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Strategies used by dairy family farmers in the south of Brazil to comply with organic regulations

L. A. Honorato,*† L. C. P. Machado Filho,* I. D. Barbosa Silveira,† and M. J. Hötzel*[1]
*Laboratório de Etologia Aplicada e Bem-Estar Animal (LETA), Departamento de Zootecnia e Desenvolvimento Rural, Universidade Federal de Santa Catarina, Rod. Admar Gonzaga, 1346 - Itacorubi, 88034-001, Florianópolis, SC, Brazil
†Grupo de estudos em comportamento de animais de produção (GECAP), Programa de Pós-graduação em Zootecnia, Universidade Federal de Pelotas, RS, Brazil

ABSTRACT

The aims of this study were to investigate the environmental, feeding, and health management of organic (ORG) family dairy farms in the south of Brazil in comparison with conventional (CONV) farms, and to assess their degree of compliance with Brazilian organic legislation and the strategies they adopt to accomplish this (n = 17 per group). During 2 visits to each farm in March and September, 2010, observations were made on the environment, feed, and health management, followed by bulk milk testing, clinical evaluation, and breed assessment of each individual cow, and an evaluation of diseases and treatments reported within the period. Additional data were collected directly from the farmers through direct interviews. The number of lactating cows was, on average, 11 (range 5 to 19) in the ORG and 16 (range 7 to 42) in the CONV herds. The ORG herds presented a lower percentage of the Holstein breed; whereas CONV herds were predominantly Holstein, in the ORG herds, only 2 herds were 100% Holstein and the remaining herds were crosses of Holstein, Jersey, and Gir (*Bos indicus*) cattle. Milk production per cow was lower (10.2 vs. 15.1 ± 1.22 L/cow, respectively) in ORG than in the CONV farms. The ORG farms offered less concentrate feed than CONV farms and had better pasture management. Organic farmers reported using phytotherapic and homeopathic products, and pasture management as a strategy to keep infection levels of endo- and ectoparasites low, whereas CONV farmers regularly used anthelmintics and acaricides. Milk production was lower in ORG than in CONV farms, but cow health and condition scores were broadly similar, indicating that the with these strategies ORG farms were able to secure levels of animal welfare comparable with CONV farms while complying with organic regulation, although at the cost of lower cow productivity.

Key words: organic milk, health, mastitis, animal welfare

INTRODUCTION

Milk ranks fifth among all agricultural products in Brazil, the largest producer in South America with approximately 30.7 billion liters per year (FAO, 2012a). The growth of the dairy activity within in the last years has led Brazil to fifth place in worldwide milk production (FAO, 2012a). A peculiarity of Brazil's dairy production is that small family farms are responsible for 58% of the total milk supply for consumption; although family farms occupy merely 24% of the area, family agriculture represents 84% of all rural establishments (de França et al., 2009). This makes milk production essential for the livelihood of a significant number of families, who may benefit from the development of alternative forms of production to survive in the competitive market of milk (Schneider and Niederle, 2010; Blanc and Kledal, 2012). In South America, organic production has grown significantly in the last several years: its area of production has increased 66% from 2004 (5,679,000 ha) to 2009 (8,600,000 ha; FAO, 2012b). In southern Brazil, many farms are currently in the process of conversion to organic production, with encouragement from the Ministry of Agricultural Development, which developed a participatory certification program.

Within the last several years, industrialized countries have advanced studies on organic animal production, with special focus on animal health (Ivemeyer et al., 2009, 2012; Rutherford, et al., 2009) and famer attitudes (Hardeng and Edge, 2001; Vaarst et al., 2006). Although the agroecological movement in Brazil has spanned decades, legislation and enforcement of compliance with requirements are yet recent. Legislation on Brazilian organic agriculture was sanctioned in 2003. The technical standards and the list of substances that are allowed and prohibited for organic production were made official in 2008 through the Normative Instruction IN64/2008 (MAPA, 2008), and recently updated by the

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[1]Corresponding author: mjhotzel@cca.ufsc.br

Normative Instruction IN46/2011 (MAPA, 2011). As a consequence of the emergent nature of organic dairy farming, practically no publications exist on animal husbandry and health in organic farming in Brazil; specifically, no reports exist on the degree of compliance with organic rules in Brazilian farms. In particular, no information exists on how farmers that converted from conventional to organic dairy are coping with the limitation or prohibition of the use of allopathic medicines and nonorganic and transgenic-free feedstuff.

Due to the demands and restrictions imposed by regulations, the health of lactating cows raised in organic systems may be negatively affected. Although reducing the use of allopathic drugs is important because of the resistance to several drugs and the danger to human health arising from residues in the environment and food, this restriction may affect animal welfare. For example, it has been shown that the ban on the regular use of long-term antibiotics may increase the risk of mastitis in subsequent lactations (Marley et al., 2010). Brazilian organic legislation encourages organic producers to make a plan to identify risks and strategies to promote and maintain animal health (MAPA, 2011). European organic dairy farms that adopt an animal health and welfare plan can minimize the need for treatments of diseases (Ivemeyer et al., 2012). Despite these restrictions in medication and feed sources, or because of them, other studies have already indicated that organic farms adopt alternative husbandry practices capable of maintaining udder health (Haskell et al., 2009) alongside levels of production (Garmo et al., 2010) similar to those of conventional farms. Besides mastitis, due to the typical farming and climatic conditions of Brazil, a further significant health problem is the high infection rate of internal and external parasites (de Souza et al., 2008; Mendes et al., 2011), which organic farmers need to control without the aid of allopathic drugs. The practices used by organic farmers and their effectiveness are not described in the literature. Furthermore, although studies carried out in other countries have presented conflicting results regarding the sanitary quality of the milk of organic systems (Zwald et al., 2004; Sato et al., 2005; Roesch et al., 2007; Fall et al., 2008), comparable data does not exist for Brazilian herds.

Furthermore, the requirement that the feed be produced organically may also create a certain difficulty to maintain adequate nutritional intake or even result in lower BCS (Sato et al., 2005). This may be an important challenge if certified organic concentrates are scare or unavailable in a region, which is the case in the south of Brazil.

The aims of this study were to investigate the environmental, feeding, and health managements of organic family dairy farms in the south of Brazil in comparison with conventional farms, and to assess their degree of compliance with Brazilian organic legislation and the strategies that they adopt to accomplish this.

MATERIALS AND METHODS

Location and Selection of Farms

The study was carried out in family farms of 7 municipalities of the western region of the state of Santa Catarina, Brazil (27°25′S 48°30′W). This region was chosen as it represents an important dairy belt within the state (ICEPA, 2011), where the production of organic milk is expanding. Seventeen farms with organic (**ORG**) milk production were compared with 17 other farms managed under a grazing system, which were considered conventional (**CONV**).

The ORG farms were either certified (n = 10) or had started the certification process at least 18 mo prior (n = 7), in accordance with Brazilian legislation. To select ORG farms, we gathered information from the dairy producers' network of cooperatives in the study region, Ascooper. At the time, 10 farms were certified organic dairy producers and a few others in the process of conversion. Seven farms that were at least 18 mo into the conversion process were included in the ORG group (full certification usually occurs in the third year, as reported by certified producers). The Brazilian legislation establishes a minimum period of 12 mo of conversion to perennial pastures and a minimum of 6 mo for cattle rearing purposes; this time is considered necessary to ensure that the production units are able to produce in accordance with the technical regulations of organic production and that the producers received the necessary training (MAPA, 2011).

Our criteria for selection of CONV dairy farms were that they were smallholding family farms producing milk in conventional systems, that they were associated with Ascooper, located close to the organic farms, as similar as possible in size, and used grazing as the main source of nutrition for the cows. Thus, when these farms entered the study their management practices needed to comply with the organic legislation.

Brazilian Organic Farming Legislation

The Brazilian organic farming legislation (MAPA, 2003) is similar and in accordance with the standards of the International Federation of Organic Agriculture Movements (IFOAM, 2012). We describe here some parts of the legislation relevant to dairy cow farming. The current organic regulation, IN 46/2011 (MAPA, 2011), refers in general terms to production without the use of fertilizers and pesticides of chemical synthesis,