

Family farming and human and environmental health conservation

Agricultura familiar e a conservação da saúde humana e ambiental
Agricultura familiar y preservación de la salud humana y ambiental

**Anelise Miritz Borges¹, Clarice Alves Bonow^{II}, Mara Regina Santos da Silva¹,
Laurelize Pereira Rocha¹, Marta Regina Cezar-Vaz¹**

¹ Universidade Federal de Rio Grande, Nursing School, Postgraduate Program in Nursing. Rio Grande, Rio Grande do Sul, Brazil.

^{II} Universidade Federal do Pampa, Nursing School. Uruguaiana, Rio Grande do Sul, Brazil.

How to cite this article:

Borges AM, Bonow CA, Silva MRS, Rocha LP, Cezar-Vaz MR. Family farming and human and environmental health conservation. Rev Bras Enferm [Internet]. 2016;69(2):304-12. DOI: <http://dx.doi.org/10.1590/0034-7167.20166902161>

Submission: 05-17-2015

Approval: 10-26-2015

ABSTRACT

Objective: understand how farmers identify positive and negative impacts of family farming work on the environment and conserve the environmental health. **Method:** a qualitative study with 129 farmers from Ilha dos Marinheiros, Rio Grande, Brazil. Secondary data and recorded interviews were used in this study, with subsequent analysis performed by Bardin and NVivo10, both based on Enrique Leff's cultural rationality. **Results:** the positive impacts included food production with responsibility, work appreciation, and the correct, minimum or inexistent insertion of agrochemicals. The negative aspects included excessive and incorrect use of agrochemicals and absent farming knowledge. **Conclusion:** environmental conservation consisted in reducing impacts that could have a negative effect on health, while performing work activities.

Key words: Agriculture; Sustainable Development; Public Health Nursing; Environmental Health; Rural Workers.

RESUMO

Objetivo: compreender como os trabalhadores agricultores identificam os impactos positivos e negativos do trabalho agrícola familiar no ambiente e conservam a saúde ambiental. **Método:** pesquisa qualitativa com 129 trabalhadores agricultores da Ilha dos Marinheiros, Rio Grande, Brasil. Foram utilizados dados secundários e entrevistas gravadas, com posterior análise de Bardin e NVivo10, ambos embasados na racionalidade cultural (Enrique Leff). **Resultados:** constaram, entre os impactos positivos, a geração de alimentos com responsabilidade, a valorização do trabalho, a correta, mínima ou nula inserção dos agrotóxicos. Como aspectos negativos, o uso excessivo e incorreto dos agrotóxicos e a ausência de conhecimentos para agricultar. **Conclusão:** a conservação do ambiente consistiu na redução de suas agressões durante o trabalho, as quais podem comprometer a saúde. **Descritores:** Agricultura; Desenvolvimento Sustentável; Enfermagem em Saúde Pública; Saúde Ambiental; Trabalhadores Rurais.

RESUMEN

Objetivo: comprender el modo en que los trabajadores agricultores identifican los impactos positivos y negativos del trabajo agrícola familiar en el ambiente y preservan la salud ambiental. **Método:** investigación cualitativa con 129 trabajadores agrícolas de la Ilha dos Marinheiros, Rio Grande, Brasil. Fueron utilizados datos secundarios y entrevistas y entrevistas grabadas, posteriormente revisadas con análisis de Bardin y NVivo10, ambos con base en la racionalidad cultural (Enrique Leff). **Resultados:** Se constataron, entre los impactos positivos, la producción responsable de alimentos, la valorización del trabajo, la correcta, mínima o nula aplicación de agroquímicos. Como aspectos negativos, el uso excesivo de agroquímicos y la falta de conocimiento sobre la actividad agrícola. **Conclusión:** la preservación del ambiente se enfocó en reducir su agresión durante el trabajo. Agredir el ambiente puede comprometer la salud.

Palabras clave: Agricultura; Desarrollo Sostenible; Enfermería en Salud Pública; Salud Ambiental; Trabajadores Rurales.

CORRESPONDING AUTHOR

Marta Regina Cezar-Vaz

E-mail: cezarvaz@vetorial.net

INTRODUCTION

The concern about promoting farming activities with no environmental impact, with people directly and indirectly involved, reminds of the concept of environmental sustainability⁽¹⁻²⁾. The application of sustainability to family farming is associated with generational knowledge⁽³⁾, comprising the culture that is intrinsically established in the lifestyle and social and economic interests of rural communities⁽²⁾.

Cultural rationality involves human socialization, expressed by values, beliefs and lifestyles⁽²⁾, whose practices of land cultivation in family units contribute to fulfilling human needs in subsistence and product trading⁽¹⁾. In this sense, farming is a great ally in economic development, as it is the second source of employment; farmers account for more than one third of the global workforce in food production⁽⁴⁾. This fact makes this workforce potentially adverse to family farming sustainability, when its economic projection does not consider the environment as finite in relation to the life forms keeping it⁽²⁾.

Family farming promotes the farmer-environment relationship, as it ensures not only family subsistence, but also an interaction with the community, establishing relationships with other farmers, and with the rural environment, considering the farming activity depends on it⁽⁵⁾. This way, work satisfaction is combined with the action of land cultivation⁽⁶⁾ in a sustainable manner⁽⁷⁾, that is, fulfilling the needs of the current population, without affecting the ability to serve future generations⁽²⁾.

In this perspective, it is not possible to detach farming work from the culture of each rural community and from the technology standards and economic interests, a fact that integrates, in cultural rationality, the development of social standards considering the practices of farming work and natural resource exploration⁽¹⁾. Such practices contribute to positive and negative impacts on population and environmental health, according to the way they are conducted⁽⁸⁾, which demands studies to be performed⁽³⁾, because, unlike past decades, the socio-environmental effects from farming work are more evident and promote more debates⁽⁸⁾, due to national and international recognition of this work activity⁽⁹⁾.

With this recognition, the South Region of Brazil presents a significant number of farming families. Rio Grande do Sul, in particular, has 85.7% of rural units dedicated to family farming; this state has the highest percentage when compared to other Brazilian states⁽¹⁰⁾. This scenario is suitable to investigations, and Ilha dos Marinheiros, in the municipality of Rio Grande was selected for its performance in the provision of farming products to the region since the mid-17th century⁽¹¹⁾, due to its land fertility. Considering the importance of this theme, this study aimed to understand how farmers identify positive and negative impacts of family farming work on the environment and conserve the environmental health.

METHOD

This is a qualitative, exploratory, descriptive study linked with the macro project *Natureza humana da força de trabalho masculina e feminina: um estudo com trabalhadores (as) em*

dois ambientes rurais do Rio Grande do Sul [Human nature of male and female workforce: a study with workers from two rural environments in Rio Grande do Sul], funded by the National Council for Scientific and Technological Development.

This study was conducted in Ilha dos Marinheiros, in the municipality of Rio Grande, in Lagoa dos Patos estuary, a singular site in the South Region, as it is an island with rural characteristics, where land is cultivated for the subsistence of 1,259 inhabitants⁽¹²⁾ distributed in five subsectors in this territory: Porto Rei, Bandeirinhas, Marambaia, Coreia, and Fundos da Ilha.

The participants of this study were farmers from family farms, that is, people in charge for managing the primary production of fruits, vegetables, grains and other farming products⁽¹³⁾. Inclusion criteria were: adults over 18 years of age, living and working in family farms producing farming products, even if for exclusive subsistence on the island.

Due to absent information about the number of farmers in Ilha dos Marinheiros at the Brazilian Institute of Geography and Statistics (IBGE, as per its acronym in Portuguese), official state and municipal bodies that support this population were consulted. Information was collected from the Trade Union for Farm Workers in the municipality, the municipal bureau of *Empresa de Assistência Técnica e Extensão Rural* (EMATER), and the Municipal Division of Agriculture, totaling 157 farmers on the island. Of these 157 farmers, 25 refused to participate and 17 were lost, whereas 14 other farmers were added, recommended by neighbors, totaling 129 interviewed farmers.

Data were collected from March to October 2013 using an individually applied semi-structured questionnaire, previously developed and validated, and which was answered during the recorded interview. Secondary data were also collected regarding the geographical and cultural background of the island, obtained from the Municipal Division of Agriculture, IBGE and the city library.

The variables of this study were: age, gender, ancestry, positive and negative impacts/effects of work on the environment and participants' concerns about environmental health conservation while performing their farming activities. For the qualitative variables of positive and negative impacts, which were addressed separately, the numeric exclusive character was not assigned to thematic units; these variables were analyzed through the speech of participants.

Ethical and scientific requirements established for studies with human beings were observed, according to Resolution 466/2012, and the macro project was approved by the Research Ethics Committee of the Federal University of Rio Grande. The participants were identified by the numbering system assigned to the questionnaire, followed by their gender and subsector.

For standardization purposes, "poison", "chemical product" and "pesticide" mentioned by farmers were replaced with "agrochemical(s)", the official term used by the Brazilian Health Surveillance Agency (ANVISA, as per its acronym in Portuguese)⁽¹⁴⁾. Environmental health is related to sustainable human development based on new production methods and lifestyles, which are related to healthy conservation of life forms to promote coexistence in a certain area⁽¹⁾.

For data analysis, a thematic content analysis⁽¹⁵⁾ was conducted, using the three methodological steps required by the method, and software NVivo10 was used as well - both analysis were processes based on Enrique Leff's cultural rationality. Rationality refers to values and beliefs established in a historic process, making social and productive practices in agriculture strongly influenced by economy and presence of natural resources, encouraging and confirming the relevance of local environmental conservation⁽¹⁾.

With such theoretical basis that supported the conclusion of the first and second method steps, data were classified, arranged and coded with NVivo, defining the knot trees and their subcategories. Each theme/knot represents the content and the meaning of thematic units/knot tree, which were condensed and aligned in the third step of result treatment.

RESULTS

Of total 129 interviewed subjects, male predominance (78 farmers) was observed, and their mean age was 55.33 ± 14.27 years. Among female participants (51 farmers) their mean age was 54.68 ± 11.08 years; and general mean age was 55.69 ± 13.10 years, minimum 25 and maximum 81 years. The conception of farming work effects on the environment and environmental health conservation were presented under

two themes: Positive and negative impacts of farming work on the environment and environmental health conservation.

Positive and negative impacts of farming work on the environment

Land cultivation work was a skill generationally required by the Portuguese ancestry for 106 farmers (84.80%), and this activity was transmitted to the island population by the first immigrants from Portugal.

Regarding the effects of farming on the environment (Table 1), of 129 interviewees, 119 (92.24%) reported positive effects, which were arranged in four knot trees or thematic units (1, 2, 3, and 4), containing 13 themes/knots and 12 codes, with predominance of male and "no" code. This code was represented by 14 answers reporting no positive impacts of the farming activity on the environment, due to the pollution caused by the use of agrochemicals, which contributed to environmental deterioration.

The negative impacts of farming activity on the environment were mentioned by 111 (86.04%) farmers, most were male, originating three thematic units (1, 2, and 3), 11 themes/knots, and 10 codes. The code "no" was present in the speech of 61 (68.69%) farmers who mentioned absence of negative impacts, because they made all arrangements to prevent environmental pollution, with mutual benefit (they caused no damage, and in return, they were not harmed).

Table 1 – Structuring of positive (n=119) and negative (n=111) impacts of farming activity on the environment based on Bardin's analysis and using NVivo

Thematic units/knot trees (1, 2, 3, and 4)	Themes/knots	n	Codes	n	
Positive impacts of farming work on the environment					
1. Productivity	Personal satisfaction	Land cultivation with satisfaction	17	Planting	9
	Autonomy	Work self-management	16	Work	6
	Work is wealth	Family support	12	Money	4
	Feeding	Producing food	7	Eating	2
Total		Total		21	
2. Agrochemical - use and non-use -		Correct use of agrochemicals	7	Pesticide	4
		Non-use of agrochemicals	7	No	7
		Avoid the use of agrochemicals	5	Poisons	3
		Use of agrochemicals when needed	1	Nature	2
Total		Total		16	
3. Environmental conservation		Care for the environment without damaging it	19	The environment	4
4. No, yes, does not know, did not answer		Does not identify positive impacts	14	No	14
		Identifies positive impacts	10	No	8
		Does not know the answer	9	No	8
		Did not answer	10	-	-
Total		43		30	

To be continued

Table 1 (concluded)

Negative impacts of farming work on the environment				
1. Agrochemical - the use -	Use of agrochemicals	30	Agrochemical	10
	Incorrect use of agrochemicals	2	Pollute	2
	Use of agrochemicals to guarantee harvest	1	Spoon	1
Total			Total	13
2. Work	Land cultivation changes the environment	8	Damages	3
	Lack of knowledge for proper cultivation	3	Guidance	2
	Insecurity regarding harvest and product sales	2	Selling	2
	Daily requirements imposed on farmers	1	Hard work	1
Total			Total	8
3. No, yes, does not know, did not answer	Does not identify negative impacts	61	No	59
	Identifies negative impacts	1	Yes	1
	Does not know the answer	4	No	3
	Did not answer	18	-	-
Total				63

Note: The numeric exclusive character was not assigned to thematic units in relation to positive impacts (n=119 respondents) and negative impacts (n=111 respondents).

The group presenting the greatest inclusion of farmers regarding positive impacts on the environment was related to productivity for 52 participants. Therefore, the knots resulting from this group constituted the act of planting to produce, to financially support the family through food production activity. Some interviewees mentioned this concern:

With my work at the farm, I help food production for me and for people who buy from us, I guess this is a positive point. (113, F, PR)

Because we sell what we produce, we earn our money for daily expenses, I guess this is positive. (62, F, PR)

Because, the way things are today, if we stop producing, I guess there won't be anything to eat in the future, and we are helping in this aspect. (53, M, PR)

The responsibility for food production was appreciated by 52 farmers, benefitting farming families with the sale of products and the consumer population. The importance of having fresh farming products for human health and maintaining this work activity to employ family members was also observed.

I guess everyone has a job and it is good for us. (6, F, B)

[...] and consumers have the possibility to consume a fresh product. (75, M, PR)

Because it's good, many people buy them because they're good for health, like the greens. (121, F, PR)

Work satisfaction was a relevant factor for 52 interviewees, justified by living in a calm environment and the autonomy for performing daily tasks, considering work as the wealth of Ilha dos Marinheiros.

I guess it's a healthy job, we like what we do. It's a good thing to have a place like this to walk outdoors, in a healthy environment. (25, F, PR)

It's very good for me [...] it's calm [...] we decide when to do the things, now, later, or if we'll do the things. (58, F, PR)

Our life is around that, we live on that [farming], then, I guess it has benefits, and that enriches the environment on the island. (129, M, B).

The agrochemicals mentioned by farmers as poison, toxic products, chemical products or pesticides caused both positive and negative impacts on the environment. The correct product handling, non-use, or avoiding the product were mentioned as positive impacts by 20 interviewees, in the group of the second greatest inclusion of answers.

The proper use of agrochemicals was related to a better harvest result, and it was needed. On the other hand, it may cause human intoxication and sickness, when the period between product application and harvest is not observed or when the product application is not identified.

We know how and when a pesticide is necessary, and that we shouldn't sell the product right after application, we have to wait the right period, because in fact we have to

use [agrochemicals], otherwise, we can't plant or harvest. (80, F, B)

[...] if we do it correctly, without so much poison, we work with intelligence [...] planting cabbage, cauliflower, we don't need poison, it'll be good for the environment; many are dying in the city because of the poison. [...] they don't cut and wash, if you use pesticide, it is hidden, although it doesn't kill, but it can intoxicate and the person may be sick with time. (109, M, M)

Still about agrochemicals, the speech of 33 farmers constituted the first and largest group of themes/knots related to the negative impacts caused by these substances. These impacts were related to contamination of land, water, air and surrounding people, posing risks to everyone, especially when the product was improperly used in plantation.

It [farming activity] destroys the environment because of the chemicals, it can affect the water, soil, even our family members, a contamination. (15, F, PR)

For chemicals, poison, pesticide, the smell affects the air, then it can [contaminate]. (111, F, M)

[...] when working with these chemical, toxic substances [...] if farmers could work without them, it would be better for their health. [...] I tell my friends: don't use it, it's dangerous. (92, M, FI)

It depends, if they [agrochemicals] are incorrectly used, then yes, but if they are correctly used, then no. (110, M, M)

The farming activity contributed to changes in the environment and future generations, which was present in the speech of 14 interviewees from the second group of themes/knots of negative impacts.

Every farming activity, working the soil, somehow it changes the system; farming activity will trigger an environmental change [...], affecting life above the soil, plants, vegetation, the life in the soil, fungi, bacteria, parasites. (77, M, M)

To the environment, a negative impact, because of these poisons, we will, the younger generation will suffer a lot. Very hard, difficult, only those dealing with that know well. (95, M, B)

Also resulting from these second group of themes/knots, routine challenges were mentioned, such as unsuccessful harvest and product sales due to economic instability and unpredictable weather.

Sometimes, it's difficult to sell, we take everything and bring everything back home, we plant but we don't know if we will harvest, if we plant now, we don't know if we will harvest every two months, the weather changes suddenly and we lose everything, I'm tired of losing everything. (45, M, PR)

It involves hard work, many times performed without proper technical support, which is offered by farming organizations, considering the continuous need to learn.

[...] we work very hard and we earn little, it's a big sacrifice, we walk in the rain, sun, in bad weather. (25, F, PR)

[...] many times we're doing it wrong, and we don't know it, we don't receive instructions. (26, M, PR)

No one provides guidance about how to do it, we follow the recommendations of the [agrochemical] salesman. (49, F, PR)

Therefore, caring for the environment when planting multiple crops - polyculture - without leading to infertile soil, was the concern of 19 interviewees from the third group of themes/knots of positive impacts.

We are producing, planting, caring for the environment, we have to take care of the land to ensure its return. (68, M, PR)

Producing without making big changes, except the required ones. It's the question of multiple crops we see here, [...] we think it's working well, maybe it's still not the ideal. (77, M, M)

The family farming activity appears as an important component of the cultural background of the interviewees, as it contributed to changes in the environment and future generations.

Environmental health conservation

All 129 farmers were also asked about how they conserved the environmental health while performing their farming activity, most male interviewees, totaling three knot trees or thematic units, 12 themes/knots and 11 codes. Of these codes, 27 indications were of code "no", related to the negative answer to environmental pollution (Table 2).

In the first and largest group of themes/knots, 67 indications referred to the use and non-use of agrochemicals, followed by 57 in the second group, regarding the relation between environmental and human health.

In the first group of themes/knots, 27 speeches of interviewees indicated environmental health conservation is possible with the correct use of agrochemicals and when the instructions on the package insert and prescriptions are observed.

These substances, we have to read the label carefully and use as indicated on the label. (103, M, M)

I'm worried about it, so I use agrochemicals with attention, respecting the dosage and the period between product application and harvest. (98, M, C)

Wearing personal protective equipment (PPE), attention to windy days and the presence of other people during the application of agrochemicals were also identified in the speech of 27 participants, due to the risk of contamination.

I tell them [family members] to take care, wear a mask, safety clothes, safety glasses, we are never close, we wait until the weather is calm [...] if it's windy, the machine sprays the substance, and when the weather is calm, the substance is applied directly to the point. (44, F, PR)

Table 2 – Structuring of environmental health conservation, based on Bardin's analysis and using NVivo (n = 125)

Thematic units/knot trees (1, 2, and 3)	Themes/knots	n	Codes	n
1. Agrochemical - use and non-use -	Correct use of agrochemicals	27	Pesticide	11
	Reduced use of agrochemicals	16	Minimum	6
	Contributes to water and soil pollution	9	No	8
	Attention to agrochemical container storage and disposal	9	The environment	4
	Non-use of agrochemicals	6	No	5
Total		Total		35
2. Environmental and human health conservation	The environment is circular in relation to human actions	47	No	27
	Caring for the environment is caring for human health today and tomorrow	7	Health	4
	Use of organic products	3	Soil	2
Total		Total		30
3. No, yes, does not know, did not answer	Does not conserve environmental health at work	7	No	7
	Does not know the answer	6	No	6
	Conserves environmental health at work	2	Yes	2
	Did not answer	4	-	-
Total		19		15

Note: The numeric exclusive character was not assigned to thematic units in relation to environmental health conservation while performing farming activity, for 125 respondents.

The speech of 16 interviewees showed minimal intention to use agrochemicals in harvest, due to the aggressive properties of the product to human and environmental health and life.

Agrochemicals are bad for the nature, the air, we shouldn't use much. (34, F, PR)

I worry because these chemical products are bad for everyone, it's bad for the health. I use only the necessary amount of chemicals, farmers have to use it, otherwise there is no harvest. (90, M, FI)

In addition, the speech of nine interviewees indicated the imprudent and excessive use of agrochemicals contributed to the pollution of water and soil, two important elements on the island.

[...] if we use a substance that will run to the sea, it'll kill fish, shrimps. (5, M, B)

[...] don't use much pesticide, as it will damage the soil, the health of humans, for sure. (57, M, PR)

Also in this larger group of themes/knots, the safe and proper storage of agrochemicals was identified in nine speeches as a strategy to environmental health conservation on the island. Some mentioned careful placement of containers in the sheds until the municipal collection, as well as container disposal,

avoiding container burning or bury, which would affect the plant development.

[...] don't let the containers left on the ground, always put them away, return them [to municipal collection] to prevent exposure. (80, F, B)

I put containers away, I don't let them on the floor, I don't put them in the trashcan, I don't burn them. (43, M, PR)

Containers, urea plastic containers, fertilizer containers, don't let them in open areas, on the soil, because of the crop, it can enter the root of a banana tree, of lettuce, and it won't grow properly. (71, F, PR)

In the second group of themes/knots, the speech of 47 farmers mentioned a circular link of their actions with the environment, as there was a continuous retroaction involving the farmer, the environment, the neighbors, the community and the consumers, in relation to the farming activity performed on the island; then, providing environmental health required working without pollution.

We worry because we have to take care, [...] we try everything to improve, not affecting anything or anyone. The environment is everything, we work and we have water, we have everything, and everything flows. It goes to the sea. (29, F, PR)

We have to try to help the environment, not to destroy it, otherwise, if we damage the environment, it will return to us, I believe many things happen now because the environment is damaged. (113, F, FI)

The speech of seven interviewees showed a concern about the excessive use of natural resources aiming to obtain profits in farming productivity and a concern about the future generation's access to these resources.

When I stop producing, I have the obligation to deliver a soil in better conditions than when I started. [...] you can't just use the soil, profit with the activity, but make it viable, productive in the future. (77, M, M)

[...] I think a lot about the future of children, the adolescents on the way [...] see a better world. (94, F, FI)

Promoting farming activities that do not affect other life forms lead to work performed with respect, potentially viable due to the insertion of organic products, as expressed in the speech of three interviewees.

[...] if it damages the environment, it also damages people and our health. (1, F, B)

If I [...] put something wrong in the food, it will be bad for me and for other people. What I don't want for me, I don't want for the others either, I try to do good things for everyone. (16, M, PR)

I try to improve it [soil] [...] use organic products, take care, use regular fertilizer, make the soil always strong. (38, M, PR)

[...] a lot of manure, rice hulls (63, M, M)

In this perspective of action and reaction, the farmers from Ilha dos Marinheiros expressed their understanding of the environmental health when performing their work, reporting a sustainable perspective of the environment and, consequently, of human health.

DISCUSSION

The practices used in farming activities are strongly influenced by local cultural standards⁽¹⁾, then, the environment where these activities are performed presents variations, just as the people involved. These are relations that involve beliefs, values and information acquired during the life of a farming population in that surrounding environment^(3,5). This continuous and interdependent relation between farmers and the environment is based on several aspects: onsite experiences, land cultivation, feeding with the products they produce, and handling unpredictable weather on a daily basis. As a result, human exhaustion is observed, triggered by exposure to sun, rain, humidity and physical effort demanded by their occupation⁽¹⁶⁻¹⁷⁾.

Ilha dos Marinheiros, as a singular area⁽¹¹⁾ in the South due to its fertile soil, has farmers who are concerned about food production, an action that promotes work as wealth and profit

as a source of subsistence. At national and international levels, other islands have their economic development based on farming activities of food production⁽¹⁸⁻¹⁹⁾. An economic need and a cultural power are seen in land cultivation and feeling proud of and satisfied with the work, a characteristic observed in family farming and the island population. Tranquility, calmness from rural areas and the possibility to make their own decisions without the figure of an employer are also positive values related to farming⁽⁶⁾.

Having farming activities conducted in a healthier manner, due to the short distance between farmers and the land, is a relevant aspect to both, which also favors environment conservation⁽²⁾.

In addition, it is an insular environment, in which land and water constitute the structure of Ilha dos Marinheiros, just as work inserted in a farming culture. This singularity was considered by most interviewees when using organic products and agrochemicals in a proper and careful manner, worrying not to pollute the soil, the air, water, and life forms present in the environment. Such prudence is supported by the Brazilian Health Surveillance Agency, which foresees polyculture and promotion of organic products to reduce the utilization of agrochemicals and potential deterioration of life, as well as insertion of PPE, proper storage and disposal of agrochemical containers, attention to the period between product application and harvest, based on the instructions on labels and package inserts from every substance⁽¹⁴⁾.

Focus stands on healthy lands and farmers, caring for soil revitalization and human health, in a conception of action and reaction⁽²⁰⁾. However, despite culture and natural resources being immeasurable and irreducible to economic calculation and technological efficiency, financial issues often prevail over survival itself, producing profitable farming actions, but gradually unviable to environmental and human sustainability⁽²⁾, which contributes to cultural resilience in times of constant economic, technological and social changes required by this activity⁽²⁾.

In this sense, the inclusion of agrochemicals may trigger such resilience, considering that, on the one hand, agrochemical use and non-use are contested, as these substances help increase productivity but may cause health problems. On the other hand, challenges with reduced appreciation of cultivated products⁽²¹⁾, and negative impacts to health and environment are not included in the final price of these products⁽⁸⁾. Consequently, one of the challenges involved in the utilization of such substances is to highlight the socio-environmental effects and healthcare costs resulting from such substances, promoting responsible consumption for life maintenance⁽⁸⁾.

The intensive handling of agrochemicals, even when observing all applicable laws/standards, causes contamination of foods, water, air, rain, workers, population and animals, that is, it contaminates all life forms associated with these products⁽²²⁾. It also causes intoxication related to the cycle of farming production and acute and chronic human effects due to occupational, dietary and environmental exposure⁽²³⁻²⁴⁾, in which hidden agrochemicals in foods mask the imminent risk of contamination.

In this cultural versus economic battle for using or not using agrochemicals, the opinion of most participants is for a

moderate use of these substances, observing the agrochemical handling requirements. This practice should be observed by everyone - rural administrators or producers - as many of them do not recognize the impacts on environmental and human health and prioritize farm productivity at all costs⁽²²⁾. Associated with such impact, insufficient information is available about the safe handling of agrochemicals, and such knowledge should be regularly disseminated and more accessible to farmers⁽²⁵⁾. In addition, a successful polyculture⁽⁹⁾ also requires knowledge of each crop involved.

Attention to the health condition of farmers, their family members and the consumer population becomes a critical aspect⁽²⁴⁾, considering the farming activity is an important situation of vulnerability determined by the relations of health, work and environment⁽²²⁾. This study presents some limitations, due to its design and number of farmers included, but it contributes to healthcare practices of family farmers, once

social actions aware of the environmental and human health incorporate the concept of sustainability⁽²⁰⁾, either because of the farming activity inherent to the rural area, or the constant contact with the environment.

CONCLUSION

The farming activity allows human survival in terms of food production and requires a collective coordination of the society as a result of its appreciation; and the insertion of family members in the farming activity adds to the environment the value of local culture, an aspect that should be considered when investigating workers in rural areas.

Land cultivation generates environmental changes, which affect the health of everyone directly or indirectly involved. Therefore, a more efficient dissemination of knowledge about this work activity is required to ensure life sustainability.

REFERENCES

1. Leff E. *Ecologia, capital e cultura. A territorialização da racionalidade ambiental*. Petrópolis: Vozes; 2009.
2. Leff E. *Saber ambiental: sustentabilidade, racionalidade, complexidade, poder*. 9ª ed. Petrópolis: Vozes; 2012.
3. Laschefski KA, Dutra C, Doula SM. [Environmental legislation as focus of conflicts: an analysis based on the smallholders' social representations of nature in Minas Gerais, Brasil]. *Soc Nat* [Internet]. 2012[cited 2014 Nov 13];24(3):405-17. Available from: <http://dx.doi.org/10.1590/S1982-45132012000300003> Portuguese.
4. Organização Internacional do Trabalho. *Repertorio de recomendaciones prácticas sobre seguridad y salud en la agricultura*. WHO [Internet]. 2010[cited 2014 Nov 13]; Available from: http://www.ilo.org/wcmsp5/groups/public/-dgreports/-dcomm/-publ/documents/publication/wcms_159460.pdf
5. Ploeg JDVD. Dez qualidades da agricultura familiar. *Rev Agric Fam Agroecol* [Internet]. 2014[cited 2014 Nov 13];1(n.esp):7-14. Available from: <http://aspta.org.br/revista/cadernos-para-debate-n1-dez-qualidades-da-agricultura-familiar>
6. García-Montoya ME, Callejón-Ferre AJ, Pérez-Alonso J, Sánchez-Hermosilla J. Assessment of psychosocial risks faced by workers in Almería-type greenhouses, using the Mini Psychosocial Factor method. *Appl Ergon* [Internet]. 2013[cited 2014 Nov 13];44(2):303-11. Available from: <http://dx.doi.org/10.1016/j.apergo.2012.08.005>
7. Weihs M, Mertens F. [Challenges for knowledge generation in environmental health: an ecosystemic approach]. *Ciênc Saúde Coletiva* [Internet]. 2013[cited 2014 Nov 13];18(5):1501-10. Available from: <http://dx.doi.org/10.1590/S1413-81232013000500036> Portuguese.
8. Porto MF, Soares WL. [Development model, pesticides, and health: a panorama of the Brazilian agricultural reality and proposals for an innovative research agenda]. *Rev Bras Saúde Ocup* [Internet]. 2012[cited 2014 Nov 13];37(125):17-31. Available from: <http://dx.doi.org/10.1590/S0303-76572012000100004> Portuguese.
9. Food and agriculture organization of the United Nations. *Global Strategy Improving Ag-statistics. Global strategy to improve agricultural and rural statistics* [Internet]. 2010[cited 2014 Nov 13];56719-GLB):1-39. Available from: <http://www.fao.org/economic/ess/ess-capacity/ess-strategy/en/#.UvUx7fldWAn>
10. Grando MZ. Um retrato da agricultura familiar gaúcha. *Indic Econ FEE* [Internet]. 2011[cited 2014 Nov 13];39(4):159-76. Available from: <http://revistas.fee.tche.br/index.php/indicadores/article/viewFile/2645/3091>
11. Brasil. Ministério do Meio Ambiente. Núcleo dos biomas mata atlântica e pampa (NAPMA) e Secretaria de Biodiversidade e Florestas. *Relatório final. Sub-projeto Ilha dos Marinheiros. Pampa: conhecimentos e descobertas sobre um bioma brasileiro* [CD]. 2006.
12. Brasil. Instituto Brasileiro de Geografia e Estatística. *Censo Demográfico e Contagem da População, 2010. Universo: Características da População e dos Domicílios* [Internet]. IBGE; 2010[cited 2014 Nov 13]; Available from: <http://www.sidra.ibge.gov.br/cd/cd2010universo.asp?o=7&i=P>
13. Brasil. Embrapa. *Manual de Boas Práticas Agrícolas e Sistema. Qualidade e Segurança dos Alimentos. Projeto PAS Campo* [Internet]. Brasília: EMBRAPA; 2004 [cited 2014 Nov 13]; Available from: <http://ainfo.cnptia.embrapa.br/digital/bitstream/item/18226/1/manualboaspraticasagricappcc.pdf>
14. Brasil. Agência Nacional de Vigilância Sanitária. *Cartilha sobre agrotóxicos. Série Trilhas do campo*. [Internet]. Brasília: ANVISA; 2011 [cited 2014 Nov 13]; Available from: http://www.marica.rj.gov.br/comite/leis/cartilha_agro.pdf
15. Bardin L. *Análise de conteúdo*. São Paulo: Edições 70; 2011.
16. Connor A, Layne L, Thomisee K. Providing Care for Migrant Farm Worker. Families in their unique sociocultural context and environment. *J Transcult Nurs* [Internet]. 2010[cited 2014 Nov 13];21(2):159-66. Available from:

- <http://www.ncfh.org/pdfs/2k9/8715.pdf>
17. Dean SG, Hudson S, Hay-Smith JC, Milosavljevic S. Rural workers' experience of low back pain: exploring why they continue to work. *J Occup Rehabil* [Internet]. 2011[cited 2014 Nov 13];21(3):395-409. Available from: <http://dx.doi.org/10.1007/s10926-010-9275-z>
 18. Velmurugan A, Swarnam TP, Ravisankar N, Dam Roy S. Prospects for organic farming in Andaman and Nicobar islands. *J Andaman Science Assoc* [Internet]. 2014[cited 2014 Nov 13];19(2):116- 25. Available from: [http://icar-ciari.res.in/19\(2\)2014/ch-1.pdf](http://icar-ciari.res.in/19(2)2014/ch-1.pdf)
 19. Oliveira CFS, Silva AV, Santos KN, Fecury AA, Almeida MKC, Fernandes AP, et al. Hepatitis B and C virus infection among Brazilian Amazon riparians. *Rev Soc Bras Med Trop* [Internet]. 2011[cited 2014 Nov 13];44(5):546-50. Available from: <http://dx.doi.org/10.1590/S0037-86822011000500003>
 20. Schirmer J, Berry HL, Brien LVO. Healthier land, healthier farmers: Considering the potential of natural resource management as a place-focused farmer health intervention. *Health place*. [Internet]. 2013[cited 2014 Nov 13];24: 97–109. Available from: <http://dx.doi.org/10.1016/j.healthplace.2013.08.007>
 21. Landini FP. [Problems faced by Brazilian rural extensionists and their relationship with their conception of rural extension]. *Ciênc Rural* [Internet]. 2015[cited 2014 Nov 13];45(2):371-7. Available from: <http://dx.doi.org/10.1590/0103-8478cr20140598> Portuguese.
 22. Gregolis TBL, Pinto WJ, Peres F. [Risk perception associated to pesticide use among family agriculture workers in Rio Branco, Acre, Brazil]. *Rev Bras Saúde Ocup* [Internet]. 2012[cited 2014 Nov 13];37(125):99-113. Available from: <http://dx.doi.org/10.1590/S0303-76572012000100013> Portuguese
 23. Tholkappian C, Rajendran S. Pesticide application and its adverse impact on health: evidences from Kerala. *Int J Science Technol* [Internet]. 2011[cited 2014 Nov 13];1(2):56-9. Available from: http://ejournalofsciences.org/archive/vol1no2/vol1no2_2.pdf
 24. Smith LED, Siciliano G. A comprehensive review of constraints to improved management of fertilizers in China and mitigation of diffuse water pollution from agriculture. *Agric Ecosyst Environ* [Internet]. 2015[cited 2014 Nov 13];209(1):15-25. Available from: <http://dx.doi.org/10.1016/j.agee.2015.02.016>
 25. Tadevosyan A, Tadevosyan N, Kelly K, Gibbs SG, Rautiainen RH. Pesticide use práticas in rural Armenia. *J Agromed* [Internet]. 2013[cited 2014 Nov 13];18(4):326-33. Available from: <http://dx.doi.org/10.1080/1059924X.2013.826118>
-