.184 | 171.469 | 0.000 |
| | Intra-grupos | 1069708.476 | 82952 | 12.896 | | |
| | Total | 1074130.843 | 82954 | | | |
| K natural - Total area of improved pastures | Inter-grupos | 101361.899 | 2 | 50680.949 | 504.511 | 0.000 |
| | Intra-grupos | 8332989.718 | 82952 | 100.456 | | |
| | Total | 8434351.617 | 82954 | | | |
| K natural - Total area of natural pasture | Inter-grupos | 669908.816 | 2 | 334954.408 | 1138.203 | 0.000 |
| | Intra-grupos | 24411407.681 | 82952 | 294.284 | | |
| | Total | 25081316.498 | 82954 | | | |

| Duncan Test: K natural - Total Area of the Farm | | | | |
|---|-------|------------------------------|-------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | | |
| | | 1 | 2 | 3 |
| Familiar Grains Producer | 75750 | 20.0 | | |
| Patronal Grains Producer | 7188 | | 50.0 | |
| C. Business Grain Producer | 17 | | | 113.4 |
| Sig. | | 1.000 | 1.000 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | | |
| a. Usa el tamaño muestral de la media armónica = 50.868. | | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los tamaños de los | | | | |

| Duncan Test: K natural - Total area of annual crops | | | | |
|---|-------|------------------------------|-------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | | |
| | | 1 | 2 | 3 |
| Familiar Grains Producer | 75750 | 4.2 | | |
| Patronal Grains Producer | 7188 | | 9.6 | |
| C. Business Grain Producer | 17 | | | 50.7 |
| Sig. | | 1.000 | 1.000 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | | |
| a. Usa el tamaño muestral de la media armónica = 50.868. | | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los tamaños de los | | | | |

| Duncan Test: K natural - Total area of perennial crops | | | |
|--|-------|------------------------------|--------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | |
| | | 1 | 2 |
| Familiar Grains Producer | 75750 | .6758 | |
| Patronal Grains Producer | 7188 | 1.4921 | 1.4921 |
| C. Business Grain Producer | 17 | | 2.4265 |
| Sig. | | .252 | .189 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 50.868. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los | | | |

| Duncan Test: K natural - Total area of improved pastures | | | |
|--|-------|------------------------------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | |
| | | 1 | 2 |
| Familiar Grains Producer | 17 | .29 | |
| Patronal Grains Producer | 75750 | 2.13 | |
| C. Business Grain Producer | 7188 | | 6.06 |
| Sig. | | .355 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 50.868. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los | | | |

| K natural - Total area of natural pasture | | | |
|--|-------|------------------------------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | |
| | | 1 | 2 |
| Familiar Grains Producer | 17 | 3.8 | |
| Patronal Grains Producer | 75750 | 4.8 | |
| C. Business Grain Producer | 7188 | | 14.9 |
| Sig. | | .784 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 50.868. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los | | | |

Human Capital

| ANOVA: K. Human Grains Producers Subtypes | | | | | | |
|---|--------------|-------------------|-------|------------------|-----------|-------|
| | | Suma de cuadrados | gl | Media cuadrática | F | Sig. |
| K human - Total Permanent Workers | Inter-grupos | 37728.644 | 2 | 18864.322 | 15316.509 | 0.000 |
| | Intra-grupos | 101395.437 | 82326 | 1.232 | | |
| | Total | 139124.081 | 82328 | | | |
| K human - Total Temporary Workers | Inter-grupos | 30127.874 | 2 | 15063.937 | 196.102 | 0.000 |
| | Intra-grupos | 6309653.101 | 82139 | 76.817 | | |
| | Total | 6339780.976 | 82141 | | | |
| K human - Total Family Members | Inter-grupos | 941.328 | 1 | 941.328 | 71.798 | 0.000 |
| | Intra-grupos | 1042263.711 | 79497 | 13.111 | | |
| | Total | 1043205.038 | 79498 | | | |

| Duncan Test K humano - Total Permanent Workers | | | | |
|--|-------|------------------------------|-------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | | |
| | | 1 | 2 | 3 |
| Familiar Grains Producer | 75750 | 0.00 | | |
| Patronal Grains Producer | 6562 | | 2.48 | |
| C. Business Grain Producer | 17 | | | 5.76 |
| Sig. | | 1.000 | 1.000 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | | |
| a. Usa el tamaño muestral de la media armónica = 50.857. | | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los | | | | |

| Duncan Test K humano - Total Temporary Workers | | | |
|--|-------|------------------------------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | |
| | | 1 | 2 |
| Familiar Grains Producer | 75750 | 1.98 | |
| Patronal Grains Producer | 6377 | 4.22 | |
| C. Business Grain Producer | 15 | | 8.00 |
| Sig. | | .225 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 44.886. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los | | | |

| K humano - Total Family Member | | | | | | |
|--------------------------------|-------|-------|-------------------|--------------|-----------------|-----------------|
| SubTypes | N | Media | Desviación típica | Error típico | la media al 95% | |
| | | | | | Límite inferior | Límite superior |
| Familiar Grains Producer | 74161 | 5.48 | 3.623 | .013 | 5.46 | 5.51 |
| Patronal Grains Producer | 5338 | 5.05 | 3.596 | .049 | 4.95 | 5.14 |
| C. Business Grain Producer | 0 | | | | | |
| Total | 79499 | 5.45 | 3.622 | .013 | 5.43 | 5.48 |

7.2.3 Coffee Producers

Natural Capital

| ANOVA: K. Natural Coffee Producers Subtypes | | | | | | |
|---|--------------|---------------|-------|-------------|----------|-------|
| | | Sum of Square | gl | Square mean | F | Sig. |
| K natural - Total Area of Farms | Inter-grupos | 19065606 | 2 | 9532803 | 1852.372 | 0.000 |
| | Intra-grupos | 256484846 | 49839 | 5146 | | |
| | Total | 275550453 | 49841 | | | |
| K natural - total Area of annual crops | Inter-grupos | 33356 | 2 | 16678 | 137.984 | 0.000 |
| | Intra-grupos | 6023983 | 49839 | 121 | | |
| | Total | 6057339 | 49841 | | | |
| K natural - total Area of perennial crops | Inter-grupos | 1702703 | 2 | 851352 | 3444.599 | 0.000 |
| | Intra-grupos | 12317983 | 49839 | 247 | | |
| | Total | 14020686 | 49841 | | | |
| K natural - total Area of pastures | Inter-grupos | 412652 | 2 | 206326 | 299.808 | 0.000 |
| | Intra-grupos | 34298919 | 49839 | 688 | | |
| | Total | 34711571 | 49841 | | | |

| Duncan Test: K natural - Total Area of Farms | | | | |
|--|-------|------------------------------|-------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | | |
| | | 1 | 2 | 3 |
| Familiar Coffee Producer | 39833 | 14.8 | | |
| Patronal Coffee Producer | 9933 | | 51.7 | |
| C. Business Coffee Producer | 76 | | | 351.8 |
| Sig. | | 1.000 | 1.000 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | | |
| a. Usa el tamaño muestral de la media armónica = 225.841. | | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los tamaños | | | | |

| Duncan Test K natural - total Area of perennial crops | | | | |
|--|-------|------------------------------|-------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | | |
| | | 1 | 2 | 3 |
| Familiar Coffee Producer | 39833 | 2.6 | | |
| Patronal Coffee Producer | 9933 | | 11.8 | |
| C. Business Coffee Producer | 76 | | | 120.7 |
| Sig. | | 1.000 | 1.000 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | | |
| a. Usa el tamaño muestral de la media armónica = 225.841. | | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los tamaños | | | | |

| Duncan Test K natural - total Area of pastures | | | |
|---|-------|------------------------------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | |
| | | 1 | 2 |
| Familiar Coffee Producer | 39833 | 1.2 | |
| Patronal Coffee Producer | 9933 | 5.7 | |
| C. Business Coffee Producer | 76 | | 59.8 |
| Sig. | | .069 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 225.841. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica | | | |

Human Capital

| ANOVA: K. Human Coffee Producers Subtypes | | | | | | |
|---|--------------|---------------|-------|-------------|----------|-------|
| | | Sum of Square | gl | Square mean | F | Sig. |
| K human - Total Permanent Workers | Inter-grupos | 245082.595 | 2 | 122541.297 | 2874.852 | 0.000 |
| | Intra-grupos | 2112806.048 | 49567 | 42.625 | | |
| | Total | 2357888.642 | 49569 | | | |
| K human - Total Temporary Workers | Inter-grupos | 5217462.590 | 2 | 2608731.295 | 1157.929 | 0.000 |
| | Intra-grupos | 111278897.933 | 49393 | 2252.929 | | |
| | Total | 116496360.523 | 49395 | | | |
| K human - Total Family Members | Inter-grupos | 212.602 | 1 | 212.602 | 15.554 | 0.000 |
| | Intra-grupos | 631372.104 | 46192 | 13.668 | | |
| | Total | 631584.706 | 46193 | | | |

| Duncan Test K humano - Total Permanent Workers | | | | |
|--|-------|------------------------------|-------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | | |
| | | 1 | 2 | 3 |
| Familiar Coffee Producer | 39833 | 0.00 | | |
| Patronal Coffee Producer | 9661 | | 4.37 | |
| C. Business Coffee Producer | 76 | | | 36.49 |
| Sig. | | 1.000 | 1.000 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | | |
| a. Usa el tamaño muestral de la media armónica = 225.793. | | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los tamaños | | | | |

| Duncan Test K humano - Total Temporary Workers | | | | |
|--|-------|------------------------------|-------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | | |
| | | 1 | 2 | 3 |
| Familiar Coffee Producer | 39833 | 4.4 | | |
| Patronal Coffee Producer | 9489 | | 21.1 | |
| C. Business Coffee Producer | 74 | | | 211.6 |
| Sig. | | 1.000 | 1.000 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | | |
| a. Usa el tamaño muestral de la media armónica = 219.877. | | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los tamaños | | | | |

| K humano - Total Family Member | | | | | | |
|--------------------------------|-------|------|-------------------|--------------|-----------------|-----------------|
| SubTypes | N | Mean | Desviación típica | Error típico | la media al 95% | |
| | | | | | Límite inferior | Límite superior |
| Familiar Coffee Producer | 38964 | 5.71 | 3.685 | .019 | 5.68 | 5.75 |
| Patronal Coffee Producer | 7230 | 5.53 | 3.764 | .044 | 5.44 | 5.61 |
| C. Business Coffee Producer | 0 | | | | | |
| Total | 46194 | 5.68 | 3.698 | .017 | 5.65 | 5.72 |

7.2.4 Peanut Producers

Natural Capital

| ANOVA de un factor Productores de Maní: Capital Natural | | | | | | |
|---|--------------|-------------------|-----|------------------|--------|-------|
| | | Suma de cuadrados | gl | Media cuadrática | F | Sig. |
| K natural - Superficie total de la finca (mz) S428 | Inter-grupos | 17970765.495 | 2 | 8985382.747 | 38.327 | 0.000 |
| | Intra-grupos | 117453688.897 | 501 | 234438.501 | | |
| | Total | 135424454.392 | 503 | | | |
| K natural - superficie de la finca en cultivos anuales (mz) | Inter-grupos | 6862713.002 | 2 | 3431356.501 | 34.156 | 0.000 |
| | Intra-grupos | 50330677.666 | 501 | 100460.434 | | |
| | Total | 57193390.669 | 503 | | | |
| K natural - superficie de la finca en cultivos perenes (mz) | Inter-grupos | 17221.036 | 2 | 8610.518 | 4.302 | 0.014 |
| | Intra-grupos | 1002798.753 | 501 | 2001.594 | | |
| | Total | 1020019.790 | 503 | | | |
| K natural - superficie de la finca en pastos sembrados (mz) | Inter-grupos | 60333.429 | 2 | 30166.714 | 10.584 | 0.000 |
| | Intra-grupos | 1427981.533 | 501 | 2850.263 | | |
| | Total | 1488314.961 | 503 | | | |
| K natural - superficie de la finca en pastos naturales (mz) | Inter-grupos | 524701.284 | 2 | 262350.642 | 14.716 | 0.000 |
| | Intra-grupos | 8931587.815 | 501 | 17827.521 | | |
| | Total | 9456289.098 | 503 | | | |
| K natural - superficie de la finca en bosque (mz) | Inter-grupos | 18722.309 | 2 | 9361.154 | 2.974 | 0.052 |
| | Intra-grupos | 1577028.977 | 501 | 3147.762 | | |
| | Total | 1595751.286 | 503 | | | |

| Prueba de Duncan: K natural - Superficie total de la finca (mz) S428 | | | | |
|--|-----|------------------------------|-------|--------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | | |
| | | 1 | 2 | 3 |
| Familiar Manicero | 256 | 33.7 | | |
| Patronal Manicero | 234 | | 294.3 | |
| Empresarial Maní | 14 | | | 1001.2 |
| Sig. | | 1.000 | 1.000 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | | |
| a. Usa el tamaño muestral de la media armónica = 37.685. | | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los tamaños | | | | |

| Prueba de Duncan: K natural - superficie de la finca en cultivos anuales (mz) | | | | |
|--|-----|------------------------------|-------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | | |
| | | 1 | 2 | 3 |
| Familiar Manicero | 256 | 21.1 | | |
| Patronal Manicero | 234 | | 206.8 | |
| Empresarial Maní | 14 | | | 550.9 |
| Sig. | | 1.000 | 1.000 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | | |
| a. Usa el tamaño muestral de la media armónica = 37.685. | | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los tamaños | | | | |

| Prueba de Duncan: K natural - superficie de la finca en cultivos perenes (mz) | | | |
|---|-----|------------------------------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | |
| | | 1 | 2 |
| Familiar Manicero | 256 | .96 | |
| Patronal Manicero | 234 | 11.36 | 11.36 |
| Empresarial Maní | 14 | | 23.07 |
| Sig. | | .314 | .256 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 37.685. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica | | | |

| K natural - superficie de la finca en pastos sembrados (mz) | | |
|--|-----|------------------------------|
| K natural - superficie de la finca en pastos sembrados (mz) | | |
| SubtipoB | N | Subconjunto para alfa = 0.05 |
| | | 1 |
| Familiar Manicero | 256 | 3.0 |
| Empresarial Maní | 14 | 14.3 |
| Patronal Manicero | 234 | 25.2 |
| Sig. | | .088 |
| Se muestran las medias para los grupos en los subconjuntos | | |
| a. Usa el tamaño muestral de la media armónica = 37.685. | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la | | |

| Prueba Duncan K natural - superficie de la finca en pastos naturales (mz) | | | |
|--|-----|------------------------------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | |
| | | 1 | 2 |
| Familiar Manicero | 256 | 3.8 | |
| Patronal Manicero | 234 | 22.2 | |
| Empresarial Maní | 14 | | 201.1 |
| Sig. | | .551 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 37.685. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica | | | |

Human Capital

| ANOVA de un factor Productores de Maní: Capital Humano | | | | | | |
|--|--------------|-------------------|-----|------------------|--------|-------|
| | | Suma de cuadrados | gl | Media cuadrática | F | Sig. |
| K humano - Total Trabajadores Permanentes | Inter-grupos | 9040.052 | 2 | 4520.026 | 67.864 | 0.000 |
| | Intra-grupos | 31370.592 | 471 | 66.604 | | |
| | Total | 40410.643 | 473 | | | |
| K humano - Total Trabajadores Temporales | Inter-grupos | 26563.809 | 2 | 13281.904 | 42.201 | 0.000 |
| | Intra-grupos | 154532.183 | 491 | 314.729 | | |
| | Total | 181095.992 | 493 | | | |
| K humano - Total personas hogar (suma sobre criterio genero) | Inter-grupos | 56.522 | 1 | 56.522 | 3.983 | 0.047 |
| | Intra-grupos | 4328.396 | 305 | 14.191 | | |
| | Total | 4384.919 | 306 | | | |

| K humano - Total Trabajadores Permanentes | | | | |
|---|-----|------------------------------|-------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | | |
| | | 1 | 2 | 3 |
| Familiar Manicero | 256 | 0.00 | | |
| Patronal Manicero | 204 | | 7.36 | |
| Empresarial Maní | 14 | | | 17.86 |
| Sig. | | 1.000 | 1.000 | 1.000 |

Se muestran las medias para los grupos en los subconjuntos homogéneos.

a. Usa el tamaño muestral de la media armónica = 37.389.

b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los tamaños de

| Prueba de Duncan: K humano - Total Trabajadores Temporales | | | | |
|--|-----|------------------------------|-------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | | |
| | | 1 | 2 | 3 |
| Familiar Manicero | 256 | 3.1 | | |
| Patronal Manicero | 224 | | 16.8 | |
| Empresarial Maní | 14 | | | 26.8 |
| Sig. | | 1.000 | 1.000 | 1.000 |

Se muestran las medias para los grupos en los subconjuntos homogéneos.

a. Usa el tamaño muestral de la media armónica = 37.594.

b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los tamaños de

7.2.5 Sesame Producers

Natural Capital

| ANOVA de un factor Productores de Ajonjolí: Capital Natural | | | | | | |
|---|--------------|-------------------|------|------------------|---------|------|
| | | Suma de cuadrados | gl | Media cuadrática | F | Sig. |
| K natural - Superficie total de la finca (mz) S428 | Inter-grupos | 912936.937 | 2 | 456468.469 | 153.740 | .000 |
| | Intra-grupos | 11303326.228 | 3807 | 2969.090 | | |
| | Total | 12216263.165 | 3809 | | | |
| K natural - superficie de la finca en cultivos anuales (mz) | Inter-grupos | 51556.432 | 2 | 25778.216 | 78.902 | .000 |
| | Intra-grupos | 1243791.017 | 3807 | 326.712 | | |
| | Total | 1295347.449 | 3809 | | | |
| K natural - superficie de la finca en cultivos perenes (mz) | Inter-grupos | 1017.674 | 2 | 508.837 | 20.915 | .000 |
| | Intra-grupos | 92618.531 | 3807 | 24.328 | | |
| | Total | 93636.205 | 3809 | | | |
| K natural - superficie de la finca en pastos sembrados (mz) | Inter-grupos | 35331.611 | 2 | 17665.806 | 50.849 | .000 |
| | Intra-grupos | 1322605.952 | 3807 | 347.414 | | |
| | Total | 1357937.563 | 3809 | | | |
| K natural - superficie de la finca en pastos naturales (mz) | Inter-grupos | 87698.850 | 2 | 43849.425 | 98.244 | .000 |
| | Intra-grupos | 1699193.866 | 3807 | 446.334 | | |
| | Total | 1786892.716 | 3809 | | | |
| K natural - superficie de la finca en bosque (mz) | Inter-grupos | 17947.709 | 2 | 8973.855 | 16.743 | .000 |
| | Intra-grupos | 2040461.647 | 3807 | 535.976 | | |
| | Total | 2058409.356 | 3809 | | | |

| K natural - Superficie total de la finca (mz) S428 | | | | |
|---|------|------------------------------|-------|-------|
| Prueba de Duncan: K natural - Superficie total de la finca (mz) S428 | | | | |
| SubtipoB | N | Subconjunto para alfa = 0.05 | | |
| | | 1 | 2 | 3 |
| Familiar Ajonjolico | 3243 | 19.8 | | |
| Patronal Ajonjolico | 561 | | 61.8 | |
| Empresarial Ajonjoli | 6 | | | 134.8 |
| Sig. | | 1.000 | 1.000 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | | |
| a. Usa el tamaño muestral de la media armónica = 17.777. | | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los tamaños de | | | | |

| K natural - superficie de la finca en cultivos anuales (mz) | | | |
|--|------|------------------------------|---------|
| Prueba de Duncan: K natural - superficie de la finca en cultivos anuales (mz) | | | |
| SubtipoB | N | Subconjunto para alfa = 0.05 | |
| | | 1 | 2 |
| Familiar Ajonjolico | 3243 | 6.9838 | |
| Patronal Ajonjolico | 561 | 16.2877 | |
| Empresarial Ajonjoli | 6 | | 49.5317 |
| Sig. | | .125 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 17.777. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de | | | |

| K natural - superficie de la finca en cultivos perenes (mz) | | | |
|--|------|------------------------------|--------|
| Prueba de Duncan: K natural - superficie de la finca en cultivos perenes (mz) | | | |
| SubtipoB | N | Subconjunto para alfa = 0.05 | |
| | | 1 | 2 |
| Familiar Ajonjolico | 3243 | .3197 | |
| Patronal Ajonjolico | 561 | 1.3239 | |
| Empresarial Ajonjoli | 6 | | 9.9217 |
| Sig. | | .544 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 17.777. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de | | | |

| K natural - superficie de la finca en pastos sembrados (mz) | | |
|--|------|------------------------------|
| K natural - superficie de la finca en pastos sembrados (mz) | | |
| SubtipoB | N | Subconjunto para alfa = 0.05 |
| | | 1 |
| Familiar Ajonjolico | 3243 | 3.5907 |
| Empresarial Ajonjoli | 6 | 6.0000 |
| Patronal Ajonjolico | 561 | 12.1848 |
| Sig. | | .196 |
| Se muestran las medias para los grupos en los subconjuntos | | |
| a. Usa el tamaño muestral de la media armónica = 17.777. | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media | | |

| K natural - superficie de la finca en pastos naturales (mz) | | | |
|--|------|------------------------------|---------|
| Prueba Duncan K natural - superficie de la finca en pastos naturales (mz) | | | |
| SubtipoB | N | Subconjunto para alfa = 0.05 | |
| | | 1 | 2 |
| Familiar Ajonjolico | 3243 | 4.4211 | |
| Patronal Ajonjolico | 561 | 17.3548 | |
| Empresarial Ajonjoli | 6 | | 42.1667 |
| Sig. | | .068 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 17.777. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de | | | |

Human Capital

| ANOVA de un factor Productores de Ajonjoli: Capital Humano | | | | | | |
|--|--------------|-------------------|------|------------------|---------|-------|
| | | Suma de cuadrados | gl | Media cuadrática | F | Sig. |
| K humano - Total Trabajadores Permanentes | Inter-grupos | 4777.954 | 2 | 2388.977 | 876.987 | 0.000 |
| | Intra-grupos | 10242.518 | 3760 | 2.724 | | |
| | Total | 15020.471 | 3762 | | | |
| K humano - Total Trabajadores Temporales | Inter-grupos | 14159.218 | 2 | 7079.609 | 51.499 | 0.000 |
| | Intra-grupos | 519497.621 | 3779 | 137.470 | | |
| | Total | 533656.839 | 3781 | | | |
| K humano - Total personas hogar (suma sobre criterio genero) | Inter-grupos | 30.954 | 1 | 30.954 | 2.163 | 0.141 |
| | Intra-grupos | 52060.269 | 3638 | 14.310 | | |
| | Total | 52091.224 | 3639 | | | |

| K humano - Total Trabajadores Permanentes | | | | |
|---|----------|-------------------------------------|----------|----------|
| Prueba de Duncan: K humano - Total Trabajadores Permanentes | | | | |
| SubtipoB | N | Subconjunto para alfa = 0.05 | | |
| | | 1 | 2 | 3 |
| Familiar Ajonjolico | 3243 | .00 | | |
| Patronal Ajonjolico | 514 | | 3.05 | |
| Empresarial Ajonjoli | 6 | | | 10.83 |
| Sig. | | 1.000 | 1.000 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | | |
| a. Usa el tamaño muestral de la media armónica = 17.760. | | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los tamaños de | | | | |

| K humano - Total Trabajadores Temporales | | | |
|--|----------|-------------------------------------|----------|
| Prueba de Duncan: K humano - Total Trabajadores Temporales | | | |
| SubtipoB | N | Subconjunto para alfa = 0.05 | |
| | | 1 | 2 |
| Familiar Ajonjolico | 3243 | 3.60 | |
| Patronal Ajonjolico | 533 | 6.90 | |
| Empresarial Ajonjoli | 6 | | 43.17 |
| Sig. | | .401 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 17.767. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de | | | |

7.2.6 Plantains and Banana Producers

Natural Capital

| ANOVA de un factor Productores de Musaceas: Capital Natural | | | | | | |
|--|--------------|-------------------|-------|------------------|----------|-------|
| | | Suma de cuadrados | gl | Media cuadrática | F | Sig. |
| K natural - Superficie total de la finca (mz) S428 | Inter-grupos | 1486056.638 | 2 | 743028.319 | 529.787 | 0.000 |
| | Intra-grupos | 25720500.125 | 18339 | 1402.503 | | |
| | Total | 27206556.763 | 18341 | | | |
| K natural - superficie de la finca en cultivos anuales (mz) | Inter-grupos | 4457.080 | 2 | 2228.540 | 40.348 | 0.000 |
| | Intra-grupos | 1012924.254 | 18339 | 55.233 | | |
| | Total | 1017381.334 | 18341 | | | |
| K natural - superficie de la finca en cultivos perenes (mz) | Inter-grupos | 434491.554 | 2 | 217245.777 | 1457.811 | 0.000 |
| | Intra-grupos | 2732912.484 | 18339 | 149.022 | | |
| | Total | 3167404.038 | 18341 | | | |
| K natural - superficie de la finca en pastos sembrados (mz) | Inter-grupos | 36816.513 | 2 | 18408.257 | 161.879 | 0.000 |
| | Intra-grupos | 2085435.374 | 18339 | 113.716 | | |
| | Total | 2122251.887 | 18341 | | | |
| K natural - superficie de la finca en pastos naturales (mz) | Inter-grupos | 109324.299 | 2 | 54662.149 | 176.162 | 0.000 |
| | Intra-grupos | 5690491.292 | 18339 | 310.295 | | |
| | Total | 5799815.591 | 18341 | | | |
| K natural - superficie de la finca en tierras en descanso/tacotales (mz) | Inter-grupos | 7803.602 | 2 | 3901.801 | 43.309 | 0.000 |
| | Intra-grupos | 1652181.642 | 18339 | 90.091 | | |
| | Total | 1659985.244 | 18341 | | | |
| K natural - superficie de la finca en bosque (mz) | Inter-grupos | 9891.108 | 2 | 4945.554 | 45.415 | 0.000 |
| | Intra-grupos | 1997064.877 | 18339 | 108.897 | | |
| | Total | 2006955.985 | 18341 | | | |
| K natural - superficie de la finca en instalaciones (mz) | Inter-grupos | 242.191 | 2 | 121.096 | 108.014 | 0.000 |
| | Intra-grupos | 20560.090 | 18339 | 1.121 | | |
| | Total | 20802.281 | 18341 | | | |
| K natural - superficie de la finca en pantanos/otra tierra (mz) | Inter-grupos | 773.569 | 2 | 386.784 | 67.179 | 0.000 |
| | Intra-grupos | 105587.271 | 18339 | 5.758 | | |
| | Total | 106360.840 | 18341 | | | |
| K natural - superficie de la finca con riego (mz) | Inter-grupos | 317675.609 | 2 | 158837.804 | 1422.673 | 0.000 |
| | Intra-grupos | 2047503.039 | 18339 | 111.647 | | |
| | Total | 2365178.647 | 18341 | | | |

| K natural - Superficie total de la finca (mz) S428 | | | | |
|---|-------|------------------------------|-------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | | |
| | | 1 | 2 | 3 |
| Familiar Musaceas | 15062 | 9.9 | | |
| Patronal Musaceas | 3259 | | 28.4 | |
| Empresarial Musaceas | 21 | | | 177.6 |
| Sig. | | 1.000 | 1.000 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | | |
| a. Usa el tamaño muestral de la media armónica = 62.510. | | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los tamaños de | | | | |

| K natural - superficie de la finca en cultivos anuales (mz) | | |
|--|-------|------------------------------|
| SubtipoB | N | Subconjunto para alfa = 0.05 |
| | | 1 |
| Familiar Musaceas | 15062 | 1.5 |
| Empresarial Musaceas | 21 | 2.5 |
| Patronal Musaceas | 3259 | 2.8 |
| Sig. | | .365 |
| Se muestran las medias para los grupos en los subconjuntos | | |
| a. Usa el tamaño muestral de la media armónica = 62.510. | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media | | |

| K natural - superficie de la finca en cultivos perenes (mz) | | | |
|--|-------|------------------------------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | |
| | | 1 | 2 |
| Familiar Musaceas | 15062 | 1.0 | |
| Patronal Musaceas | 3259 | 4.7 | |
| Empresarial Musaceas | 21 | | 139.6 |
| Sig. | | .095 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 62.510. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de | | | |

| K natural - superficie de la finca en pastos sembrados (mz) | | |
|--|-------|------------------------------|
| SubtipoB | N | Subconjunto para alfa = 0.05 |
| | | 1 |
| Familiar Musaceas | 15062 | 1.2447 |
| Empresarial Musaceas | 21 | 1.4524 |
| Patronal Musaceas | 3259 | 4.9514 |
| Sig. | | .065 |
| Se muestran las medias para los grupos en los subconjuntos | | |
| a. Usa el tamaño muestral de la media armónica = 62.510. | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media | | |

| K natural - superficie de la finca en pastos naturales (mz) | | | |
|--|-------|------------------------------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | |
| | | 1 | 2 |
| Empresarial Musaceas | 21 | .4 | |
| Familiar Musaceas | 15062 | 3.2 | |
| Patronal Musaceas | 3259 | | 9.5 |
| Sig. | | .386 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 62.510. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de | | | |

| K natural - superficie de la finca con riego (mz) | | | |
|--|-------|------------------------------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | |
| | | 1 | 2 |
| Familiar Musaceas | 15062 | .1 | |
| Patronal Musaceas | 3259 | 1.9 | |
| Empresarial Musaceas | 21 | | 121.7 |
| Sig. | | .328 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 62.510. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de | | | |

Human Capital

| ANOVA de un factor Productores de Musaceas: Capital Humano | | | | | | |
|--|--------------|-------------------|-------|------------------|----------|-------|
| | | Suma de cuadrados | gl | Media cuadrática | F | Sig. |
| K humano - Total Trabajadores Permanentes | Inter-grupos | 94528.693 | 2 | 47264.347 | 2203.542 | 0.000 |
| | Intra-grupos | 383212.570 | 17866 | 21.449 | | |
| | Total | 477741.263 | 17868 | | | |
| K humano - Total Trabajadores Temporales | Inter-grupos | 61454.938 | 2 | 30727.469 | 465.770 | 0.000 |
| | Intra-grupos | 1174752.584 | 17807 | 65.971 | | |
| | Total | 1236207.522 | 17809 | | | |
| K humano - Total personas hogar (suma sobre criterio genero) | Inter-grupos | 923.739 | 1 | 923.739 | 66.066 | 0.000 |
| | Intra-grupos | 232564.582 | 16633 | 13.982 | | |
| | Total | 233488.321 | 16634 | | | |

| Prueba de Duncan: K humano - Total Trabajadores Permanentes | | | | |
|---|-------|------------------------------|-------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | | |
| | | 1 | 2 | 3 |
| Familiar Musaceas | 15062 | 0.0 | | |
| Patronal Musaceas | 2787 | | 2.4 | |
| Empresarial Musaceas | 20 | | | 64.0 |
| Sig. | | 1.000 | 1.000 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | | |
| a. Usa el tamaño muestral de la media armónica = 59.494. | | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los tamaños de | | | | |

| Prueba de Duncan: K humano - Total Trabajadores Temporales | | | | |
|---|-------|------------------------------|-------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | | |
| | | 1 | 2 | 3 |
| Familiar Musaceas | 15062 | 1.0 | | |
| Patronal Musaceas | 2729 | | 4.2 | |
| Empresarial Musaceas | 19 | | | 46.1 |
| Sig. | | 1.000 | 1.000 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | | |
| a. Usa el tamaño muestral de la media armónica = 56.535. | | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los tamaños de | | | | |

7.2.7 Fruit Producers

Natural Capital

| ANOVA de un factor Productores Fruticultores: Capital Natural | | | | | | |
|---|--------------|-------------------|-------|------------------|--------|------|
| | | Suma de cuadrados | gl | Media cuadrática | F | Sig. |
| K natural - Superficie total de la finca (mz) S428 | Inter-grupos | 1080694 | 2 | 540347.024 | 243.67 | .000 |
| | Intra-grupos | 24936372 | 11245 | 2217.552 | | |
| | Total | 26017066 | 11247 | | | |
| K natural - superficie de la finca en cultivos anuales (mz) | Inter-grupos | 2045 | 2 | 1022.296 | 56.46 | .000 |
| | Intra-grupos | 203623 | 11245 | 18.108 | | |
| | Total | 205667 | 11247 | | | |
| K natural - superficie de la finca en cultivos perenes (mz) | Inter-grupos | 2661 | 2 | 1330.723 | 36.26 | .000 |
| | Intra-grupos | 412696 | 11245 | 36.700 | | |
| | Total | 415357 | 11247 | | | |
| K natural - superficie de la finca en pastos sembrados (mz) | Inter-grupos | 34264 | 2 | 17131.969 | 70.44 | .000 |
| | Intra-grupos | 2734942 | 11245 | 243.214 | | |
| | Total | 2769206 | 11247 | | | |
| K natural - superficie de la finca en pastos naturales (mz) | Inter-grupos | 245803 | 2 | 122901.595 | 210.57 | .000 |
| | Intra-grupos | 6563288 | 11245 | 583.663 | | |
| | Total | 6809091 | 11247 | | | |
| K natural - superficie de la finca con riego (mz) | Inter-grupos | 849 | 2 | 424.570 | 12.97 | .000 |
| | Intra-grupos | 368083 | 11245 | 32.733 | | |
| | Total | 368932 | 11247 | | | |

| K natural - Superficie total de la finca (mz) S428 | | | |
|--|------|-------|------|
| SubtipoB | N | 0.05 | |
| | | 1 | 2 |
| Familiar Fruticultor | 9847 | 15.16 | |
| Patronal Fruticultor | 1386 | | 44.8 |
| Empresarial Frutales | 15 | | 47.8 |
| Sig. | | 1.000 | 0.8 |
| Se muestran las medias para los grupos en los subconjuntos | | | |
| a. Usa el tamaño muestral de la media armónica = 44.451. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media | | | |

| K natural - superficie de la finca en cultivos perenes (mz) | | |
|--|------|-------------|
| Duncan | | |
| SubtipoB | N | para alfa = |
| | | 1 |
| Familiar Fruticultor | 9847 | .5 |
| Patronal Fruticultor | 1386 | 2.0 |
| Empresarial Frutales | 15 | 2.4 |
| Sig. | | .169 |
| Se muestran las medias para los grupos en los | | |
| a. Usa el tamaño muestral de la media armónica = 44.451. | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la | | |

| K natural - superficie de la finca en pastos sembrados (mz) | | |
|--|------|------------------------------|
| | | Subconjunto para alfa = 0.05 |
| SubtipoB | N | 1 |
| Familiar Fruticultor | 9847 | 2.2153 |
| Empresarial Frutales | 15 | 3.3667 |
| Patronal Fruticultor | 1386 | 7.5255 |
| Sig. | | .130 |
| Se muestran las medias para los grupos en los | | |
| a. Usa el tamaño muestral de la media armónica = 44.451. | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la | | |

| K natural - superficie de la finca con riego (mz) | | |
|--|------|------------------------------|
| | | Subconjunto para alfa = 0.05 |
| SubtipoB | N | 1 |
| Familiar Fruticultor | 9847 | .0353 |
| Empresarial Frutales | 15 | .6167 |
| Patronal Fruticultor | 1386 | .8697 |
| Sig. | | .521 |
| Se muestran las medias para los grupos en los | | |
| a. Usa el tamaño muestral de la media armónica = 44.451. | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la | | |

Human Capital

| ANOVA de un factor Productores Fruticultores: Capital Humano | | | | | | |
|--|--------------|-------------------|-------|------------------|----------|-------|
| | | Suma de cuadrados | gl | Media cuadrática | F | Sig. |
| K humano - Total Trabajadores Permanentes | Inter-grupos | 5032 | 2 | 2515.960 | 3893.469 | 0.000 |
| | Intra-grupos | 7130 | 11034 | .646 | | |
| | Total | 12162 | 11036 | | | |
| K humano - Total Trabajadores Temporales | Inter-grupos | 9181 | 2 | 4590.643 | 115.380 | 0.000 |
| | Intra-grupos | 438098 | 11011 | 39.787 | | |
| | Total | 447279 | 11013 | | | |
| K humano - Total personas hogar (suma sobre criterio genero) | Inter-grupos | 363 | 1 | 363.078 | 27.625 | 0.000 |
| | Intra-grupos | 138462 | 10535 | 13.143 | | |
| | Total | 138825 | 10536 | | | |

| K humano - Total Trabajadores Permanentes | | | | |
|--|------|------------------------------|-------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | | |
| | | 1 | 2 | 3 |
| Familiar Fruticultor | 9847 | 0.00 | | |
| Patronal Fruticultor | 1175 | | 2.16 | |
| Empresarial Frutales | 15 | | | 3.27 |
| Sig. | | 1.000 | 1.000 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | | |
| a. Usa el tamaño muestral de la media armónica = 44.366. | | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los | | | | |

| K humano - Total Trabajadores Temporales | | | |
|--|------|------|-------|
| SubtipoB | N | 0.05 | |
| | | 1 | 2 |
| Familiar Fruticultor | 9847 | 1.17 | |
| Patronal Fruticultor | 1155 | 3.71 | |
| Empresarial Frutales | 12 | | 15.92 |
| Sig. | | .089 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos | | | |
| a. Usa el tamaño muestral de la media armónica = 35.587. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media | | | |

7.2.8 Horticulture Producer Natural Capital

| ANOVA de un factor Productores Horticultores: Capital Natural | | | | | | |
|---|--------------|-------------------|-------|------------------|--------|------|
| | | Suma de cuadrados | gl | Media cuadrática | F | Sig. |
| K natural - Superficie total de la finca (mz) S428 | Inter-grupos | 167889.056 | 2 | 83944.528 | 36.154 | .000 |
| | Intra-grupos | 24437564.746 | 10525 | 2321.859 | | |
| | Total | 24605453.802 | 10527 | | | |
| K natural - superficie de la finca en cultivos anuales (mz) | Inter-grupos | 4260.010 | 2 | 2130.005 | 24.935 | .000 |
| | Intra-grupos | 899073.480 | 10525 | 85.423 | | |
| | Total | 903333.490 | 10527 | | | |
| K natural - superficie de la finca en cultivos perenes (mz) | Inter-grupos | 42.672 | 2 | 21.336 | 5.976 | .003 |
| | Intra-grupos | 37576.961 | 10525 | 3.570 | | |
| | Total | 37619.633 | 10527 | | | |
| K natural - superficie de la finca en pastos sembrados (mz) | Inter-grupos | 881.801 | 2 | 440.901 | 3.553 | .029 |
| | Intra-grupos | 1306187.050 | 10525 | 124.103 | | |
| | Total | 1307068.851 | 10527 | | | |
| K natural - superficie de la finca en pastos naturales (mz) | Inter-grupos | 14606.579 | 2 | 7303.289 | 20.598 | .000 |
| | Intra-grupos | 3731850.978 | 10525 | 354.570 | | |
| | Total | 3746457.557 | 10527 | | | |
| K natural - superficie de la finca con riego (mz) | Inter-grupos | 1069.382 | 2 | 534.691 | 32.854 | .000 |
| | Intra-grupos | 171291.576 | 10525 | 16.275 | | |
| | Total | 172360.957 | 10527 | | | |

| K natural - Superficie total de la finca (mz) S428 | | |
|--|------|------------------------------|
| SubtipoB | N | Subconjunto para alfa = 0.05 |
| | | 1 |
| Familiar Horticultor | 9277 | 19.64 |
| Patronal Horticultor | 1240 | 31.86 |
| Empresarial Hortalizas | 11 | 41.59 |
| Sig. | | .082 |
| Se muestran las medias para los grupos en los subconjuntos | | |
| a. Usa el tamaño muestral de la media armónica = 32.671. | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la | | |

| K natural - superficie de la finca en cultivos anuales (mz) | | | |
|---|------|------------------------------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | |
| | | 1 | 2 |
| Familiar Horticultor | 9277 | 3.93 | |
| Patronal Horticultor | 1240 | 5.78 | |
| Empresarial Hortalizas | 11 | | 11.05 |
| Sig. | | .419 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 32.671. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica | | | |

| K natural - superficie de la finca en cultivos perenes (mz) | | |
|--|------|------------------------------|
| SubtipoB | N | Subconjunto para alfa = 0.05 |
| | | 1 |
| Familiar Horticultor | 9277 | .57 |
| Empresarial Hortalizas | 11 | .59 |
| Patronal Horticultor | 1240 | .77 |
| Sig. | | .69 |
| Se muestran las medias para los grupos en los subconjuntos | | |
| a. Usa el tamaño muestral de la media armónica = 32.671. | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la | | |

| K natural - superficie de la finca en pastos sembrados (mz) | | |
|--|------|------------------------------|
| SubtipoB | N | Subconjunto para alfa = 0.05 |
| | | 1 |
| Empresarial Hortalizas | 11 | 0.0000 |
| Familiar Horticultor | 9277 | 2.3077 |
| Patronal Horticultor | 1240 | 3.1725 |
| Sig. | | .281 |
| Se muestran las medias para los grupos en los subconjuntos | | |
| a. Usa el tamaño muestral de la media armónica = 32.671. | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la | | |

| K natural - superficie de la finca en pastos naturales (mz) | | |
|--|------|------------------------------|
| SubtipoB | N | Subconjunto para alfa = 0.05 |
| | | 1 |
| Empresarial Hortalizas | 11 | 2.3864 |
| Familiar Horticultor | 9277 | 7.0072 |
| Patronal Horticultor | 1240 | 10.6264 |
| Sig. | | .095 |
| Se muestran las medias para los grupos en los subconjuntos | | |
| a. Usa el tamaño muestral de la media armónica = 32.671. | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la | | |

| K natural - superficie de la finca con riego (mz) | | | |
|---|------|------------------------------|--------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | |
| | | 1 | 2 |
| Familiar Horticultor | 9277 | .1850 | |
| Patronal Horticultor | 1240 | 1.1456 | 1.1456 |
| Empresarial Hortalizas | 11 | | 2.6364 |
| Sig. | | .336 | .135 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 32.671. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica | | | |

Human Capital

| ANOVA de un factor Productores Horticultores: Capital Humano | | | | | | |
|--|--------------|-------------------|-------|------------------|----------|-------|
| | | Suma de cuadrados | gl | Media cuadrática | F | Sig. |
| K humano - Total Trabajadores Permanentes | Inter-grupos | 14220.965 | 2 | 7110.483 | 2037.207 | 0.000 |
| | Intra-grupos | 36058.392 | 10331 | 3.490 | | |
| | Total | 50279.358 | 10333 | | | |
| K humano - Total Trabajadores Temporales | Inter-grupos | 17479.594 | 2 | 8739.797 | 93.891 | 0.000 |
| | Intra-grupos | 964917.221 | 10366 | 93.085 | | |
| | Total | 982396.815 | 10368 | | | |
| K humano - Total personas hogar (suma sobre criterio genero) | Inter-grupos | 261.038 | 1 | 261.038 | 18.220 | 0.000 |
| | Intra-grupos | 142538.021 | 9949 | 14.327 | | |
| | Total | 142799.058 | 9950 | | | |

| K humano - Total Trabajadores Permanentes | | | | |
|--|------|------------------------------|-------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | | |
| | | 1 | 2 | 3 |
| Familiar Horticultor | 9277 | 0.00 | | |
| Patronal Horticultor | 1049 | | 2.64 | |
| Empresarial Hortalizas | 8 | | | 31.25 |
| Sig. | | 1.000 | 1.000 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | | |
| a. Usa el tamaño muestral de la media armónica = 23.798. | | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los tamaños | | | | |

| K humano - Total Trabajadores Temporales | | | |
|---|------|------------------------------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | |
| | | 1 | 2 |
| Familiar Horticultor | 9277 | 1.76 | |
| Patronal Horticultor | 1082 | 5.81 | |
| Empresarial Hortalizas | 10 | | 14.70 |
| Sig. | | .106 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 29.694. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica | | | |

7.2.9 Tobacco Producer

Natural Capital

| ANOVA de un factor Productores Tabacaleros: Capital Natural | | | | | | |
|---|--------------|-------------------|-----|------------------|--------|------|
| | | Suma de cuadrados | gl | Media cuadrática | F | Sig. |
| K natural - Superficie total de la finca (mz) S428 | Inter-grupos | 175927.190 | 2 | 87963.595 | 9.050 | .000 |
| | Intra-grupos | 1827355.788 | 188 | 9719.978 | | |
| | Total | 2003282.978 | 190 | | | |
| K natural - superficie de la finca en cultivos anuales (mz) | Inter-grupos | 86132.597 | 2 | 43066.299 | 30.062 | .000 |
| | Intra-grupos | 269329.222 | 188 | 1432.602 | | |
| | Total | 355461.820 | 190 | | | |
| K natural - superficie de la finca en cultivos perenes (mz) | Inter-grupos | 130.895 | 2 | 65.448 | 1.705 | .185 |
| | Intra-grupos | 7216.378 | 188 | 38.385 | | |
| | Total | 7347.273 | 190 | | | |
| K natural - superficie de la finca en pastos sembrados (mz) | Inter-grupos | 335.743 | 2 | 167.871 | 1.016 | .364 |
| | Intra-grupos | 31060.274 | 188 | 165.214 | | |
| | Total | 31396.016 | 190 | | | |
| K natural - superficie de la finca en pastos naturales (mz) | Inter-grupos | 31655.426 | 2 | 15827.713 | 3.322 | .038 |
| | Intra-grupos | 895720.450 | 188 | 4764.470 | | |
| | Total | 927375.876 | 190 | | | |
| K natural - superficie de la finca con riego (mz) | Inter-grupos | 46551.612 | 2 | 23275.806 | 53.542 | .000 |
| | Intra-grupos | 81726.828 | 188 | 434.717 | | |
| | Total | 128278.440 | 190 | | | |

| K natural - Superficie total de la finca (mz) S428 | | | |
|---|-----|---------|----------|
| SubtipoB | N | 0.05 | |
| | | 1 | 2 |
| Familiar Tabaco | 117 | 28.4736 | |
| Patronal Tabaco | 64 | | 85.5663 |
| Empresarial Tabaco | 10 | | 114.5000 |
| Sig. | | 1.000 | .309 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 24.160. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica | | | |

| K natural - superficie de la finca en cultivos anuales (mz) | | | | |
|--|-----|------------------------------|---------|----------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | | |
| | | 1 | 2 | 3 |
| Familiar Tabaco | 117 | 10.9903 | | |
| Patronal Tabaco | 64 | | 34.5203 | |
| Empresarial Tabaco | 10 | | | 100.9930 |
| Sig. | | 1.000 | 1.000 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | | |
| a. Usa el tamaño muestral de la media armónica = 24.160. | | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los | | | | |

| K natural - superficie de la finca en cultivos perenes (mz) | | |
|--|-----|------------------------------|
| SubtipoB | N | Subconjunto para alfa = 0.05 |
| | | 1 |
| Empresarial Tabaco | 10 | 0.0000 |
| Familiar Tabaco | 117 | .9213 |
| Patronal Tabaco | 64 | 2.5494 |
| Sig. | | .180 |
| Se muestran las medias para los grupos en los subconjuntos | | |
| a. Usa el tamaño muestral de la media armónica = 24.160. | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la | | |

| K natural - superficie de la finca en pastos sembrados (mz) | | |
|--|-----|------------------------------|
| SubtipoB | N | Subconjunto para alfa = 0.05 |
| | | 1 |
| Empresarial Tabaco | 10 | 0.0000 |
| Familiar Tabaco | 117 | 2.4555 |
| Patronal Tabaco | 64 | 4.8281 |
| Sig. | | .221 |
| Se muestran las medias para los grupos en los subconjuntos | | |
| a. Usa el tamaño muestral de la media armónica = 24.160. | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la | | |

| K natural - superficie de la finca en pastos naturales (mz) | | |
|--|-----|------------------------------|
| SubtipoB | N | Subconjunto para alfa = 0.05 |
| | | 1 |
| Empresarial Tabaco | 10 | 0.0000 |
| Familiar Tabaco | 117 | 4.4328 |
| Patronal Tabaco | 64 | 31.2797 |
| Sig. | | .139 |
| Se muestran las medias para los grupos en los subconjuntos | | |
| a. Usa el tamaño muestral de la media armónica = 24.160. | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la | | |

| K natural - superficie de la finca con riego (mz) | | | |
|---|-----|---------|---------|
| SubtipoB | N | 0.05 | |
| | | 1 | 2 |
| Familiar Tabaco | 117 | 3.6705 | |
| Patronal Tabaco | 64 | 12.9970 | |
| Empresarial Tabaco | 10 | | 74.2930 |
| Sig. | | .122 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 24.160. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica | | | |

Human Capital

| ANOVA de un factor Productores Tabacaleros: Capital Humano | | | | | | |
|--|--------------|-------------------|-----|------------------|--------|------|
| | | Suma de cuadrados | gl | Media cuadrática | F | Sig. |
| K humano - Total Trabajadores Permanentes | Inter-grupos | 12053.997 | 2 | 6026.999 | 33.115 | .000 |
| | Intra-grupos | 32942.155 | 181 | 182.001 | | |
| | Total | 44996.152 | 183 | | | |
| K humano - Total Trabajadores Temporales | Inter-grupos | 641732.025 | 2 | 320866.012 | 40.265 | .000 |
| | Intra-grupos | 1482219.605 | 186 | 7968.923 | | |
| | Total | 2123951.630 | 188 | | | |
| K humano - Total personas hogar (suma sobre criterio genero) | Inter-grupos | 4.202 | 1 | 4.202 | .315 | .576 |
| | Intra-grupos | 1962.349 | 147 | 13.349 | | |
| | Total | 1966.550 | 148 | | | |

| K humano - Total Trabajadores Permanentes | | | | |
|--|-----|------------------------------|-------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | | |
| | | 1 | 2 | 3 |
| Familiar Tabaco | 117 | 0.00 | | |
| Patronal Tabaco | 58 | | 11.88 | |
| Empresarial Tabaco | 9 | | | 31.67 |
| Sig. | | 1.000 | 1.000 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | | |
| a. Usa el tamaño muestral de la media armónica = 21.914. | | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los | | | | |

| K humano - Total Trabajadores Temporales | | | |
|---|-----|-------|--------|
| SubtipoB | N | 0.05 | |
| | | 1 | 2 |
| Familiar Tabaco | 117 | 16.10 | |
| Patronal Tabaco | 62 | 32.97 | |
| Empresarial Tabaco | 10 | | 279.90 |
| Sig. | | .513 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 24.062. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica | | | |

7.2.10 Cocoa Producer Natural Capital

| ANOVA de un factor Productores Cacaoteros: Capital Natural | | | | | | |
|---|--------------|-------------------|------|------------------|---------|------|
| | | Suma de cuadrados | gl | Media cuadrática | F | Sig. |
| K natural - Superficie total de la finca (mz) S428 | Inter-grupos | 254684.986 | 2 | 127342.493 | 3.660 | .026 |
| | Intra-grupos | 225762255.951 | 6489 | 34791.533 | | |
| | Total | 226016940.938 | 6491 | | | |
| K natural - superficie de la finca en cultivos anuales (mz) | Inter-grupos | 10030.553 | 2 | 5015.277 | 99.819 | .000 |
| | Intra-grupos | 326030.074 | 6489 | 50.244 | | |
| | Total | 336060.628 | 6491 | | | |
| K natural - superficie de la finca en cultivos perenes (mz) | Inter-grupos | 669.211 | 2 | 334.605 | 27.366 | .000 |
| | Intra-grupos | 79340.064 | 6489 | 12.227 | | |
| | Total | 80009.274 | 6491 | | | |
| K natural - superficie de la finca en pastos sembrados (mz) | Inter-grupos | 8257.317 | 2 | 4128.659 | 25.154 | .000 |
| | Intra-grupos | 1065064.789 | 6489 | 164.134 | | |
| | Total | 1073322.107 | 6491 | | | |
| K natural - superficie de la finca en pastos naturales (mz) | Inter-grupos | 56117.437 | 2 | 28058.719 | 4.109 | .016 |
| | Intra-grupos | 44309939.928 | 6489 | 6828.470 | | |
| | Total | 44366057.365 | 6491 | | | |
| K natural - superficie de la finca con riego (mz) | Inter-grupos | 11002.341 | 2 | 5501.170 | 981.494 | .000 |
| | Intra-grupos | 36370.162 | 6489 | 5.605 | | |
| | Total | 47372.503 | 6491 | | | |

| K natural - Superficie total de la finca (mz) S428 | | |
|--|------|------------------------------|
| SubtipoB | N | Subconjunto para alfa = 0.05 |
| | | 1 |
| Familiar Cacaotero | 5772 | 31.9451 |
| Patronal Cacaotero | 712 | 49.8170 |
| Empresarial Cacao | 8 | 114.7675 |
| Sig. | | .150 |
| Se muestran las medias para los grupos en los subconjuntos | | |
| a. Usa el tamaño muestral de la media armónica = 23.701. | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la | | |

| K natural - superficie de la finca en cultivos anuales (mz) | | | |
|--|------|------------------------------|---------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | |
| | | 1 | 2 |
| Familiar Cacaotero | 5772 | 4.1763 | |
| Patronal Cacaotero | 712 | 4.6826 | |
| Empresarial Cacao | 8 | | 39.3750 |
| Sig. | | .806 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 23.701. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de | | | |

| K natural - superficie de la finca en cultivos anuales (mz) | | | |
|--|------|------------------------------|---------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | |
| | | 1 | 2 |
| Familiar Cacaotero | 5772 | 4.1763 | |
| Patronal Cacaotero | 712 | 4.6826 | |
| Empresarial Cacao | 8 | | 39.3750 |
| Sig. | | .806 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 23.701. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de | | | |

| K natural - superficie de la finca en cultivos perenes (mz) | | | |
|--|------|------------------------------|--------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | |
| | | 1 | 2 |
| Familiar Cacaotero | 5772 | 1.7421 | |
| Patronal Cacaotero | 712 | 2.7106 | |
| Empresarial Cacao | 8 | | 4.9063 |
| Sig. | | .340 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 23.701. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de | | | |

| K natural - superficie de la finca en pastos sembrados (mz) | | |
|--|------|------------------------------|
| SubtipoB | N | Subconjunto para alfa = 0.05 |
| | | 1 |
| Empresarial Cacao | 8 | 3.2188 |
| Familiar Cacaotero | 5772 | 3.9557 |
| Patronal Cacaotero | 712 | 7.5629 |
| Sig. | | .274 |
| Se muestran las medias para los grupos en los subconjuntos | | |
| a. Usa el tamaño muestral de la media armónica = 23.701. | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la | | |

| K natural - superficie de la finca en pastos naturales (mz) | | |
|--|------|------------------------------|
| SubtipoB | N | Subconjunto para alfa = 0.05 |
| | | 1 |
| Familiar Cacaotero | 5772 | 12.1207 |
| Empresarial Cacao | 8 | 19.9325 |
| Patronal Cacaotero | 712 | 21.4994 |
| Sig. | | .716 |
| Se muestran las medias para los grupos en los subconjuntos | | |
| a. Usa el tamaño muestral de la media armónica = 23.701. | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la | | |

| K natural - superficie de la finca con riego (mz) | | | |
|--|------|------------------------------|---------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | |
| | | 1 | 2 |
| Familiar Cacaotero | 5772 | .0144 | |
| Patronal Cacaotero | 712 | .0637 | |
| Empresarial Cacao | 8 | | 37.1250 |
| Sig. | | .943 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 23.701. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de | | | |

Human Capital

| ANOVA de un factor Productores Cacaoteros: Capital Humano | | | | | | |
|--|--------------|-------------------|------|------------------|----------|-------|
| | | Suma de cuadrados | gl | Media cuadrática | F | Sig. |
| K humano - Total Trabajadores Permanentes | Inter-grupos | 3546.918 | 2 | 1773.459 | 4117.091 | 0.000 |
| | Intra-grupos | 2753.388 | 6392 | .431 | | |
| | Total | 6300.306 | 6394 | | | |
| K humano - Total Trabajadores Temporales | Inter-grupos | 61069.726 | 2 | 30534.863 | 787.726 | 0.000 |
| | Intra-grupos | 247620.069 | 6388 | 38.763 | | |
| | Total | 308689.795 | 6390 | | | |
| K humano - Total personas hogar (suma sobre criterio genero) | Inter-grupos | 183.335 | 1 | 183.335 | 15.142 | 0.000 |
| | Intra-grupos | 75054.562 | 6199 | 12.108 | | |
| | Total | 75237.897 | 6200 | | | |

| K humano - Total Trabajadores Permanentes | | | | |
|--|------|------------------------------|-------|-------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | | |
| | | 1 | 2 | 3 |
| Familiar Cacaotero | 5772 | 0.00 | | |
| Patronal Cacaotero | 616 | | 2.26 | |
| Empresarial Cacao | 7 | | | 10.29 |
| Sig. | | 1.000 | 1.000 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | | |
| a. Usa el tamaño muestral de la media armónica = 20.739. | | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los tamaños | | | | |

| K humano - Total Trabajadores Temporales | | | |
|---|------|------|-------|
| SubtipoB | N | 0.05 | |
| | | 1 | 2 |
| Familiar Cacaotero | 5772 | 1.07 | |
| Patronal Cacaotero | 611 | 3.21 | |
| Empresarial Cacao | 8 | | 86.88 |
| Sig. | | .237 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 23.657. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica | | | |

7.2.11 Oil Palm Producer

Natural Capital

| ANOVA de un factor Productores de Palma Africana: Capital Natural | | | | | | |
|---|--------------|-------------------|-----|------------------|--------|------|
| | | Suma de cuadrados | gl | Media cuadrática | F | Sig. |
| K natural - Superficie total de la finca (mz) S428 | Inter-grupos | 31755321.231 | 2 | 15877660.615 | 34.702 | .000 |
| | Intra-grupos | 86474521.373 | 189 | 457537.150 | | |
| | Total | 118229842.604 | 191 | | | |
| K natural - superficie de la finca en cultivos anuales (mz) | Inter-grupos | .292 | 2 | .146 | .009 | .991 |
| | Intra-grupos | 3046.708 | 189 | 16.120 | | |
| | Total | 3047.000 | 191 | | | |
| K natural - superficie de la finca en cultivos perenes (mz) | Inter-grupos | 29379152.057 | 2 | 14689576.029 | 31.391 | .000 |
| | Intra-grupos | 88442765.196 | 189 | 467951.139 | | |
| | Total | 117821917.253 | 191 | | | |
| K natural - superficie de la finca en pastos sembrados (mz) | Inter-grupos | 1720.065 | 2 | 860.032 | 3.157 | .045 |
| | Intra-grupos | 51488.417 | 189 | 272.425 | | |
| | Total | 53208.482 | 191 | | | |
| K natural - superficie de la finca en pastos naturales (mz) | Inter-grupos | 11710.739 | 2 | 5855.369 | 6.189 | .002 |
| | Intra-grupos | 178799.628 | 189 | 946.030 | | |
| | Total | 190510.367 | 191 | | | |
| K natural - superficie de la finca con riego (mz) | Inter-grupos | .161 | 2 | .080 | .525 | .593 |
| | Intra-grupos | 28.899 | 189 | .153 | | |
| | Total | 29.060 | 191 | | | |

| K natural - Superficie total de la finca (mz) S428 | | | |
|--|-----|------------------------------|-----------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | |
| | | 1 | 2 |
| Familiar Palma Africana | 132 | 28.3288 | |
| Patronal Palma Africana | 56 | 76.7057 | |
| Empresarial Palma Africana | 4 | | 2886.0200 |
| Sig. | | .868 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 10.892. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los | | | |

| K natural - superficie de la finca en cultivos anuales (mz) | | |
|--|-----|------------------------------|
| SubtipoB | N | Subconjunto para alfa = 0.05 |
| | | 1 |
| Empresarial Palma Africana | 4 | 2.5000 |
| Familiar Palma Africana | 132 | 2.5258 |
| Patronal Palma Africana | 56 | 2.6104 |
| Sig. | | .952 |
| Se muestran las medias para los grupos en los subconjuntos | | |
| a. Usa el tamaño muestral de la media armónica = 10.892. | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media | | |

| K natural - superficie de la finca en cultivos perenes (mz) | | | |
|--|-----|------------------------------|-----------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | |
| | | 1 | 2 |
| Familiar Palma Africana | 132 | 3.4691 | |
| Patronal Palma Africana | 56 | 18.8775 | |
| Empresarial Palma Africana | 4 | | 2746.4300 |
| Sig. | | .958 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 10.892. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los | | | |

| K natural - superficie de la finca en pastos sembrados (mz) | | |
|--|-----|------------------------------|
| SubtipoB | N | Subconjunto para alfa = 0.05 |
| | | 1 |
| Familiar Palma Africana | 132 | 2.5452 |
| Empresarial Palma Africana | 4 | 7.1250 |
| Patronal Palma Africana | 56 | 9.1071 |
| Sig. | | .386 |
| Se muestran las medias para los grupos en los subconjuntos | | |
| a. Usa el tamaño muestral de la media armónica = 10.892. | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media | | |

| K natural - superficie de la finca en pastos naturales (mz) | | | |
|--|-----|------------------------------|---------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | |
| | | 1 | 2 |
| Familiar Palma Africana | 132 | 13.6192 | |
| Patronal Palma Africana | 56 | 26.3554 | |
| Empresarial Palma Africana | 4 | | 54.3125 |
| Sig. | | .335 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 10.892. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los | | | |

| K natural - superficie de la finca con riego (mz) | | |
|--|-----|------------------------------|
| SubtipoB | N | Subconjunto para alfa = 0.05 |
| | | 1 |
| Familiar Palma Africana | 132 | .0492 |
| Patronal Palma Africana | 56 | .0536 |
| Empresarial Palma Africana | 4 | .2525 |
| Sig. | | .256 |
| Se muestran las medias para los grupos en los subconjuntos | | |
| a. Usa el tamaño muestral de la media armónica = 10.892. | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media | | |

Human Capital

| ANOVA de un factor Productores de Palma Africana: Capital Humano | | | | | | |
|--|--------------|-------------------|-----|------------------|--------|------|
| | | Suma de cuadrados | gl | Media cuadrática | F | Sig. |
| K humano - Total Trabajadores Permanentes | Inter-grupos | 546884.658 | 2 | 273442.329 | 31.946 | .000 |
| | Intra-grupos | 1566367.820 | 183 | 8559.387 | | |
| | Total | 2113252.478 | 185 | | | |
| K humano - Total Trabajadores Temporales | Inter-grupos | 1049.518 | 2 | 524.759 | 37.180 | .000 |
| | Intra-grupos | 2526.395 | 179 | 14.114 | | |
| | Total | 3575.912 | 181 | | | |
| K humano - Total personas hogar (suma sobre criterio genero) | Inter-grupos | 8.173 | 1 | 8.173 | .677 | .412 |
| | Intra-grupos | 1955.827 | 162 | 12.073 | | |
| | Total | 1964.000 | 163 | | | |

| K humano - Total Trabajadores Permanentes | | | |
|--|-----|------|--------|
| SubtipoB | N | 0.05 | |
| | | 1 | 2 |
| Familiar Palma Africana | 132 | 0.00 | |
| Patronal Palma Africana | 50 | 2.94 | |
| Empresarial Palma Africana | 4 | | 374.50 |
| Sig. | | .941 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 10.808. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de | | | |

| K humano - Total Trabajadores Temporales | | | |
|--|-----|------|-------|
| SubtipoB | N | 0.05 | |
| | | 1 | 2 |
| Familiar Palma Africana | 132 | 1.06 | |
| Patronal Palma Africana | 47 | 3.68 | |
| Empresarial Palma Africana | 3 | | 18.33 |
| Sig. | | .158 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 8.283. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de | | | |

7.2.12 Forest Producer Natural Capital

| ANOVA de un factor Productores Forestales: Capital Natural | | | | | | |
|---|--------------|-------------------|-----|------------------|--------|------|
| | | Suma de cuadrados | gl | Media cuadrática | F | Sig. |
| K natural - Superficie total de la finca (mz) S428 | Inter-grupos | 6490354.423 | 2 | 3245177.211 | 51.126 | .000 |
| | Intra-grupos | 43352922.777 | 683 | 63474.265 | | |
| | Total | 49843277.200 | 685 | | | |
| K natural - superficie de la finca en cultivos anuales (mz) | Inter-grupos | 56.152 | 2 | 28.076 | .365 | .694 |
| | Intra-grupos | 52529.675 | 683 | 76.910 | | |
| | Total | 52585.827 | 685 | | | |
| K natural - superficie de la finca en cultivos perenes (mz) | Inter-grupos | 1313774.640 | 2 | 656887.320 | 39.479 | .000 |
| | Intra-grupos | 11364229.534 | 683 | 16638.696 | | |
| | Total | 12678004.174 | 685 | | | |
| K natural - superficie de la finca en pastos sembrados (mz) | Inter-grupos | 5803.976 | 2 | 2901.988 | 4.960 | .007 |
| | Intra-grupos | 399616.074 | 683 | 585.089 | | |
| | Total | 405420.050 | 685 | | | |
| K natural - superficie de la finca en pastos naturales (mz) | Inter-grupos | 19301.149 | 2 | 9650.574 | 4.857 | .008 |
| | Intra-grupos | 1357160.046 | 683 | 1987.057 | | |
| | Total | 1376461.195 | 685 | | | |
| K natural - superficie de la finca en bosque (mz) | Inter-grupos | 360771.248 | 2 | 180385.624 | 45.672 | .000 |
| | Intra-grupos | 2697565.510 | 683 | 3949.583 | | |
| | Total | 3058336.757 | 685 | | | |

| K natural - superficie de la finca en cultivos anuales (mz) | | |
|--|-----|------------------------------|
| SubtipoB | N | Subconjunto para alfa = 0.05 |
| | | 1 |
| Empresarial Forestal | 17 | 0.0000 |
| Familiar Forestal | 514 | 1.0661 |
| Patronal Forestal | 155 | 1.5906 |
| Sig. | | .424 |
| Se muestran las medias para los grupos en los subconjuntos | | |
| a. Usa el tamaño muestral de la media armónica = 44.629. | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media | | |

| K natural - superficie de la finca en cultivos perenes (mz) | | | |
|--|-----|------------------------------|----------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | |
| | | 1 | 2 |
| Familiar Forestal | 514 | .6025 | |
| Patronal Forestal | 155 | 11.7949 | |
| Empresarial Forestal | 17 | | 283.0971 |
| Sig. | | .682 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 44.629. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los | | | |

| K natural - superficie de la finca en pastos sembrados (mz) | | |
|--|-----|------------------------------|
| SubtipoB | N | Subconjunto para alfa = 0.05 |
| | | 1 |
| Empresarial Forestal | 17 | 1.0588 |
| Familiar Forestal | 514 | 3.7693 |
| Patronal Forestal | 155 | 10.5649 |
| Sig. | | .079 |
| Se muestran las medias para los grupos en los subconjuntos | | |
| a. Usa el tamaño muestral de la media armónica = 44.629. | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media | | |

| K natural - superficie de la finca en pastos naturales (mz) | | |
|--|-----|------------------------------|
| SubtipoB | N | Subconjunto para alfa = 0.05 |
| | | 1 |
| Familiar Forestal | 514 | 8.8721 |
| Empresarial Forestal | 17 | 17.3235 |
| Patronal Forestal | 155 | 21.4339 |
| Sig. | | .212 |
| Se muestran las medias para los grupos en los subconjuntos | | |
| a. Usa el tamaño muestral de la media armónica = 44.629. | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media | | |

| K natural - superficie de la finca en bosque (mz) | | | | |
|---|-----|------------------------------|---------|----------|
| SubtipoB | N | Subconjunto para alfa = 0.05 | | |
| | | 1 | 2 | 3 |
| Familiar Forestal | 514 | 13.9801 | | |
| Patronal Forestal | 155 | | 54.0846 | |
| Empresarial Forestal | 17 | | | 124.3059 |
| Sig. | | 1.000 | 1.000 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | | |
| a. Usa el tamaño muestral de la media armónica = 44.629. | | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de los tamaños de los | | | | |

Human Capital

| ANOVA de un factor Productores Forestales: Capital Humano | | | | | | |
|--|--------------|-------------------|-----|------------------|--------|------|
| | | Suma de cuadrados | gl | Media cuadrática | F | Sig. |
| K humano - Total Trabajadores Permanentes | Inter-grupos | 71967.246 | 2 | 35983.623 | 78.189 | .000 |
| | Intra-grupos | 283953.147 | 617 | 460.216 | | |
| | Total | 355920.394 | 619 | | | |
| K humano - Total Trabajadores Temporales | Inter-grupos | 182321.389 | 2 | 91160.695 | 22.792 | .000 |
| | Intra-grupos | 2603760.390 | 651 | 3999.632 | | |
| | Total | 2786081.780 | 653 | | | |
| K humano - Total personas hogar (suma sobre criterio genero) | Inter-grupos | 123.719 | 1 | 123.719 | 10.619 | .001 |
| | Intra-grupos | 5697.397 | 489 | 11.651 | | |
| | Total | 5821.116 | 490 | | | |

| K humano - Total Trabajadores Permanentes | | | |
|--|-----|------|-------|
| SubtipoB | N | 0.05 | |
| | | 1 | 2 |
| Familiar Forestal | 514 | 0.00 | |
| Patronal Forestal | 89 | 5.58 | |
| Empresarial Forestal | 17 | | 65.71 |
| Sig. | | .235 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 41.664. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de | | | |

| K humano - Total Trabajadores Temporales | | | |
|--|-----|-------|--------|
| SubtipoB | N | 0.05 | |
| | | 1 | 2 |
| Familiar Forestal | 514 | .61 | |
| Patronal Forestal | 126 | 10.85 | |
| Empresarial Forestal | 14 | | 114.57 |
| Sig. | | .487 | 1.000 |
| Se muestran las medias para los grupos en los subconjuntos homogéneos. | | | |
| a. Usa el tamaño muestral de la media armónica = 36.896. | | | |
| b. Los tamaños de los grupos no son iguales. Se utilizará la media armónica de | | | |