

Bliska, Antonio et al.

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Relevance of management practices for support of Brazilian farming business growth and the regional development¹

Abstract: In Brazil, the management of the farm is a practice hardly used. Much of producer time - rural businessman - is spent on technical issues and tasks related to the production process. Administrative aspects are often relegated to the background. Planning, acquisition of information and knowledge, and development of relationship strategies with customers, society and staff - employees or relatives - are harmed, which can compromise the activity. Identifying the level of management of farms and especially the weak points of their management systems, can help farmers to turn into rural entrepreneurs, regardless of the size of his estate. It can also guide cooperatives, producer associations, public or private organizations for technical assistance and rural extension, as industry inputs as well as guide the planning of sectoral public policies. The aim of this study was to identify the management levels of coffee production segments and vegetables, and analyze its relationship with land ownership, production systems and socioeconomic characteristics, cultural, and soil and climate, of their producing areas. We used the Identification Method of Management Degree - MIGG. The results of 428 questionnaires applied from 2010 to 2015 corroborate the thesis that despite the technical expertise in cultivation, the management of the agricultural business is still, in most cases, primitive and intuitive. On farms with lower degree of management, decision-making are not based on methods that allow for the systematic reproduction processes. Of those presenting high levels of management, management practices were integrated into modern farming practices, regardless of the size of the farm. In the coffee segment, with large sample, in the West region of Bahia state and Cerrado of Minas Gerais state, the management degrees are high and production processes - based on intensive use of modern technology - are quite homogeneous, accompanied by yields and very high quality compared to other coffee regions. Such practices have contributed to the increased competitiveness of those farms and to the development of those regions.

Keywords: Agriculture; Competitiveness; Regional development.

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Relevância das práticas de gestão no suporte ao crescimento da empresa agrícola brasileira e ao desenvolvimento regional

Resumo: No Brasil a gestão da propriedade rural é uma prática raramente utilizada. Grande parte do tempo do produtor – empresário rural – é despendida com questões técnicas e tarefas relacionadas ao processo produtivo. Aspectos administrativos são comumente relegados a um segundo plano. Planejamento, aquisição de informações e conhecimentos e elaboração de estratégias de relacionamento com clientes, sociedade e colaboradores – funcionários ou familiares – são prejudicados, o que pode comprometer a atividade. A identificação do nível de gestão das propriedades agrícolas e, principalmente, dos pontos fracos de seus sistemas de gestão, poderá auxiliar os agricultores a se transformarem em empresários rurais, independente do tamanho de sua propriedade. Também poderá orientar cooperativas, associações de produtores, organizações públicas ou privadas de assistência técnica e extensão rural, como as indústrias de insumos, bem como orientar o planejamento de políticas públicas setoriais. O objetivo deste estudo foi identificar os níveis de gestão dos segmentos de produção de café e hortaliças, e analisar suas relações com a estrutura fundiária, sistemas de produção e características socioeconômicas, culturais e edafoclimáticas das respectivas regiões produtoras. Utilizou-se o Método de Identificação do Grau de Gestão – MIGG. Os resultados de 428 questionários aplicados entre 2010 e 2015 corroboram a tese de que, apesar da experiência técnica no cultivo, a gestão do negócio agrícola ainda é, na maioria das vezes, primitiva e intuitiva. Nas propriedades com grau de gestão mais baixo, as tomadas de decisão não são baseadas em métodos que permitam a reprodução sistemática dos processos. Naquelas com graus de gestão elevados, as práticas de gestão foram integradas às práticas modernas de cultivo, independentemente do tamanho da área. No segmento cafeeiro, com amostra mais ampla, nas regiões Oeste do Estado da Bahia e Cerrado do Estado de Minas Gerais os graus de gestão são elevados e os processos produtivos – baseados no uso intensivo de tecnologias modernas – são bastante homogêneos, acompanhados de produtividades e qualidade muito elevadas, em relação às demais regiões cafeeiras. Tais práticas têm contribuído para o aumento de competitividade daquelas empresas e com o desenvolvimento daquelas regiões.

Palavras-chave: Agricultura; Competitividade; Desenvolvimento regional.

Introduction

In any economic activity, regardless of their area of expertise, companies must meet management conditions to produce goods, wealth and be sustainable over time. In Brazil, the management of the farm is a practice hardly used. Who adopts management practices in rural areas is an exception to the rule.

On agriculture, in general, and family farms in particular management is a tool that can qualitatively promote the professionalization of the farmer. Especially when we consider aspects such as maintenance workers in rural areas, social inclusion, digital inclusion, ecology and conservation of natural resources, job creation, and income generation, family succession and quality of life for all citizens of the country. Both in rural and urban areas, because it is important to increased their integration.

The management leads to innovations. In the search for information, knowledge and new technologies, producers find new ways to produce more and better, spending less human and material resources. That is, producing with more quality and yield, in search of greater competitiveness.

Rural entrepreneurs, even family background when using innovative technologies, achieve enviable incomes in small areas with intensive cultivation. So, an innovative management is especially important for family farms.

In the segment of flowers and ornamental plants, for example, in countries like USA, Japan, Italy and Germany, entrepreneurs manage production areas with an average of 1.2 ha (Rer. Plas.t). The effort management, the proper administration of the agricultural production process leads naturally to adapt to market demands and competitiveness. Of course the search for information and its application in the field, in production, require effort and investment. However, since returns are obtained, work will be done by smallholders or not.

Agribusiness is considered the Brazilian vocation, mainly due to soybean production, corn, cotton, beef, sugarcane and coffee. But it can also be understood as a vocation if other opportunities are taken advantage, following the example of Spain in the vegetables production, Chile in fruit production, and Colombia in the flowers production.

The participation of the government in this process can occur in various ways, such as generation of information and new technologies, availability of credit facilities and effective extension services. For this, public policies need to be planned and executed so that the country does not trade only commodities. The participation of the government in this process can occur in various ways, such as generation of information and new technologies, availability of credit facilities and effective extension services. For this, public policies need to be planned and implemented, so that the country does not trade only commodities.

Identification of the management level of farms and especially the weak points of their management systems, can help farmers to turn into rural business men, regardless of the size of their business - the farm. It can also guide cooperatives, producer associations, public or private organizations for technical assistance and rural extension, such as suppliers of agricultural equipment as well as guide the planning of sectoral public policies.

Brazil is the world's largest coffee producer. Their coffee regions have different characteristics both in relation to soil and climatic aspects, and in relation to cultural aspects, land structure and the level of adoption of technological innovations. Considering the relative importance of each of the Brazilian coffee regions, and the importance of creating internal management mechanisms for the coffee segment, since the improvement of agricultural processes to the placement of the coffee in the market, as well as for the competitiveness of farms, the main aim of this study is to identify the degree of management of Brazilian coffee farms and analyze the strengths and weaknesses of the predominant management systems in those regions. The study also examined the relationship among the management degree and the land structure, production systems and socioeconomic, cultural, soil and climatic characteristics of its producing regions.

Although Brazil is not a major player in the global market of vegetables crop, due to the size of its territory and size of its population, the vegetables have important place in domestic food production. This segment has a high rate of post-harvest losses. This is a deficiency in the harvesting process, sorting, grading and packaging, as well as the low utilization of the cold chain and logistics infrastructure conditions in the country. The population dispersion and the recent adoption of public policies in recent decades has led to dispersion of the production areas, especially in the vicinity of urban areas throughout the

country. The incorporation of new technologies in the production process has been slow and disorganized way. Then, another objective of this study is to look at management level behavior in the vegetable crop sector, where small producers prevail, as in the coffee sector.

A larger study is ongoing, so the results and conclusions presented reflect the sampling carried out from June 2011 to June 2015.

Material and methods

To assess the degree of management on farms, we used the Identification Method of Management Degree - MIGG, for coffee and horticulture segments, including hydroponic production in Brazil (Bliska Junior, 2010).

The MIGG is a management tool to help the producer to professionalize and transform its business in a rural business, to perpetuate itself in the market. It was developed at the Faculty of Agricultural Engineering, the State University of Campinas, Unicamp. The tool is available for the production of flowers, vegetables and fruits, and also to coffee cultivation in a study conducted jointly with the Agronomic Institute of Campinas, IAC.

The MIGG can contribute, in an organized manner, to make decisions as to structural changes and getting superior quality products. For companies in the agricultural sector it can help to create internal management mechanisms, from the improvement of agricultural processes to its placing on the market. It assesses the level of production management maturity.

This tool was developed based on the criteria recommended by the National Quality Foundation (FNQ) (2000, 2007, 2009).

The questionnaire - MIGG was held in loco through visits to farmers. Or in the technical and scientific events, where questionnaires are available in printed form or on computers, or via online questionnaire on the website of the Faculty of Agricultural Engineering / FEAGRI, the State University of Campinas / Unicamp.

We applied 382 questionnaires for the coffee segment, 139 in the State of Paraná, 107 in Minas Gerais, 86 in Bahia, 24 in São Paulo, 23 in Espírito Santo, and 02 in Rio de Janeiro, from May 2012 until June 2015.

For the segment of vegetables we applied 46 questionnaires in the five Brazilian regions, 19 in the Southeast, 14 in the South, 09 in the Midwest, 02 in North and 02 in the Northeast, between October 2010 and June 2015.

The questions that make up the questionnaire are simple, direct and admit only two answers: yes or no. Therefore subjectivity that often accompanies descriptive and qualitative methods is minimized. The issues are the indicators that estimate the evaluated criteria. The itinerary developed aims to continuously raise quality standards in all phases of the production system. The degree of management is assessed by eight criteria aimed at excellence in management: strategies and planning, leadership, customers, society, information and knowledge, people, processes and results.

Each criterion provides the evaluation of the respondent, a sum of points, which totals a maximum of 1000 points. The organization of the scoring system is based on the Excellence Model Management - MEG, the FNQ, but the score of the questions are weighted and distributed in accordance with the ranking of criteria specific to each of segments studied according to the method Delphi . The total of points obtained classifies the degree of management levels from one to nine, being a lowest nine, the highest.

Results

As we have seen in the methodology, the 64 questions that make up the MIGG represent the indicators used to assess the management of the coffee properties. These questions admit to answer only "yes" or "no."

The respondent is instructed to answer "yes" only when making certain action or employ certain procedures in the total area of cultivation of coffee and / or when such actions or procedures are documented properly, so that they can be consulted at any time for other persons other than the manager himself and allow the continuation and reproduction of the production process in the absence of the manager. Otherwise the answer should be "no". The negative responses represent the weaknesses of the management system, which need to be corrected. And our analysis will emphasize these weaknesses.

Management degree in coffee production

Currently the main coffee region of Brazil is the State of Minas Gerais, dominated the cultivation of Arabica coffee (*Coffea arabica*). In 2013 Minas Gerais accounted for 54% of volume and 57% of the total value of the coffee beans produced in the country. Considering only the Arabica coffee production, Minas Gerais accounts for 68% of volume and 70% of the Brazilian production, table 1, IBGE (2015).

The cultivation of *Coffea canephora* (robusta coffee) in Minas Gerais accounted for 3% of both the volume and the value of the Brazilian production of coffee in 2013 (IBGE, 2015th). The cultivation of *Coffea canephora* (robusta coffee) in Minas Gerais accounted for 3% of both the volume and the value of the Brazilian production of coffee in 2013 (IBGE, 2015th).

According Bliska et al. (2009), the coffee farms of Minas Gerais have dimensions ranging between 25ha and 50ha, with approximately 15ha of them cultivated with coffee, dominated the binomial coffee and dairy farming. According those authors, classification of coffee farms in the Minas Gerais by size profile (small, medium and large) allows typify two distinct groups.

In terms of number of farms, small producers dominate in the regions of Zona da Mata and the Jequitinhonha Valley, while medium and large farmers form the majority in the Cerrado region, which corresponds to the middle region of Triangulo Mineiro and Alto Paranaíba. The largest volume of production comes from medium and large farms. The authors found also large differences in the degree of adoption of technologies available for the coffee crop. In the Cerrado and the Jequitinhonha Valley, the average productivity is higher, resulting primarily from irrigation systems, spacing appropriate for mechanization of farming and harvesting. In Zona da Mata, the less intensive use of technologies result in yield below that obtained in other mining regions. In the Cerrado prevails business management model and training of hand labor aiming high yields. In the other regions prevail familiar management system for farms and the low level of manpower education.

In this context, we observed significant differences between the production systems used in areas of Cerrado, most recently occupied, when compared to traditional coffee regions. In the Cerrado of Minas Gerais - called "Triangulo Mineiro and Alto Paranaíba" - agricultural occupation began in the 1970s In the Cerrado of Bahia - region "West End of

Bahia" - agricultural expansion occurred from the 1990s. Coffee business predominates in these regions, with higher degrees of management.

Even in the state of Bahia, producer of 5% of total volume of Brazilian coffee (IBGE, 2015), are the most disparate profiles of coffee production. Large farms, as in the West End Cerrado, and the South Region of the state, can either occupy significant portion of the available area with large farming extensions (West) or just develop it into small modules (Chapada Diamantina). In Vitória da Conquista belt, there is a focus on small coffee producers with areas devoted to coffee typically smallholders.

State of São Paulo is the third largest coffee producer in Brazil, with 10.5% of the volume of coffee produced (IBGE, 2015). Its Cerrado areas, located mainly in region of Ribeirão Preto, micro-regions of Franca and Batatais, also shows management and technological level higher than the state averages.

The following technologies predominate in all areas of Cerrado: mechanized crop management, mechanical harvesting, crop irrigation, use of certified seeds and seedlings, more specialized hand labor and genetic diversity of Arabica coffee.

In the state of Espírito Santo predominates the cultivation of Robusta coffee, but there are also Arabica coffee production. This state produces 29% of the entire volume of coffee from Brazil (IBGE, 2015). The differences between the production systems in the Holy Spirit are just tenuous. . So much for coffee arabica, as for the robust, few discrepancies are observed. In terms of the physical productive base - size of farms, crops, percentage of renewal and expansion of the culture - there are practically no differences. Small farmers contribute the largest share of total output and focus heavily in the region of Alegre, where 85% of collected bags comes from small producers.

However, in the region of São Gabriel da Palha, high concentration of Robusta coffee production area, only 10% of properties belonging to medium and large producers, accounting for around 40% of production. A similar phenomenon occurs in the region of Alegre, where only 2% of properties (medium and large), accounts for 15% of production. This concentration of production in medium and large properties is associated with strong specialization of production, with a business characteristics (Bliska et al. 2009).

Visitation of the coffee farms in the producing regions, in the states of Minas Gerais, Espírito Santo, São Paulo, Bahia and Paraná, to apply the questionnaires, in addition to the collection of quantitative data, provided the opportunity to make several observations *in situ*. Besides aspects and characteristics of the soil, climatic and topographic conditions, the most outstanding observations are related to traditional post-harvest practices, widespread and culturally entrenched, but totally inadequate from the point of view of product quality.

The coffee plantations in the state of Paraná, 1,5% of total volume of Brazilian coffee (IBGE, 2015), can be subdivided into two relatively distinct regions. The region encompassed by Cornélio Procópio, also called the New North, constitutes the most important productive state belt while the Jacarezinho pole is the so-called pioneer northern. In terms of size, the farms of Cornélio Procópio region have, on average, twice the size of the agricultural production units of Jacarézinho region, although, in both cases the coffee plantations, on average occupy small areas.

The coffee post-harvest processes caught the attention, especially the coffee drying on the ground, in direct contact with the soil, or drying in greenhouses not dimensioned for such purpose. Another aspect relates to the excessive handling to carry this process out of farms, mainly in South-Central Bahia, where the harvested coffee is often huddled for two days or more, to supplement the load of a truck to be taken to the process drying in municipalities on the edges of Chapada Diamantina.

The management degrees of coffee farms obtained in the study are presented in Tables 1 to 6. Tables 1 and 2 relate to the State of Minas Gerais, which accounts for over 50% of both the total volume and value of coffee production in Brazil. Tables 3-6 refer respectively to the levels of management in the states of Espírito Santo, the second largest Brazilian producer, São Paulo the third, Bahia the fourth, and Paraná the fifth.

Table 1. Management degree in coffee production, state of Minas Gerais, geographic regions.

| State Minas Gerais | Averages | | | | | | | | | | | |
|------------------------------|----------|-----------|---------------------|---------------------------|-------------------|---------------------|-------|-----------|-------|------------------------------|-----------------|-------|
| | State | Regions | | | | | | | | | | |
| | | Triangulo | South /Southeast | Campo das Vertentes | Vale do Mucuri | Vale do Rio Doce | North | Northwest | West | Metropolitan region of BH | Zona da Mata | |
| Sample size | 107 | 14 | 76 | 3 | 1 | 1 | 2 | 1 | 5 | 1 | 2 | |
| Highest score | | | | | | | | | | | | |
| Management degree | 9 | 6.6 | 7.1 | 6.4 | 6.7 | 9.0 | 8.0 | 5.5 | 9.0 | 8.2 | 5.0 | 5.3 |
| Criteria | | | | | | | | | | | | |
| Strategies and plans | 60 | 19.2 | 30.0 | 16.6 | 25.0 | 15.0 | 30.0 | 7.5 | 30.0 | 39.0 | 0.0 | 5.0 |
| Lead | 50 | 42.6 | 44.3 | 42.1 | 46.7 | 50.0 | 50.0 | 50.0 | 50.0 | 40.0 | 50.0 | 33.3 |
| Customers | 90 | 55.1 | 61.1 | 51.9 | 60.0 | 90.0 | 90.0 | 52.5 | 60.0 | 72.0 | 60.0 | 40.0 |
| Society | 60 | 51.0 | 52.1 | 51.1 | 56.7 | 50.0 | 40.0 | 45.0 | 60.0 | 56.0 | 50.0 | 36.7 |
| Information and knowledge | 90 | 68.2 | 73.9 | 65.7 | 65.0 | 75.0 | 75.0 | 82.5 | 75.0 | 84.0 | 75.0 | 45.0 |
| People | 60 | 35.4 | 37.1 | 34.2 | 40.0 | 50.0 | 50.0 | 35.0 | 60.0 | 44.0 | 20.0 | 26.7 |
| Processes | 190 | 142.4 | 152.1 | 137.6 | 160.0 | 160.0 | 170.0 | 155.0 | 160.0 | 168.0 | 140.0 | 120.0 |
| Results | 400 | 259.6 | 255.0 | 253.2 | 263.3 | 400.0 | 280.0 | 170.0 | 400.0 | 364.0 | 90.0 | 243.3 |
| Total | 1000 | 673.6 | 705.7 | 652.3 | 716.7 | 890.0 | 785.0 | 597.5 | 895.0 | 867.0 | 485.0 | 550.0 |

Table 2. Management degree in coffee production, state of Minas Gerais, geographic regions of "Triângulo Mineiro/Alto Paranaíba" and "South/Southwest of Minas Gerais" and their micro-regions.

| State Minas Gerais | | Average | | | | | | | | | | | | |
|---------------------------|------|---------|----------------------------------|-------|------------|-----------------|--------------------------|----------|-----------------|--------|---------|--------------|-----------------------|-------|
| | | State | Regions | | | | | | | | | | | |
| | | | Triângulo Mineiro/Alto Paranaíba | | | South/Southeast | | | | | | | | |
| Sample size | 107 | 14 | Uberlândia | Patos | Patrocínio | 76 | São Sebastião do Paraíso | Varginha | Poços de Caldas | Passos | Alfenas | São Lourenço | Santa Rita do Sapucaí | |
| | | | 6 | 5 | 3 | | 19 | 29 | 8 | 6 | 7 | 4 | 3 | |
| Highest score | | | | | | | | | | | | | | |
| Management degree | 9 | 6.6 | 7.1 | 6.0 | 7.8 | 8.3 | 6.4 | 6.0 | 6.5 | 7.0 | 5.8 | 6.6 | 7.3 | 7.0 |
| Criteria | | | | | | | | | | | | | | |
| Strategies and plans | 60 | 19.2 | 30.0 | 22.5 | 30.0 | 45.0 | 16.6 | 18.2 | 16.6 | 16.9 | 15.0 | 19.3 | 11.3 | 10.0 |
| Lead | 50 | 42.6 | 44.3 | 41.7 | 44.0 | 50.0 | 42.1 | 41.6 | 40.3 | 42.5 | 45.0 | 41.4 | 50.0 | 46.7 |
| Customers | 90 | 55.1 | 61.1 | 55.0 | 57.0 | 80.0 | 51.9 | 49.7 | 48.1 | 63.8 | 40.0 | 60.0 | 60.0 | 65.0 |
| Society | 60 | 51.0 | 52.1 | 46.7 | 54.0 | 60.0 | 51.1 | 49.5 | 53.4 | 46.3 | 40.0 | 55.7 | 57.5 | 53.3 |
| Information and knowledge | 90 | 68.2 | 73.9 | 67.5 | 75.0 | 85.0 | 65.7 | 60.8 | 65.5 | 69.4 | 55.0 | 77.1 | 82.5 | 60.0 |
| People | 60 | 35.4 | 37.1 | 28.3 | 46.0 | 40.0 | 34.2 | 34.2 | 35.2 | 36.3 | 31.7 | 30.0 | 40.0 | 26.7 |
| Processes | 190 | 142.4 | 152.1 | 133.3 | 168.0 | 163.3 | 137.6 | 120.0 | 141.0 | 145.0 | 136.7 | 140.0 | 157.5 | 166.7 |
| Results | 400 | 259.6 | 255.0 | 190.0 | 264.0 | 370.0 | 253.2 | 241.6 | 254.1 | 282.5 | 213.3 | 258.6 | 277.5 | 273.3 |
| Total | 1000 | 673.6 | 705.7 | 585.0 | 738.0 | 893.3 | 652.3 | 615.5 | 654.3 | 702.5 | 576.7 | 682.1 | 736.3 | 701.7 |

Table 3. Management degree of coffee production, state of Espírito Santo, geographic regions and major micro-regions.

| State Espírito Santo | Average | | | | | | |
|---------------------------|---------|---------|---------|----------------|-----------------------------------------------------------|-------|-----------------------|
| | State | Regions | | | | | Northwest/North Coast |
| | | South | Central | | | | |
| Sample size | 23 | 6 | 15 | Micro-regions | | 2 | |
| | | | | Afonso Cláudio | Cachoeiro de Itapemirim / Vitória / São Mateus / Colatina | | |
| | | | | 11 | 4 | | |
| Highest score | | | | | | | |
| Management degree | 9 | 7.1 | 5.3 | 7.9 | 7.7 | 7.8 | 7.0 |
| Criteria | | | | | | | |
| Strategies and plans | 60 | 22.2 | 17.5 | 25.0 | 23.2 | 25.0 | 15.0 |
| Lead | 50 | 44.8 | 45.0 | 46.7 | 46.4 | 41.7 | 30.0 |
| Customers | 90 | 61.3 | 45.0 | 70.0 | 69.5 | 62.5 | 45.0 |
| Society | 60 | 53.0 | 51.7 | 53.3 | 53.6 | 53.3 | 55.0 |
| Information and knowledge | 90 | 75.7 | 70.0 | 81.0 | 83.2 | 67.5 | 52.5 |
| People | 60 | 42.6 | 35.0 | 44.7 | 43.6 | 48.3 | 50.0 |
| Processes | 190 | 152.2 | 113.3 | 170.0 | 173.6 | 151.7 | 135.0 |
| Results | 400 | 275.7 | 195.0 | 305.3 | 291.8 | 326.7 | 295.0 |
| Total | 1000 | 727.4 | 572.5 | 796.0 | 785.0 | 776.7 | 677.5 |

Table 4. Management degree in coffee production, state of São Paulo, the main geographic regions and micro-regions.

| State São Paulo | Average | | | | | | | | |
|---------------------------|---------|----------------|---------------|----------|----------|---------------|--------------------------|-------|------------------------------------------|
| | State | Regions | | | | | | | Marília / Assis / Presidente Prudente |
| | | Ribeirão Preto | | | Campinas | | | | |
| Sample size | 24 | 6 | Micro-regions | | 14 | Micro-regions | | 4 | |
| | | | Franca | Batatais | | Amparo | São João da Boa Vista | | |
| | | | 4 | 2 | | 5 | 9 | | |
| Highest score | | | | | | | | | |
| Management degree | 9 | 6.6 | 7.3 | 7.3 | 7.5 | 6.2 | 6.2 | 6.2 | 6.8 |
| Criteria | | | | | | | | | |
| Strategies and plans | 60 | 20.6 | 20.0 | 15.0 | 30.0 | 18.2 | 21.0 | 16.7 | 30.0 |
| Lead | 50 | 43.8 | 46.7 | 47.5 | 45.0 | 42.1 | 42.0 | 42.2 | 45.0 |
| Customers | 90 | 60.6 | 62.5 | 60.0 | 67.5 | 64.3 | 66.0 | 63.3 | 45.0 |
| Society | 60 | 52.1 | 55.0 | 55.0 | 55.0 | 50.0 | 48.0 | 51.1 | 55.0 |
| Information and knowledge | 90 | 70.6 | 77.5 | 78.8 | 75.0 | 66.4 | 63.0 | 68.3 | 75.0 |
| People | 60 | 37.9 | 45.0 | 50.0 | 35.0 | 32.9 | 36.0 | 31.1 | 45.0 |
| Processes | 190 | 137.9 | 161.7 | 162.5 | 160.0 | 125.0 | 128.0 | 123.3 | 147.5 |
| Results | 400 | 242.9 | 285.0 | 272.5 | 310.0 | 229.3 | 208.0 | 241.1 | 227.5 |
| Total | 1000 | 666.5 | 753.3 | 741.3 | 777.5 | 628.2 | 612.0 | 637.2 | 670.0 |

Table 5. Management degree of coffee production, state of Bahia, geographic regions and major micro-regions.

| State Bahia | Average | | | | | | | | |
|---------------------------|---------|----------|---------------|---------------|---------|----------------------|--------|-------|-------|
| | State | Regions | | | | | | | South |
| | | West End | South-Central | | | | South | | |
| Sample size | 86 | 6 | 75 | Micro-regions | | | | 5 | |
| | | | | Seabra | Brumado | Vitória da Conquista | Jequié | | |
| | | | | 43 | 11 | 20 | 1 | | |
| Highest score | | | | | | | | | |
| Management degree | 9 | 5.5 | 7.8 | 5.3 | 5.1 | 7.2 | 5.0 | 4.0 | 5.0 |
| Criteria | | | | | | | | | |
| Strategies and plans | 60 | 24.2 | 22.5 | 24.0 | 16.0 | 42.3 | 31.5 | 15.0 | 30.0 |
| Lead | 50 | 40.7 | 38.3 | 40.8 | 40.9 | 44.5 | 38.5 | 40.0 | 42.0 |
| Customers | 90 | 41.5 | 77.5 | 38.6 | 31.4 | 68.2 | 36.0 | 75.0 | 42.0 |
| Society | 60 | 31.3 | 51.7 | 29.3 | 22.8 | 47.3 | 33.0 | 40.0 | 36.0 |
| Information and knowledge | 90 | 61.2 | 85.0 | 58.7 | 60.7 | 60.0 | 54.5 | 45.0 | 69.0 |
| People | 60 | 26.4 | 45.0 | 24.5 | 21.2 | 30.9 | 27.5 | 40.0 | 32.0 |
| Processes | 190 | 99.4 | 155.0 | 97.2 | 90.5 | 120.0 | 98.0 | 120.0 | 66.0 |
| Results | 400 | 202.8 | 306.7 | 196.4 | 183.7 | 300.0 | 175.5 | 20.0 | 174.0 |
| Total | 1000 | 527.5 | 781.7 | 509.6 | 467.2 | 713.2 | 494.5 | 395.0 | 491.0 |

Table 6. Management degree of coffee production, state of Paraná, geographic regions and major micro-regions.

| State Paraná | Médias | | | | | | | | | |
|---------------------------|--------|----------------------------|------------------------|-----------|----------|---------------|-------|-------|-----------------------------|------------------------|
| | State | Regions | | | | | | | Western Center of Paraná | Northwest of Parana |
| | | Pioneer North of Parana | North Centre of Paraná | | | Micro-regions | | | | |
| Sample size | 139 | 10 | 115 | Apucarana | Londrina | Ivaiporã | 11 | 3 | | |
| | | | | 39 | 27 | 47 | | | | |
| Highest score | | | | | | | | | | |
| | 9 | 6.3 | 6.9 | 6.3 | 5.9 | 5.9 | 6.5 | 5.6 | 6.7 | |
| Criteria | | | | | | | | | | |
| Strategies and plans | 60 | 9.9 | 18.0 | 9.7 | 6.5 | 11.1 | 10.9 | 5.5 | 10.0 | |
| Lead | 50 | 38.1 | 38.0 | 37.5 | 38.7 | 38.1 | 35.3 | 40.9 | 50.0 | |
| Customers | 90 | 48.7 | 61.5 | 47.3 | 43.1 | 42.8 | 51.1 | 50.5 | 50.0 | |
| Society | 60 | 45.9 | 53.0 | 45.4 | 46.4 | 45.2 | 42.8 | 43.6 | 50.0 | |
| Information and knowledge | 90 | 67.4 | 76.5 | 66.7 | 65.0 | 62.8 | 68.0 | 65.5 | 75.0 | |
| People | 60 | 32.4 | 35.0 | 32.7 | 31.0 | 28.9 | 34.5 | 24.5 | 43.3 | |
| Processes | 190 | 131.8 | 146.0 | 129.7 | 124.9 | 117.4 | 135.1 | 137.3 | 146.7 | |
| Results | 400 | 259.0 | 275.0 | 263.7 | 242.1 | 244.8 | 281.7 | 199.1 | 243.3 | |
| Total | 1000 | 633.2 | 703.0 | 632.6 | 597.7 | 591.1 | 659.3 | 566.8 | 668.3 | |

Table 7 shows the percentages of assessed 382 coffee farms that showed positive values for each of the 64 indicators that compose the questionnaire MIGG. All indicators for the criterion "Society" showed positive values at least 65% of the coffee farms. All criterion indicators "Leadership" presented positive values in at least 68% of farms.

The MIGG questionnaire opens with the criterion "Strategy and Planning" and one of the indicators used to assess this criterion is the existence of "Business plan". The results indicated that most of the farmers do not have a business plan. The four criteria of the indicators "Strategies and planning" are among the seven indicators with fewer positive values. Indicator 1 - "Business plan" had the second worst result among the 64 indicators.

Only 16.4% of farmers have developed a business plan.

The indicator that showed the worst performance was 29 - "Health care for employees", referring to the criterion "People", with only 8% of positive responses. Entrepreneurs (farmers) in general do not understand that offer health insurance to their employees, whether relatives or hired, is part of their commitment to ensuring quality of life, benefits and good health seeking more effective job performance. This can be a tranquility factor for both the employee and the company as the medical monitoring also enables disease prevention and possible reduction in the number of absences due to illness.

The indicator 40 - "Harvest avoids contact with the ground", referring to the criterion "Process", presented the best performance, with 97.4% of positive responses.

The second indicator with the best performance was 24 - "Regular participation in fairs, field days, visits to production areas." However, as most of the questionnaires was applied for technical events this information possibly presents a deviation from the average greater than that presented by other indicators.

Table 7. Percentage of 82 coffee farms with positive values for each of the 64 indicators of MIGG - Coffee questionnaire. Evaluated criteria (and their indicators): Strategies and plans (4), Leadership (5), Customers (6) Society (6), information and knowledge (6) People (6), process (19) and Results (12).

| Criteria | Number of Indicator | % de farms with positive values | Criteria | Number of Indicator | % de farms with positive values |
|---------------------------|---------------------|---------------------------------|---------------------------|---------------------|---------------------------------|
| People | 29 | 8.1 | Processes | 50 | 64.8 |
| Strategies and plans | 1 | 16.4 | Results | 61 | 64.8 |
| Strategies and plans | 2 | 20.4 | Processes | 36 | 65.0 |
| Customers | 13 | 24.5 | Society | 21 | 65.5 |
| Strategies and plans | 3 | 30.8 | Processes | 48 | 65.5 |
| Processes | 38 | 46.2 | Society | 16 | 67.4 |
| Strategies and plans | 4 | 47.3 | Customers | 15 | 67.6 |
| Information and knowledge | 27 | 49.1 | Leadership | 6 | 68.1 |
| Processes | 52 | 49.6 | Processes | 34 | 71.8 |
| Customers | 14 | 49.9 | Society | 18 | 72.6 |
| Results | 60 | 53.3 | Processes | 42 | 73.1 |
| Information and knowledge | 23 | 54.0 | Society | 20 | 74.4 |
| Results | 62 | 54.0 | Leadership | 7 | 75.7 |
| People | 33 | 54.3 | Information and knowledge | 26 | 75.7 |
| Processes | 47 | 54.3 | Processes | 51 | 75.7 |
| Processes | 49 | 54.3 | Customers | 12 | 76.0 |
| People | 31 | 55.6 | Society | 19 | 76.8 |
| Customers | 10 | 56.4 | Processes | 41 | 78.1 |
| Processes | 43 | 56.4 | Results | 64 | 80.2 |
| Results | 55 | 56.4 | Information and knowledge | 25 | 80.7 |
| Results | 63 | 57.4 | People | 28 | 80.7 |
| Processes | 46 | 58.2 | Processes | 44 | 80.9 |
| Processes | 35 | 58.5 | Results | 58 | 82.8 |
| Results | 56 | 58.7 | Leadership | 8 | 84.1 |
| Results | 59 | 59.0 | Leadership | 9 | 85.9 |
| Customers | 11 | 59.5 | Society | 17 | 88.3 |
| Results | 54 | 61.6 | Processes | 37 | 89.6 |
| Results | 53 | 62.1 | Leadership | 5 | 92.2 |
| People | 30 | 62.9 | Information and knowledge | 22 | 92.2 |
| Results | 57 | 62.9 | Processes | 39 | 94.0 |
| Processes | 45 | 63.7 | Information and knowledge | 24 | 94.5 |
| People | 32 | 64.0 | Processes | 40 | 97.4 |

Management degree in vegetable crop production

The management degrees of vegetable crop farms obtained in the study are presented in Tables 8. The level of management, up to date, in the areas of Brazilian vegetable production showed relatively high values. This fact is due to the concentration of samples in two situations: protected cultivation and soilless cultivation. Both represent processes with application of more advanced technologies and reflecting planning and greater knowledge of rural entrepreneurs in this segment. In the production of leafy in soilless cultivation, especially in hydroponic systems NFT (Nutrient Film Technique), the demand for greater control of the process also helps to raise the values of the other criteria evaluated by MIGG. Thus, average around 6.8, found in the country should be reduced as the questionnaires are applied to traditional growers, the soil and in the open field. It should be noted that the value of 8 found in the Northeast is a small sampling, based on only two hydroponic growers

Table 8. Management degree of farms that produce vegetables, Brazilian regions.

| Vegetable production | Average | | | | | | |
|---------------------------|---------|-------------------|-----------|--------------|-------|-----------|-------|
| | Brazil | Brazilian regions | | | | | |
| | | South | Southeast | Midwest / FD | North | Northeast | |
| Sample size | 46 | 14 | 19 | 9 | 2 | 2 | |
| Highest score | | | | | | | |
| Management degree | 9 | 7.0 | 7.4 | 6.8 | 6.8 | 5.5 | 8.0 |
| Criteria | | | | | | | |
| Strategies and plans | 60 | 40.1 | 42.9 | 36.3 | 43.3 | 45.0 | 37.5 |
| Lead | 50 | 45.0 | 45.0 | 42.6 | 48.9 | 45.0 | 50.0 |
| Customers | 90 | 61.7 | 68.6 | 61.6 | 55.0 | 40.0 | 67.5 |
| Society | 60 | 35.8 | 34.3 | 33.9 | 38.9 | 35.0 | 50.0 |
| Information and knowledge | 90 | 76.3 | 79.3 | 75.8 | 78.3 | 52.5 | 75.0 |
| People | 60 | 40.2 | 40.0 | 38.4 | 43.3 | 45.0 | 40.0 |
| Processes | 190 | 133.3 | 135.0 | 134.7 | 132.2 | 95.0 | 150.0 |
| Results | 400 | 268.5 | 299.3 | 264.7 | 238.9 | 165.0 | 325.0 |
| Total | 1000 | 700.9 | 744.3 | 688.2 | 678.9 | 522.5 | 795.0 |

Table o shows the percentages of assessed 46 coffee farms that showed positive values for each of the 64 indicators that compose the questionnaire MIGG. All indicators for the criterion "Information and knowledge" showed positive values at least 65% of the coffee farms. And all criterion indicators "Leadership" presented positive values in at least 78% of farms.

Table 9. Percentage of 82 coffee farms with positive values for each of the 64 indicators of MIGG – Vegetables Crops questionnaire. Evaluated criteria (and their indicators): Strategies and plans (4), Leadership (5), Customers (6) Society (6), information and knowledge (6) People (6), process (19) and Results (12).

| Criteria | Number of Indicator | % de farms with positive values | Criteria | Number of Indicator | % de farms with positive values |
|---------------------------|---------------------|---------------------------------|---------------------------|---------------------|---------------------------------|
| People | 29 | 15.2 | Customers | 15 | 78.3 |
| Processes | 45 | 26.1 | Society | 18 | 78.3 |
| Processes | 46 | 26.1 | People | 32 | 78.3 |
| Customers | 13 | 28.3 | Customers | 12 | 80.4 |
| Society | 20 | 41.3 | Customers | 14 | 80.4 |
| Processes | 51 | 43.5 | Customers | 10 | 82.6 |
| Strategies and plans | 2 | 45.7 | Information and knowledge | 25 | 82.6 |
| Society | 17 | 47.8 | People | 31 | 82.6 |
| Results | 56 | 47.8 | People | 33 | 82.6 |
| Processes | 50 | 50.0 | Results | 53 | 82.6 |
| Processes | 40 | 52.2 | Society | 16 | 84.8 |
| Society | 19 | 54.3 | Information and knowledge | 23 | 84.8 |
| People | 30 | 54.3 | Processes | 38 | 84.8 |
| Results | 62 | 54.3 | Processes | 43 | 84.8 |
| Society | 21 | 56.5 | Results | 63 | 84.8 |
| Results | 55 | 56.5 | Processes | 41 | 87.0 |
| Results | 61 | 56.5 | Processes | 42 | 87.0 |
| Processes | 39 | 58.7 | Strategies and plans | 4 | 89.1 |
| Customers | 11 | 63.0 | Leadership | 6 | 89.1 |
| Results | 57 | 63.0 | Information and knowledge | 22 | 89.1 |
| Strategies and plans | 1 | 65.2 | Information and knowledge | 26 | 89.1 |
| Information and knowledge | 27 | 65.2 | People | 28 | 89.1 |
| Results | 60 | 65.2 | Leadership | 8 | 91.3 |
| Processes | 52 | 67.4 | Processes | 35 | 91.3 |
| Results | 59 | 67.4 | Processes | 36 | 91.3 |
| Strategies and plans | 3 | 69.6 | Results | 64 | 93.5 |
| Processes | 34 | 71.7 | Leadership | 5 | 95.7 |
| Processes | 49 | 71.7 | Leadership | 9 | 95.7 |
| Results | 58 | 73.9 | Information and knowledge | 24 | 95.7 |
| Processes | 47 | 76.1 | Processes | 37 | 95.7 |
| Results | 54 | 76.1 | Processes | 44 | 95.7 |
| Leadership | 7 | 78.3 | Processes | 48 | 95.7 |

Conclusions

The results obtained from questionnaires between 2010 and 2015 corroborate the thesis that despite the technical expertise in cultivation, the management of the agricultural business is still, for the most part, primitive and intuitive.

The management degree of Brazilian farms is heterogeneous. On farms with lower degree of management, it was observed that decision-making is not based on methods that allow for the systematic reproduction processes. On farms which have been identified high levels of management, it was noted that management practices were integrated into modern farming practices, regardless of company size.

In the coffee segment with large sample, in West region of Bahia state and Cerrado of Minas Gerais the management degrees are highest. Considering the scores for each of the criteria evaluated and the sample characterization - especially the average size of farms in the evaluated areas - it is concluded that in the Cerrado regions there is a strong tendency to coffee business, more organized and competitive, with processes production based on the intensive use of modern technologies and fairly homogeneous, accompanied by productivity and very high quality compared to other coffee regions. Such practices have contributed to the increased competitiveness of those companies and the development of those regions.

Although maximum management degree have been identified in the regions analyzed, no farm has achieved the highest score. That is, the search for excellence must continue. In Cerrado of Bahia, where coffee farms have very similar size and administration characteristics, were carried out intensive investments in management systems to the professionalization of agriculture. In the South and Southwest of Minas Gerais, as well as in the Plateau of the Conquista, Chapada Diamantina and Central North of Paraná, few farmers understand that the search for quality, by increasing returns on investments and long-term sustainability, the management can be such an important tool as the use of production technologies.

The number of corrective actions necessary to raise the level of management of Brazilian farms is extensive. If we consider the intrinsic competitive advantages of each region, we can also

conclude that Brazilian coffee production and vegetable crops has potential to respond to corrective action, which may result in increased yield and economical return.

References

Bliska Jr., A. Flores e plantas ornamentais em números: uma visão do mercado mundial. Revista Plasticultura, ano XIII, v.39, nov/dez 2014.

BLISKA JÚNIOR, A. Método de identificação do grau de gestão (MIGG) nas atividades de produção de flores de corte. Campinas, SP. 2010.

BLISKA, F. M. M. ; [MOURÃO, E.](#) ; AFONSO JÚNIOR, P. C. ; [VEGRO, C. L. R.](#) ; [PEREIRA, S. P.](#) ; [GIOMO, G. S.](#) . Dinâmica fitotécnica e sócio-econômica da cafeicultura brasileira. Informações Econômicas (Impresso), v. 39 n.1, p. 5-18, 2009.

FNQ, FUNDAÇÃO NACIONAL DA QUALIDADE. **Auto-avaliação e Gestão de Melhorias**. 2007. 48p.

FNQ, FUNDAÇÃO NACIONAL DA QUALIDADE, 2000. Disponível em: www.fnq.org.br.

FNQ, FUNDAÇÃO NACIONAL DA QUALIDADE. **Crítérios de Excelência**. São Paulo, 2009. 52p.

IBGE. Instituto Brasileiro de Geografia e Estatística. *Produção Agrícola Municipal - PAM*. Data da consulta: 28 de maio de 2015. Disponível em: <http://www.ibge.gov.br/home/estatistica/economia/pam/2013/default.shtm> b.