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Bibliometric Study on the Profile of Agroecology Research in Journals of Agrarian Sciences

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Keywords*— *Agriculture, Organic, Sustainability.

Abstract *— There are few Brazilian researches of scientific production in the field of Agrarian Sciences that are dedicated to the field of organic production presenting the Agroecology as a science with themes, references, authors and methodological approaches. Therefore, this study proposes to study the profile of studies on the theme of Agroecology published in agrarian science journals qualis A1, A2 and B1 from 2011 to 2022. The concern of this study is to understand: how Agroecology is being portrayed and which designs are being taken in Brazilian journals of Agrarian Sciences. The study is supported by bibliographic analysis research, which will help to quantify and analyze all selected scientific production (Cooper & Lindsay, 1998; Leite Filho, 2006). All data collection took place between articles published from the end of 2011 to the beginning of 2022. After selection, the material was cataloged in the Mendeley Desktop software. The Qualitative Data Analysis tool was fundamental in this process, once it helped in the tabulation, creation of graphics and as a subsidy of descriptive and qualitative statistics in the analysis of data while support of studies coming from Critical Ecosystem Linguistics. The results of this study show that a considerable part of the research focuses precisely on the question of organic agriculture, without opening up to a greater understanding of Agroecology, so that it also leaves aside the interdisciplinary character of Agroecology. Most of the articles are signed by a group of authors, which demonstrates a sharing of knowledge and knowledge.*

I. INTRODUCTION

The Brazilian financial system has a publicly traded company that resulted from the merger of three companies: São Paulo Stock Exchange [BOVESPA], Commodities and Futures Exchange [BM&F] and Central for Custody and Financial Settlement Securities [CETIP], which is currently called B3 [Brazil, Stok Exchange, Counter]. The B3 has 13 tradable companies in the food production setor. Brazil Foods [BRF], João Batista Sobrinho [JBS], Marfrig Global Foods [MGF] and Minerva are the companies that make up B3 and are part of the Bovespa Index [Ibovespa], accounting for around 80% of all business in the area.

In recent years, some of these companies that work with manipulated products and medicines have brought organic ingredients to the financial market and have carried out an Initial Public Offering [IPO] offering

their shares to society for the first time, which has attracted investors. Driven by little public investment in the area of organic products, the Landless Rural Workers Movement [MST] announces, in 2021, its entry into the financial market with the purpose of raising funds to finance the production of organic food through associations and cooperatives.

In recent years this type of product has conquered consumers. According to Organis (2021), the number of consumers of this type of food in 2021 grew by 63%, which has maximized the supply and diversity of pesticide free products. This movement of products without pesticides in the dispute for spaces with conventional and industrialized products has also produced satisfactory effects in the understanding of the role of Agroecology for agriculture and for the Brazilian agricultural economy.

This work will adopt a concept for Agroecology and another for organic agriculture. The first, understood in this article as a scientific approach that aims to transition from one model of agriculture to another, or rather, from conventional to sustainable agriculture. This way of thoughs opposetive to the Agroecology to the idea of products that the Green Revolution idealized. No does it restrict the term merely to a substitution of chemical inputs for alternative, organic inputs (Caporal & Costabeber, 2004). In this way, organic agriculture will be a form of cultivation that is based on natural methods.

Briefly if a producer provides a product based on an ecological perspective, without poison, being able to work on a large scale, in which it delivers to an intermediary, this can be inserted in an organic vision. This product can be agroecological when the producer provides food without using chemical elements, inserted in a production system that involves ethical, cultural, political, ecological, economic and social dimensions (Caporal & Costabeber, 2004). Organic and agroecological products start from the same base and they not impact the soil, but with different dimensions. Organic agriculture, therefore, would be one of the types of agriculture practiced within what this study considers the science of Agroecology.

In the agricultural scenario of Sciences in Brazil, studies on organic agriculture as an agriculture of Agroecology that deal with themes, authors and authors, references and methodological approaches are still very incipient, even less studies that treat Agroecology as an interdisciplinary science. Nonetheless, this study starts from the following question: how is the theme of Agroecology being portrayed and what outlines are being taken in Brazilian journals of Agrarian Sciences? From there, this research wants to reach its objective: to present the designs built by research in Agrarian Sciences on Agroecology.

The Englishman Lord Northbourne (1896-1982) used firstly the term *organic agriculture*. However, the Englishman Albert Howard (1873-1947) who studied the lectures of the German Rudolf Steiner (1861-1925) created the practice of organic agriculture. Rudolf Stainer (1861-1925), in 1924, has prepared a course based on a series of conferences for producers, in which he conceptualized agriculture beyond its economic dimension, presenting the concept of an agricultural organism, initiating the school of biodynamics. Howard (2012) advocates that the foundation of sustainability is the conversion of soil fertility, highlighting the importance of soil microorganisms for the work of agriculture.

Other types of agriculture were being developed around world. In the 1930s studies of organic farming arose, with the Swiss Jerome Ehlers (1958-2014) as a representative, who advocated soil management, fertilization and crop rotation. In the same decade, a type of agriculture called natural agriculture was developed, whose ideas defended by the Japanese Masanobu Fukuoka (1913-2008), proposed minimal human intervention in nature by the absence of plowing and without the use of fertilizers. Similar to these studies, Lady Eve Balfour (1898-1990) developed studies in Great Britain in which they approached the relationships of life and health of soils, observing the life of plants and animals.

In the 1980s permaculture appeared through the studies of Bruce Charles Mollison (1928-2016) and Holmgren (1955-2017) who proposed an integrated system of small animal and plant species useful to humans. Mollison (1928-2016), or Bill Mollison, observing the animals in the forest, imagined creating a system similar to what he saw, having a mandala as a model, together with the Australian David Holmgren (1955-2017), he developed a structure for a sustainable and self-perpetuating system, where there is “harmonious interaction between people and the landscape, providing food, energy, shelter and other needs, material or not in a sustainable way” (Mollison & Slay, 1998).

Putting organic agriculture, permaculture and Agroecology in the same thread, the three would be branches of the same trunk, that is, the same ecological approach, but which differ from each other.

Altieri (2004) suggests that there is a very restricted relationship between permaculture and agroecology. Both Agroecology and Permaculture are characterized as sciences and both originated in the same period. This two terms are very close to sustainability. However, there are differences between the two.

Agroecology focuses on the definition of agriculture and the other, permaculture, embraces agriculture, sanitation, housing, land occupation, etc. Permaculture is based on three ethical principles: caring for the land, caring for people and sharing surpluses. In this way, it supplants the function of the land as just the supply of food, as if just producing was enough. What also happens with Agroecology that, for Altieri (2004, p. 17), "to be effective, development strategies must incorporate not only technological dimensions, but also social and economic issues", ratified by Caporal and Costabeber (2004) when they use similar vision.

Common difference from permaculture and agroecology to organic agriculture is what is organic is not always sustainable, considering what Caporal and Costabeber (2004) advocate. Already between organic agriculture and agroecology there are differences in the relationships established to produce and commercialize. The organic seal, a requirement in modern capitalist agriculture for organic products, can be given to large, heavily mechanized large estates, which involve little or even expel the labor of peasants from their lands.

Organic farming sometimes produces "new labels" on "old bottles". The agricultural system does not change, the elements remain independent and the organic inputs are inserted into a structure that remains traditional. The logic of production and marketing remains the same.

Some countries have created laws that make organic agriculture viable, even surpassing conventional activities in agriculture. Although producing epistemological confusions, in its differences and common points with Agroecology, organic agriculture manages to bring the agenda of Agroecology to the political agenda. In fact, the agenda of Agroecology is the result of discussions and popular participation.

In the Brazil, in May 1999, a law was created which provides for norms for the production of organic products. By Decree 7794, in August 2012, the National Policy on Agroecology and Organic Production [PNAPO] is established, establishing a pact between the Federal Government and civil society in order to stimulate actions, policies and programs in the scope of organic production and the agroecological transition.

This decree takes as a concept for organic agriculture activity and agroecologically based production the provisions of Law 10831, of December 2003. The legal framework for organic agriculture also includes: Law 10831/2003; Decrees 6323/2007 and 6913/2009; Normative Instructions 54 "On the Commissions" and 64 "Of the Organic Systems of Animal and Plant Production"; Normative Instructions 17 "On Sustainable Organic Extractivism" and 18 "Processing, Storage and Transport" and 19 "On Organic Quality Control and Information Mechanisms". This entire legal framework of organic agriculture refers little to Agroecology, and the framework itself is often an obstacle even for commercialization and organic production.

However, the history of the organic products market in the Brazil didn't start from the legislation, on the contrary, in the 90s there were already significant initiatives, although there's no legislation for its regulation (Costa, 2017). It was also in the 90s that the expression Agroecology started to be used as a way of representing sustainable agriculture, observing the ethical, cultural, political, ecological, economic and social dimensions (Caporal & Costabeber, 2004), based on the reflections developed around the agroecological experiences observed in different places in Latin America.

The current meaning of the term Agroecology leaves aside the understanding that was had in the 1920s, which according to Gliessman (2000) was presented as alternative agriculture, to be understood as a science, with a great contribution from Altieri (1989; 2004). Although, this "alternative agriculture" being researched in depth by many researchers who have demonstrated its effectiveness, it was still not well accepted in the industrial, political and academic circles. Understood as a discipline that studied agroecosystems, the contribution of other fields of knowledge was fundamental to broaden the concept. Thus, its origin is demarcated in Agricultural Sciences, in Ecology, in social movements and in the analysis of agroecosystems of traditional communities and in the study of rural development (Hecht, 2002).

Lord Northbourne (1896-1982), Jerome Ehlers (1958-2014), Masanobu Fukuoka (1913-2008), Lady Eve Balfour (1898-1990), Mollison and Holmgren (1981) began to be revisited by several researchers in the Agrarian Sciences, in a search for ecological relationships with agricultural systems.

In Brazil, this revisitation was carried out by several authors who helped to build and spread the concept of Agroecology as Paschoal (2019), Primavesi (2002), Lutzenberger (1983), Machado and Machado Filho (2014), Pinheiro (2018), Caporal and Costabeber (2004).

In the 1990s, the first Brazilian documents about these ideas come from the First Brazilian Meeting of Alternative Agriculture, in 1981. In 1984, the Second Brazilian Meeting of Alternative Agriculture takes place and, three years later, the third Meeting. These events were fundamental for the dissemination of Agroecology as an emerging science.

For Hecht (2002) social issues began to emerge with greater force by the agricultural literature at the exact moment when social movements presented themselves as resistance to the conventional form of agriculture and as a consequence of rural development studies and at the moment when scholars were concerned to report and describe the agricultural practices of traditional peoples. For the same author (2002), the existence of this kindy of study about diversity and lines of thought, contribute to the development of Agroecology and a interdisciplinarity movement. And, therefore, being the most appropriate to deal with the problems present in the rural world. From this point of view, this study could hypothesize that current research has been rethinking the epistemological position of the Agrarian Sciences regarding Agroecology. Is it? This is what this study will investigate from the central questioning about the designs taken by the researches of the Agrarian Sciences.

After this introduction, this article is organized in material and method, results and discussions and conclusion. Material and method describes the methodological processes adopted in the research. The results and discussions present all the development of the research and some reflections that were elabored from the collected data. The conclusion present some answers to the discussed of the article.

II. MATERIAL AND METHOD

To answer the central question, bibliographic analysis research is given up, which will help to quantify and analyze all the selected scientific production (Cooper & Lindsay, 1998; Leite Filho, 2006). The first step was to enter the Sucupira platform, in the quadrennium option 2013-2016, in the area of Agrarian Sciences, and search for journals that have the strata proposed in this study. A total of 462 A1 records, 450 of A2 and 890 of B1 (national and international) were found. The selection was based on the journals in which the object of study could be found.

Thirty journals were chosen: Scientia Agrícola, Annals Science and Agrotechnology [UFLA], Sicence and Agrotechnology, Vittis, Acta Amazonica, Acta Botanica Brasilica, Acta Limnologica Brasiliensia, Arquivos do Instituto Biológico, Biodversidade Brasileira, Biota, Neotropica, Bragantia, Brazilian, Archives of Biology and Technology, Brazilian Jornal of Biology, Brazilian Jornal of Botany, Bfazilian Journal of Chemical, Brazilian Journal of food Technology, Brazilian Journal of Plant Physiology, Brazilian Journal of probability and Statistics, Ebape BR, Food Sicence and Technology, Forestry Sicence, Rural Science, Agricultural Engineering, Forest and Environment, Irrigation, Brazilian Jorunal of Agricultural and Environmental Engineering, Caatinga, CERES, Agronomic Science Journal.

Due to the actuality and importance of the subject of this study, there was a concern for the methodological procedure and the validation of the finding that support this research. Thus, the analysis by triangulation of methods was proposed by the “use of multiple methods, or triangulation, reflects an attempt to ensure an in-depth understanding of the phenomenon in question” (Denzin & Lincoln, 2006, p. 19).

All data collection took place between articles published from the end of 2011 to the beginning of 2022. After selection, the material was cataloged in the Mendeley Desktop software. The Qualitative Data Analysis [QDA] tool and the Microsoft Office Excel software were fundamental in this process, because they helped in the tabulation and creation of the graphs and as a subsidy of descriptive and qualitative statistics in the analysis of the data, with the contribution of Critical Ecosystem Linguistics [LEC] that takes into itself the principles of “ecomethodology” (Garner, 2004). Ecomethodology is fundamental in this study, as the pedagogy of its method is centered on the learning of the daily and daily doing of the subjects, with the purpose of promoting sustainability in development.

This paper observes yet the openness that exists for Brazilian research to be published in other languages, even in Brazilian journals. Therefore, the selection of articles on the topic of Agroecology was based on the insertion of keywords in English and Portuguese (Agroecology, organic agriculture, sustainable agriculture, permaculture). The selected articles had in their titles, keywords or abstract at least one of the words observed. Some articles were discarded, as they appeared in the inclusion criteria of words without, however, appearing them in the title, abstract or keywords, containing words that, although they were in the same lexical field, were not necessarily in the semantic field of Agroecology, for For example, the words: agricultural, agro-industry, farming or expressions such as “fertilization of organic origin”.

As previously mentioned, together with the QDA, the LEC (Couto, 2020) will be used, which has been increasingly dedicating itself to a more ecological view of the world, advocating that human beings and their way of living, existing and thinking are inserted in a large ecosystem, which discards the cartesian view of the world. Unlike other areas of knowledge, in the field of linguistics and discourse analysis, LEC has its epistemological basis built on ecological concepts, and the most important concept in this field is that of ecosystem.

Observing the phenomenon of language, it can be considered, therefore, that there is not only one linguistic ecosystem, depending on the perspective, four or more can be found: natural language ecosystem, mental ecosystem, social ecosystem, which can converge into a single, the integral language ecosystem and, in this way, the language can be associated with an environment (natural, mental, social or integral). Thus, when talking about the environment, we need to know the reference bases whom will depend on the researcher's approach (Couto, 2015). Boff (2012) argues that it is necessary to identify not only the type of ecology but to include the integral ecology that encompasses the other three. The narrative of life takes place in this intertwining of ecologies. To this end, the LEC will better support the understanding of this intertwining, as it emphasizes life (Agroecology is life) and what develops from it, such as the resistance of peoples to remain in their territories.

III. RESULTS AND DISCUSSION

Returning to the periodicals cataloged in Mendeley, in the period from 2011 to the beginning of 2022, 48 articles were found, involving 187 authors, in 14 periodicals, of 26 volumes, sometimes appearing in the same volume more than one publication. . This count takes into account the special editions of the Periodicals.

Table 1: Articles found

Year	Article	Authors	Journals found
2022	Composition differences between organic and conventional processed foods: a meta-analytical study	6	Rural Science
2022	Investigating the leading drivers of organic farming: A survival analysis	6	Rural Science
2022	Potato genotypes and environments under potato in the Brazilian Cerrado biome	6	Rural Science
2022	Environmentally sustainable practices in hospital food and nutrition units	3	Brazilian Journal of Food Technology
2021	Agave pulquero (Agave salmiana), socio-economic and agro-ecological importance and its development perspectives: a literature review	2	Rural Science
2021	Coffee waste as an eco-friendly and low-cost alternative for biochar production impacts on sandy soil chemical attributes and microbial gene abundance	10	Bragantia
2021	Conversion to organic farming: a dynamic opportunity for Pakist ani smallholders of fresh fruit	2	Rural Science
2021	Determinants of Rulindo tea farmers' perception towards organic farming	2	Rural Science
2021	Economic Viability of beet crops using Calotropis Procer Biomas as soil fertilizer in two growing seasons	6	Caatinga Magazine
2021	Effect of sowing time and density for vegetative and reproductive traits of genotypes of maize landrace in an agroecological system	2	Rural Science
2021	Perception of fungi by farmers in the Cerrado	7	Brazilian Journal of Biology
2021	Sulfonamide resistance genes in soils treated with waste from animal production in an organic production system	8	Seminar: Agricultural Sciences
2021	The cherry tomato under an organic system inoculated with Trichoderma asperellum and intercropped with vegetables of family fabaceae	6	Agronomic Science Magazine
2021	Yield and quality of passion fruit under organic cultivation with input levels and irrigation in the state of Acre	5	Caatinga Magazine

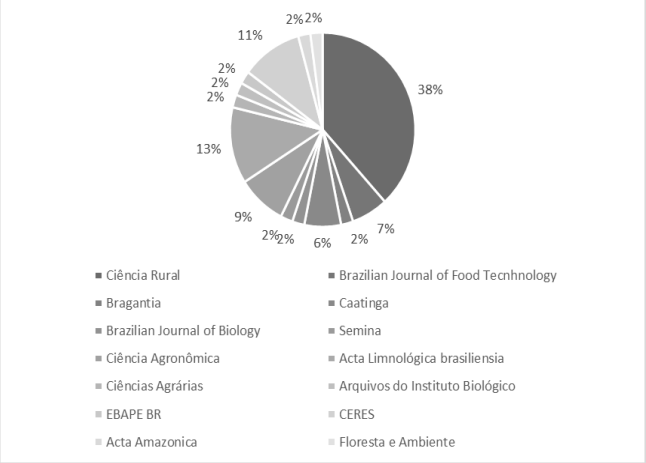
2020	Alpha and beta diversities of Trichoptera (Insecta) assemblages in natural and rural subtropical streams	6	Acta Limnológica Brasiliensia
2020	Application of multivariate methods and geostatistics to model the relationship between CO2 emissions and physicochemical variables in the Hidrosogamoso reservoir, Colombia	3	Acta Limnológica Brasiliensia
2020	Demystifying agroecology in Brazil	2	Rural Science
2020	Determining the performance of alfalfa population collected from a narrow agroeceological zone of Turkey	3	Rural Science
2020	Consumer preferences toward organic food and the moderating role of knowledge: a case of Pakistan and Malaysia	5	Rural Science
2020	Work in organic farming : an overview	3	Rural Science
2020	women working in animal husbandry : a study in the agroecological transition context	3	Rural Science
2020	Work in organic farming : an overview	3	Rural Science
2019	Family farming in agroecological transition : a look at the marketing of milk and dairy products in municipalities of the Zona da Mata of Minas Gerais State , Brazil	2	Rural Science
2019	Production costs and profitability in coriander fertilized with Calotropis procera under organic cultivation	5	Agronomic Science Magazine
2019	Quality and sensory acceptance of 'Pearl' pineapple grown in soil with application of organic fertilizer	5	Rural Science
2019	Potato genotypes reaction to early blight and late blight in organic cultivation	5	Rural Science
2018	agronomic characteristics of the pacovan organic banana in irrigation sustains in the Açu-RN valley	4	Caatinga Magazine
2018	Effect of pigeon pea intercropping or shading with leucaena plants on the occurrence of the coffee leaf miner and on its predation by wasps in organic coffee plantings	5	Rural Science
2018	Organic residue inputs influence soil biological properties in organic farming systems	5	Brazilian Journal of Agricultural Sciences
2017	Biodiversity of nematodes biological indicators of soil quality in the agroecosystems	2	Archives of the Biological Institute
2017	Copepod assemblage structure (Crustacea: Copepoda) along a longitudinal environmental gradient in a tropical river-floodplain system, Brazil	5	Acta Limnologica Brasiliensia
2017	Designing resistance: aesthetics and counter-hegemony in the agroecological movement in Brazil	2	EBAPE BR
2017	Factors affecting assemblage attributes of freshwater Oligochaeta in Neotropical shallow floodplain lakes	5	Acta Limnologica Brasiliensia
2017	Leguminous cover crops for banana plantations in semi-arid regions	3	Caatinga Magazine
2016	Qualitative attributes and postharvest conservation of green ears of maize grown on different cover crops in organic no-till system	6	CERES
2016	Fluvial lateral environments in Río de La Plata basin: effects of hydropower damming and eutrophication	4	Acta Limnologica Brasiliensia

2016	Quality of tomato fruits grown in an organic production system and treated with lemongrass by-products	5	Agronomic Science Magazine
2015	Socioeconomic alternatives for family farmers: the role of an agroecological association	2	CERES
2015	Ecological guilds of epiphytic diatoms (Bacillariophyta) on Acrostichum danaeifolium Längst. & Fisch in a subtropical wetland in southern Brazil	2	Acta Limnologica Brasiliensia
2014	Green manure with sunn hemp intercropped with baby corn preceding kale under organic management	5	CERES
2014	Cultivation of vegetables in the organic system	3	CERES
2014	Damage of fruit flies (Diptera, Tephritidae) on citrus managed in the organic production system	4	CERES
2013	Environmental risk assessment due to metallic contamination and organic material in sediments from the Aurá River basin, Metropolitan Region of Belém – PA	2	Acta Amazonica
2013	Indicator of sustainability of agroecosystems: case study in corn growing areas	2	Rural Science
2013	Yield and nutritional status of the conilon coffee tree in organic fertilizer systems	4	Agronomic Science Magazine
2012	Microbiological aspects and nutritional information of organic tomato sauce from family farming	5	Brazilian Journal of Food Technology
2012	Attitudes and motivations in relation to the consumption of organic foods in Belo Horizonte – MG	2	Brazilian Journal of Food Technology
2012	Litter Stock and Microbial Activity in Soil under Agroforestry Systems	4	Forest and Environment

In the total numbers of journals researched, the articles that make up the *corpus* of this research are in 14 in the area of Agrarian Sciences. All articles found are located in journals in the stratum classified as B1 of the Coordination for the Improvement of Higher Education Personnel [CAPES, acronym in Portuguese].

The graphic in Table 2 shows that in the total number of journals surveyed, 62% of the volumes found are concentrated in 03journals. If scientific publications are used as an indicator of performance in areas of knowledge, this graph reveals a statistically significant correlation regarding a small degree of interest of Qualis CAPES B1 journals for the theme of organic agriculture related to Agroecology perhaps also reveals the lack of interest of periodicals A1 and A2 in the subject. Therefore, the number of publications on the subject of Agroecology does not match the current offer of organic products and medicines in the financial market and in the number of articles published on the subject of organic crops.

Table 2: Total number of volumes in percentage



Considering the profile of the journals, which are focused on areas such as Agronomy, Veterinary Medicine, Food Engineering, Water Resources Engineering, Animal Science, the expectation was that there would be a much greater number of articles directly related to the science of Agroecology and, mainly, , in larger strata. For Gliessman (2009) despite the emergence of Agroecology in the

1930's, show us that this science approach gained strength in the 1980s, as a result of the association of Agronomy and Ecology. These two science, Agronomy and Ecology, were previously considered dichotomous, and the reflection of this dichotomy can be seen in other branches of these sciences, and it still seems to be current when considering the almost erasure of Agroecology in journal texts around Agrarian Sciences. " With due caution, there is no need to be afraid of eclecticism" (Couto, 2018, p. 23), even knowing that this eclecticism, which can be called multi-inter-transciplinarity in this study (Altieri, 1989), may present, at least in methodological terms, obstacles that can be observed in the most varied sciences and disciplines. But in the science of Agroecology this form of approach is the "exit to the fenced and exhausted world of our time" (Leff, 2002).

About the authors and author numbers, if we consider the author and author number for the text number, we would have almost 4 per production. But this correlation does not relate in that way. Of these 48 articles, more than 50% were written by 4 or more authors and authors. This may represent a peculiar characteristic of adherence to the collective production of texts that are written by researchers who come from various fields of knowledge, a very particular characteristic in the scientific production of the science of Agroecology, and which seems to be characteristic in studies within the scope of publications with organic farming themes, at least in these journals. This type of scientific attitude welcomes the interdisciplinary and ecosystemic way that conduct the types of research carried out that investigate the integral ecology mentioned by Boff (2012).

In the Agroecology science, collaboration and cooperation are passes for the exchange of knowledge and practices. In the context of scientific production in the field of Agroecology, this characteristic reflects in such a way that the subjects involved in the action are sometimes considered as co-authors of the scientific production, which was not possible to identify this form of authorship in the articles found.

The Table 1 shows the number of publications carried out on organic cultivation/production and Agroecology. The Table 3 resumes this information, but bringing us the types of approaches performed by these articles.

Table 3: Research approaches and types

Year	Approach			search type		
	Quantitative	**Qualitative**	**quanti-qualitative**	**Exploratory**	**descriptive**	**Explanatory**
2011	0	0	0	0	0	0
2012	3	0	0	0	3	0
2013	3	0	0	0	3	0
2014	3	0	0	0	3	0
2015	1	1	0	0	1	1
2016	3	0	0	0	3	0
2017	4	1	0	0	4	1
2018	3	0	0	0	3	0
2019	4	0	0	0	4	0
2020	5	1	1	3	2	2
2021	9	0	1	1	9	0
2022	4	0	0	0	4	0
Total	**42**	**3**	**2**	**4**	**39**	**4**

The preference of authors for quantitative approaches is notorious. But occasionally there is emergence of the qualitative approach in journals as we can see in the years 2015, 2017 and 2020. These researchers who have chosen an approach that does not follow the others seem to be part of a minimal group of scholars in which it is assumed that it is not necessary in science, whatever it may be, to adopt a single and exclusive model of approach. Going deeper and returning to the articles in this review, it is possible to say that these few authors are in the group of those who defend Agroecology as a science (Caporal & Costabeber, 2004), without getting lost in a lay confusion between Agroecology and organic agriculture.

In the same Table, almost the same total employment of the quantitative approach and the type of descriptive research we have observed. The paths of investigation between the descriptive approach and quantitative research seem to be the same, assuming a posture of annuity of interference of the researcher subject. This understanding is disconnected from Agroecology, as a science, which needs an approach that already presupposes its interference at the exact moment of the question of which environment the research will study (Couto, 2015).

Table 4: Data analysis procedures

Analysis					Year
Statistic	**diagnosis**	**Contents**	**Speech**	**Historical**	
0	0	0	0	0	2011
3	0	0	0	0	2012
3	0	0	0	0	2013
3	0	0	0	0	2014
1	1	0	0	0	2015
3	0	0	0	0	2016
4	0	0	1	0	2017
3	0	0	0	0	2018
3	0	1	0	0	2019
5	0	1	0	2	2020
10	0	0	0	0	2021
4	0	0	0	0	2022
42	**1**	**2**	**1**	**2**	**Total**

In reference to data analysis presented, the preference of authors is aggregated in the statistical analysis (geostatistics, biostatistics, etc.). If a relationship is made between the use of the statistical method and the descriptive approach, and the result is almost equal in number of use by the authors, it could be said that this statistic with the more descriptive approach can have the purpose of to describe as much data as possible, as can be better perceived by the use of a large number of graphics analysis and tables in the articles selected for this research. At the same time, in the last two years there has been a vertiginous increase in the Agroecology/organic theme, it seems that there is no attempt to diversify the methodological procedures. For the Agroecology science, the use of just one type of methodological procedure places research on a non-interdisciplinary path, an important condition to contribute to the expansion of the concept of Agroecology. Therefore, it is sometimes difficult to see, for example, the possible territorial dispute that may exist between Agroecology and other production models. The territorial dispute category would evidence power relations, construction of new processes to face patriarchy, the involvement of ancestry and religiosity in the construction and understanding of organizational and training processes, the communication process involved in the articulation of knowledge, practices and daily experience and in the marketing of products, etc.

As for the research procedures, of the total of 09 types adopted (documentary, bibliographic, participatory research, etc.), 26 were inserted in what is commonly called experimental and 11 were of the survey and field type. The experimental one was preferred by the researchers, as it is considered one of the main types of research due to the fact that it has greater control over the variables. If they are placed in the same group as field research and survey, which is possible, this number increases considerably to 37. Faced with so many research procedures, the choice for a few may occur merely as an epistemological option, or even influences from the Cartesianism, the journals' criteria for publication or the agility of the processes avoiding greater bureaucratic publication procedures, hypotheses that cannot be proven in this study.

Regarding the topics covered, it is divided into three groups here: 1. Articles that did not make any reference to Agroecology, even when talking about organic agriculture or agroecosystem; 2. Those who present clarity regarding the defense of agroecology, as a new and interdisciplinary science, and the distinct understanding that there is between Agroecology and organic agriculture, or yet, when it presents a critical view while having it as a science; 3. Those which somehow link Agroecology to other sciences or agriculture.

Synthetically, by the historical line that was presented in the theoretical basis of this study, it is possible to affirm that Agroecology is the benchmark of new proposals of sustainable agriculture and becomes indispensable to understand the new ways of doing agriculture. Agroecology is understood as a science that aims to support the transition from current models of rural development and conventional agriculture to more sustainable models (Caporal & Costabeber, 2002). This new science starts from the concept of agroecosystem as a unit of analysis that relies on scientific bases to study agrarian activity from different scientific disciplines in an ecological perspective (Altieri, 2004) that is concerned with identifying not only the type of ecology , but seek it in its form of integrality (Couto, 2015) that involves several dimensions (Caporal 7 Costabeber, 2004), a little different from what Baiardi and Mendes claim (2005, as cited in Baiardi & Pedroso, 2020, p. 2, free translation):

> In Brazil it was no different. When they reverberated, the scientific community officially didn't worry about them, except about isolated manifestations of some of its members. These irrational manifestations that took place under the mantle of neo-obscurantism gradually evolved to an almost hysteria in relation to genetic modifications, with condemnation of researches

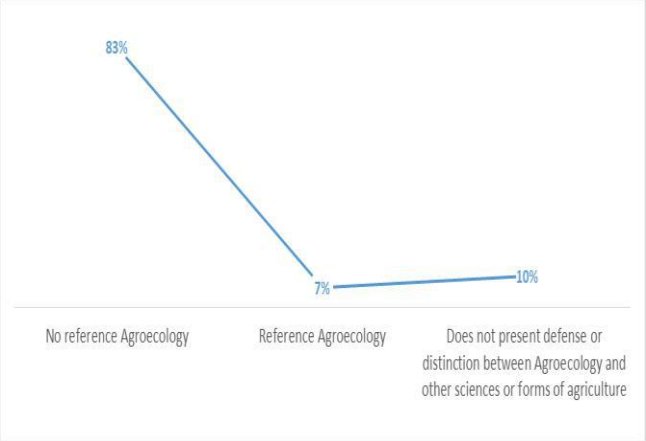
in modern biotechnology in their discourse, not being, in essence, anything different from those in which theological thought attempted not take into account the discoveries of Copernicus, Galileo, Descartes and Darwin.

This way of seeing Agroecology can be seen in Table 05 as "new visions", despite not being a new conception because this type of questioning arises at the same time that Agroecology appears in Brazil as a proposal of science. Baiardi and Pedroso (2020, p. 3) consider that Agroecology does not have an exact definition that is scientifically accepted, since "as a 'particular science', only as defined by its leaders, depends on external conditions to the world of science and in the same time, it is defined as a non-agrarian science, as a science of sustainable agriculture, not dissociated from the idea of holistic". If these authors (2020) consider Agroecology as a distant dream with a disarranged designer, it is that, perhaps, they do not treat it without detaching it from Cartesian schemes, since this new science is integrative and holistic, and consequently would be Agroecology, as a theory and practical, more appropriate to understand sustainable rural development (Caporal, Costabeber & Paulus, 2006, p. 21).

On the other hand, in this "new vision" of Agroecology, Naves and Reis (2017), based on a new analysis, build a defense of Agroecology in which they point to new forms of production, bringing aggregating elements to the concept of Agroecology, pointing out indicators of sustainability (however, they do not mention this term), such as: income generation, eco-efficient equipment, environmental health and family health, product qualities, community participation, workers' autonomy, diversification of production, forms of marketing and valorization knowledge and traditional knowledge.

Another important point for the Agroecology concept is the participation of social movements and the territorial dispute waged in the agrarian and agricultural field. At this point, these authors (2017, p 312) resort to the concept of antagonism as a form of resistance that social movements seek. Thus, the authors present a defense of the concept of Agroecology as a science that highlights, knowledge, values, habits, experiences of building territories of life and political and identity organization.

Table 5: References to Agroecology



The articles that did not make any reference to Agroecology, even talking about organic agriculture or agroecosystem are talking about what? If, in the theoretical assumptions of some authors, more than 80% of the articles do not make any relationship with Agroecology, it seems that the cultivation of organics in these cases still remains in the same agricultural system, being inserted in a traditional agrarian and agricultural structure, of monoculture and in which the narrative is not understood from all the dimensions that Caporal and Costabeber (2004) suggest.

There is still, and there are not few, mainly in the agrarian environment, a confusion of understanding between Agroecology and organic or organic and Agroecology, as well as those who defend that Agroecology and organic can be part of the same processes. The 10% indicated in the graphic frame may be situated in this context of hypothesis.

These conceptions can occur for several reasons, considering: Agroecology is still a science under construction, and therefore needs to better define its paradigms and that its principles and epistemologies need more studies and reflections (1); that Agroecology is not a science, but only a process that takes place in practice and on a daily basis (2); Agroecology and organic are the same reality because they start from the same base – ecology (3); the Agroecology term is not autonomous because it is an interdisciplinary science (4). Finally, the Agroecology term is a "new fad" and will soon pass; or even, to present new postures that its defenders still can't see.

IV. CONCLUSION

The results of this study show that a considerable part of the research focuses precisely on the question of organic agriculture, without opening up to a greater understanding

of Agroecology, so that it also leaves aside the interdisciplinary and transdisciplinary character of this new science. The articles demonstrated in this study are open to new ways of doing science, such as the collective production of articles. However, it is observed that more studies in the area are necessary, mainly in the treatment of Agroecology as a new science, which is being in construction and in the same way is a complex and multi-trans-disciplinary approach, has its object of study and its epistemological bases clear and that it opens the door to be expanded in its way of seeing reality. It's a new science, but its foundations are as old as the history of agriculture.

REFERENCES

[1] Altieri, M. (1989). Agroecologia: as bases científicas da agricultura alternative, 2rd. ed. Rio de Janeiro: PTA-FASE.

[2] Altieri, M. (2004). Agroecologia: a dinâmica produtiva da agricultura sustentável, 4rd. ed. Porto Alegre: UFRGS.

[3] Boff, L. (2012). As quatro ecologias: ambiental, política e social, mental e integral. Rio de Janeiro: Mar de Ideias.

[4] Caporal, F. R. Costabeber, J. A. (2002). Agroecologia: enfoque científico e estratégico. Revista Agroecologia e Desenvolvimento Rural Sustentável, vol. 3. Porto Alegre: UFRGS, pp.13-16.

[5] Caporal, F. R. Costabeber, J. A. Paulus, G. (2006). Agroecologia: matriz disciplinar ou novo paradigma para o desenvolvimento rural sustentável. Brasília: DATER/SAF/MDA. Retrieved from https://pt.scribd.com/document/360256467.

[6] Cqporal, F. R. Costabeber, J. A. (2004). Agroecologia: alguns conceitos e princípios. Brasília: MDA/SAF/DATER-IICA.

[7] Cooper, H. M. Lindsay, J.J. Research synthesis and meta-analysis. (1998). In BICKMAN, L. ROG, D. J. Handbook of social esearch methods. Thousand Oaks, CA, United States: Sage Publications, pp. 315-242. Retrieved from https://www.researchgate.net/publication/230557448.

[8] Costa, M. B. B. (2017). Agroecologia no Brasil: história, princípios e práticas. São Paulo: Expressão Popular.

[9] Couto, H. H. (2018). A metodologia na Linguística Ecossistêmica. Ecolinguística. In Revista Brasileira de Ecologia e Linguagem, vol, 4. Brasília: UNB, pp. 18-33. Retrieved from https://periodicos.unb.br/index.php/erbel/article/view/1235.

[10] Couto, H. H. (2015). Linguística ecossistêmica. Ecolinguística. In Revista Brasileira de Ecologia e Linguagem, vol. 1. Brasília: UNB, p. 47-81, 2015. Retrieved from: https://periodicos.unb.br/index.php/erbel/article/view/9967.

[11] Couto, H. H. (2020). Discursística. In Revista Linguagem e Glotopolítica. Brasília: UNB. Retrieved from: https://ilinguagem.blogspot.com/2020/03/discursistica.html

[12] Denzin, N. K. Lincoln, Y. S. (2006). Introdução: a disciplina e a prática da pesquisa qualitativa. In DENZIN, N. K. LINCOLN, Y. S, Eds. O planejamento da pesquisa qualitativa: teorias e abordagens. 2nd. ed. Porto Alegre: Artmed, pp. 15-41.

[13] Garner, M. (2004). Language: an ecological view. Berna: Peter Lang.

[14] Gliessman, S.R. (2009) Agroecologia: processos ecológicos em agricultura sustentável. 4nd. ed. Porto Alegre: UFRGS.

[15] Hecht, S. B. (2002). A evolução do pensamento agroecológico. In Altieri, M. A. Agroecologia: bases científicas para uma agricultura sustentável. Guaíba: AS-PTA, pp. 21-51.

[16] Howard, S. A. (1940). Testamento Agrícola. 2nd. ed. São Paulo: Expressão Popular. Retrieved from https://periodicos.unb.br/index.php/erbel/article/view/9967/8800.

[17] Leff, E. Agroecologia e saber ambiental. (2002). In Agroecologia e Desenvolvimento Rural Sustentável, v. 3, Porto Alegre: pp. 36-51.

[18] Leite Filho, G. A. (2006). Padrões de produtividade de autores em periódicos de congressos na área de contabilidade no Brasil: um estudo bibliométrico. São Paulo: Congresso USP Contralodoria e Contabilidade, Retrieved from http://www.congressousp.fipecafi.org.

[19] Lutzenberger, J. (1983). Fim do Futuro? Manifesto Ecológico Brasileiro. 3nd ed. Porto Alegre: UFRGS.

[20] Machado, L. C. P. Machado Filho, L. C. (2014). Dialética da agroecologia. São Paulo: Expressão Popular.

[21] Mollison, B. Holmgren, D**.** (1981) Permacultura um: uma agricultura permanente nas comunidades em geral. São Paulo: Ground LTDA.

[22] Molisson, B. Slay, R. M. (1998). Introdução a permacultura. Brasília: MA/SDR/PNFC.

[23] ORGANIS, Associação de Promoção dos Orgânicos. (2021). Panorama do Consumo de orgânicos no Brasil 2021. São Paulo: Ciorgânicos.

[24] Paschoal, A. D. (2019). Pragas, agrotóxicos e a crise ambiente: Problemas e soluções. São Paulo: Expressão Popular.

[25] Pinheiro, S. Agroecologia 7.0. (2018). São Paulo: AGPTEA.

[26] Primavesi, A. Manejo ecológico do solo: a agricultura em regiões tropicais. (2002). São Paulo: Nobel.