PHYSICAL AND HEALTH EVALUATION OF POULTRY FARMS FROM CAMPO VERDE CITY, MATO GROSSO, BRAZIL

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ABSTRACT

The municipality of Campo Verde - MT pioneered the poultry industry in Mato Grosso, which currently accounts for much of the country's poultry exports. In Brazil, the control of exports of chicken meat occur mainly through biosecurity measures in production. Thus, this study aims to present an overview of the commercial cutting poultry establishments in the integrated system of the municipality of Campo Verde, Mato Grosso, from surveys conducted by INDEA / Mato Grosso. The census was comprised of 114 commercial poultry establishments and three commercial laying farms. It was observed that despite the implementation of biosecurity measures required in the Normative Instruction, the majority of poultry farms do not accomplish their protocols, and these must be adjusted. With regard to the questions of biosecurity, most of the properties were compliant, however, the non-compliant establishments should conform until 2012. We conclude that commercial poultry establishments in the integrated system of the municipality of Campo Verde, Mato Grosso seek a greater efficiency of the system through the implementation of biosecurity measures, however, they need some adjustments due to the new regulatory instructions that are ever more demanding, especially regarding the protocols of biosecurity measures.

Keywords: poultry, biosecurity, animal health measures.

EVALUACIÓN SANITÁRIA Y FÍSICA DE LAS GRANJAS DE AVES DE CORRAL EN EL MUNICIPIO DE CAMPO VERDE, MATO GROSSO, BRASIL

RESUMEN

El municipio de Campo Verde -MT fue pionero en la industria de aves de corral en Mato Grosso, es actualmente responsable por mucho de las exportaciones de aves de corral del país. En Brasil, el control de las exportaciones de carne de pollo ocurre principalmente através de medidas de bioseguridad en la producción. Así, este estudio tiene como objetivo presentar una visión general de los establecimientos avícolas comerciales del sistema integrado en el municipio de Campo Verde -MT de corte, a partir de encuestas realizadas por INDEA / MT . La evaluación del censo consistió en 114 establecimientos avícolas comerciales cortada y de

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tres granjas comerciales postura. Se observó que a pesar de la aplicación de las medidas de bioseguridad exigidas en la instrucción normativa, la mayoría de las granjas no se dan cuenta del cumplimiento de los mismos protocolos , y éstas deben encajar . Con respecto a las cuestiones de bioseguridad , la mayoría de las tiendas tenían que cumplir , sin embargo , las instalaciones no cumplen deben adaptarse hasta 2012. Llegamos a la conclusión de que los establecimientos comerciales de aves buscan una mayor eficiencia del sistema mediante la aplicación de medidas de bioseguridad , sin embargo , requieren algunos ajustes en la cara de los nuevos , instrucciones normativas cada vez más exigentes , especialmente con respecto a los protocolos de medidas bioseguridad.

Palabras clave: aves de corral, bioseguridad, medidas zoosanitarias.

AVALIAÇÃO FÍSICO SANITÁRIA DE GRANJAS AVÍCOLAS DO MUNICÍPIO DE CAMPO VERDE, MATO GROSSO, BRASIL

RESUMO

O município de Campo Verde- MT foi pioneiro na avicultura no Mato Grosso, sendo, atualmente, responsável por grande parte das exportações de aves do país. No Brasil o controle da exportação de carne de frango ocorre principalmente por meio de medidas de biosseguridade na produção. Assim, o presente estudo objetiva apresentar um panorama dos estabelecimentos avícolas comerciais de corte no sistema integrado do município de Campo Verde-MT, a partir de vistorias realizadas pelo INDEA/MT. A avaliação censitária foi composta por 114 estabelecimentos avícolas comerciais de corte e três granjas comerciais de postura. Observou-se que apesar da execução de medidas de biosseguridade exigidas na instrução normativa, a maioria das granjas não realiza o preenchimento de protocolos das mesmas, sendo que estas deverão se ajustar. Com relação aos quesitos de biosseguridade, a maior parte dos estabelecimentos apresentava-se em conformidade, contudo, os recintos não conformes deveriam se adequar até 2012. Conclui-se que os estabelecimentos avícolas comerciais buscam uma maior eficiência do sistema por meio da implantação de medidas de biosseguridade, contudo, necessitam de algumas adequações frente às novas instruções normativas, cada vez mais exigentes, principalmente no que diz respeito aos protocolos de medidas de biosseguridade.

Palavras-chave: avicultura, biosseguridade, medidas sanitárias.

INTRODUCTION

The poultry laying was initiated in the state of São Paulo, with the arrival of the first Japanese immigrants. In the 1940s and 1950s it has begun the poultry slaughter in the state of Santa Catarina. Subsequently, the growth of poultry production in southern Brazil and the recent expansion of poultry production in the Midwest and North, demonstrate the trajectory of the change (1).

Brazil was the third major producer and the major exporter of chicken meat in 2012, with a total of 3,943 million tons, which represented 38% of the total exported worldwide (2). In 2011, it were created in Brazil approximately 1.27 billion of poultry (cutting and laying), 46 million in Mato Grosso, and of these only 5.3 million in Campo Verde (3). Thus, the region of Campo Verde excels in the productive scenario in Mato Grosso and also in Brazil and in this sense, it should conform with international norms to remain in evidence in this scenario. The poultry industry in the municipality of Campo Verde-Mato Grosso started in the

early 80's with commercial poultry farms, cutting and laying, and one of the pioneers of the state nuclei to create broilers. Since then, the producers of this sector, in a general context of pursuit of greater efficiency, started to modernize the production process of farming broilers. Additionally, with the increasing of the production and because of environmental pressures for purchasing countries, especially in Europe, greater care has been required in the production process. The adequacy of these health precepts is necessary to ensure the viability of the production and marketing of Brazilian chicken, due to the dependence of the national poultry industry in relation to the foreign market (1).

So, currently, and in order to keep the market and to ensure the biosecurity protocols, unified practices have been adopted by producers in commercial poultry farms. The integrated system of commercial poultry constitutes a highly connected network in which the routine activities keep poultry farms within a geographic area in constant contact. Consequently, biosecurity practices are increasingly required to minimize the transmission of infectious diseases such as avian influenza, Newcastle, among others (4).

In addition, programs to control diseases transmitted by animals in developing countries may be difficult to implement, since they involve social, economic, environmental and cultural variables (5).

Given these facts, population data on the level of biosecurity and disease transmission are rare, despite the importance to identify possible routes of dissemination of diseases and epidemiological surveillance (6). Thus, this study aims to present an overview of commercial poultry establishments in the integrated system of the municipality of Campo Verde-Mato Grosso, starting from statutory surveys conducted by the Institute for Defense Agriculture of the state of Mato Grosso - INDEA / Mato Grosso and assessment of compliance Normative Instruction 056/2007 of the Ministry of Agriculture and the Resolution INDEA / Mato Grosso 002/2007 of the Agency of Defense of the state of Mato Grasso (7,8).

MATERIAL AND METHODS

This field study is cross-sectional and was conducted by direct observation of extensive official documents of inspection visits to these establishments. For the evaluation it was used the "Report of Inspection of Physical Health", "Registration Form of Poultry Establishments", "Statement of Notification of Requirement for Registration" by the INDEA / Mato Grosso.

Visits were made to the establishments of the city for six veterinarians credentialed and properly trained at the Training Center of the Institute for Health Defense of the State of Mato Grosso - INDEA of Cuiaba-Mato Grosso. The training was provided by INDEA / Mato Grosso and occurred in September 2008.

The visits to the establishments were previously scheduled with the support of the technical in charge and there was the drafting of a weekly report of the inspection of the commercial poultry establishments.

The municipality of Campo Verde-Mato Grosso was created on July 4, 1988 and is located 130 km from Cuiaba and configures itself as one of the largest poultry producers in the region. In Campo Verde there are 114 producers unified in an integrated system with a single integrator, plus three commercial laying establishments on an independent system.

For the present study, in 2008 all these poultry establishments were visited and the record of the forms analyzed using descriptive exploratory analysis. The data were grouped in tables and graphs containing the frequency of compliance with the variables studied in relation to the Brazilian legislation (7,8) of the variables that have been collected.

RESULTS AND DISCUSSION

Results are presented in three items: 1. Macro and micro insulation of commercial poultry sheds; 2. Health management; 3. Infrastructure.

Macro and micro insulation of commercial poultry sheds.

It is important to emphasize the need for proper insulation of commercial poultry sheds, especially concerning the macro and micro insulation. The macro insulation refers to the geographical location of the farm and the presence of health barriers such as reforestation and natural forest of fruitless trees, among poultry units, which act as a natural filter, while the micro insulation refers to the care related to the distances of the different structures within the farms (9).

Of the 114 establishments of Campo Verde-Mato Grosso inspected in 2008, 99.1% complied with the minimum distance between the farm and the stock plants (Table 1), and the only non-compliant is surrounded by hedges and around the plantation has eucalyptus, which increases biosecurity. As for establishments of ratites, this item does not apply, because in Campo Verde there is no creation / establishment of ratites and / or ornamental birds.

Relative to the distance of the farms to the poultry hatcheries, 95.6% were in conformity, and the five farms that do not meet the minimum distances, four belong to the integrator, which has a good biosecurity system with eucalyptus plantations around the farm. The other has, behind the aviary, a small forest, which is considered a natural barrier. For the distance of the cutting farms and laying hens, 73.6% of farms were in compliance (Table 1).

As in the municipality of Campo Verde there is only one integrator, it was not possible to evaluate if farms of different integrators were maintaining a minimum legal distance of one kilometer. Among poultry farming of the same integrator, it was found that 87.7% of farms complied with the minimum distance of 200 meters, and among laying poultry farms it was found that all of them were in conformity with the legislation. Among sheds and ration factory of the same company to produce commercial poultry feed, all farms were in conformity because the integrator has a single factory and it is over 500 meters. Among commercial poultry farms to the industry of processing animal products and byproducts, ponds, residues and landfills, it is found that 88.5% were compliant (Table 1).

From the total of the integrated evaluated in this study related to macro insulation, it was found that 72.8% were compliant and 27.2% were non-compliant (Table 1).

It is important to highlight that, due to the existence of natural barriers such as reforestation, natural bush and local topography, these distances can be modified at the criterion of the official veterinarian in charge of the poultry establishment as IN 56/2007 (7, 9). This decision is determined after conducting analyzes of the risks for each property in order to ensure biosecurity and regularization of the not-complying establishment in INDEA / Mato Grosso.

In Table 2 are listed the minimum distances between the legal production sheds and other structures within the farms (micro insulation). Between the nucleus and shed or the house of the farm are needed at least 20.0 meters, and 88.5% are in compliance. Between the shed and the side road are needed 100.0 meters, with 83.3% of the farms meeting this minimum distance. For the distance between the sheds and the peripheral limits of the farm, 80.7% are in compliance.

The distance between commercial poultry sheds for same purpose and age should be twice the width of the sheds, and 99.1% are in compliance (Table 2). The only farm that is not-compliance was an old building. Thus, in this case was made an analysis of health risk and evaluation of the welfare of the birds by the official veterinarian.

Table 1. Enforcement of legislation regarding minimum distances between poultry farms and other commercial establishments (macro insulation) in Campo Verde / Mato Grosso, according to statutory surveys made in 2008 by the Institute for Health Defense of the State of Mato Grosso - INDEA

Distance between farms and:	**Minimum distance (m)***	**C (%)**	**NC (%)**
Stock poultry	3000	99,1	0,9
Hatcheries	3000	95,6	4,4
Ratites and poultry trade [1]	3000	-	-
Commercial farms of broilers and laying	3000	73,6	26,4
Farms of broilers of different integrators	1000	-	-
Farms of broilers of the same integrator	200	87,7	12,3
Commercial farms for laying hens	500	100,0	0,0
Ration factory of others	3000	65,7	34,3
Ration factory of the same company to produce ration for commercial poultry	500	100,0	0,0
Establishments that produce animal products, ponds and landfills	3000	88,5	11,5
Shops and poultry farms for production of wild birds and or exotic	4000	-	-

* Normative instructions 056/2007 and 002/2007 (BRASIL, 2007 e INDEA, 2007)
C – compliant; NC – non compliant; NA – non applicable; 1. There is no creation of these birds in the city.

Among nuclei broilers, it was observed that the minimum distance was respected in 82.4% of cases (Table 2). It should be highlighted that this item has great significance in the health, because even being producers of the same system, integrator with similar work, proximity creates risks to who are involved, if any biosecurity measure is not appropriate for one or more farms.

Among sheds and ration factory for their own consumption, 90.3% respect the legal distance, and the properties that are not in accordance have pig farming for subsistence. Between the sheds and the creation of other species of not commercial animals, unless pigs, poultry and ratites, in this study it was observed that 64.9% are compliant, and producers who are not, create bovines. Among poultry and pigs sheds, 56.1% meet the minimum distance required (Table 2), and the producers who do not comply have a tradition of creating these animals for their own consumption.

Thus, in this study, related to macro insulation of the 114 establishments visited, 65.7% were in compliance with the law. To all those producers who have non-compliance related to these items, adjustments to minimum distances were recommended or the adoption of natural or artificial barriers in order to isolate the commercial establishment of birds of other creations.

Table 2. Compliance with Normative Instructions regarding minimum distances adopted within the commercial poultry farms (micro insulation) in Campo Verde-Mato Grosso, according to surveys made in 2008 by the Institute for Health Defense of the State of Mato Grosso - INDEA

Distance between sheds or nuclei of poultry and:	**Minimum distance (m)***	**C (%)**	**NC (%)**
Fence isolation	5	72,8	27,2
Residence	20	85,5	14,5
Side road	100	83,3	16,7
Property boundaries	30	80,8	19,2
Poultry sheds of the same age and purpose	Varies**	99,1	0,9
Layers sheds, rearing and production	200	-	-
Other nuclei broilers	200	82,4	17,6
Own ration factory	500	90,3	9,7
Other not commercial animal species	20	64,9	35,1
Not commercial pigs	600	56,1	43,9

* Normative instructions 056/2007 and 002/2007 (BRASIL, 2007 e INDEA, 2007);** ** Double width of the shed;
C – compliant; NC – non compliant; NA – non applicable.

Health management

Of the establishments inspected, 92.9% showed the structure of the land in accordance with the law. To not- compliant properties it were recommended improvements related mainly to the leveling and compacting of land, facilitating drainage of rainwater in order to provide greater comfort and safety for the birds to the final product.

Establishments must realize the control and registration of vehicle traffic and people, including the placement of warning signs to prevent the entry of outsiders into the production process. These should allow the entry of vehicles, equipment and materials in the internal areas of domestic poultry farms only when the specific biosecurity measures were complied, such as disinfection by spraying disinfectant. Furthermore, it is important to prevent the entry of persons who have entered into other farms three days before, plus bath, changing clothes and shoes at the entrance of the establishment and at each nucleus. People who work in broilers establishments may only enter if they are using appropriate and exclusive clothing and footwear for that activity after cleaning themselves with water and disinfectant (7,9,10).

In the present study it was found that only 78% of the farms are in compliance, because they follow the criteria set out in the legislation (Table 3). The non-compliant have more than one vehicle access and people do not have disinfection procedures. Furthermore, no farm had a written protocol regarding the control of people, vehicles and materials, and this is of fundamental importance for the inspection of establishments. Thus, it was recommended to all of them the adequacy to prevailing legislation and the making of a protocol.

For commercial cutting poultry is important to adopt the system of creating all in-all out. This system encourages the development of birds of the same age in the same shed at the same time period, besides the health break of at least 10 days between batches (8).

Furthermore, in commercial poultry, all poultry establishments must maintain protocols for cleaning and disinfecting of catchment tanks and distribution of wastewater. The cleaning of the silo should be done at every outgoing of the batch (8). In the present study, it was found that 100% of the farms used the all in-all out system and health break in the right way (Table 3).

On farms, due to the high volume of waste coming from the production system, it is especially important to adopt appropriate procedures for the destination of wastewater and waste production, such as dead birds, eggs discarded, manure and packaging in accordance with environmental laws (8).

The treatment system of waste can be done in two ways: by digesters and by compost. The use of biodigesters for the treatment of the broilers waste allows partial stabilization of waste and still produce biogas which can be used as a source of heat or energy at the farm. The composting of waste permits the production of a solid biofertilizer that can be exported to outside the producing regions, which usually are already highly environmentally impacted. The care with the management of composting are critical, as this is an aerobic process and the lack of oxygen can lead to a process of inadequate degradation, with the emanation of odors (10).

In CampoVerde all integrated use the system of treatment of the composting of waste (Table 3), because this is the system advocated by the integrator.

It is necessary to use pest control programs in order to keep the sheds and the local of the food storage free of insects and rodents, wild and domestic animals (7). It is important to note that to avoid the presence of insects and invasive animals at the facilities, it is important to maintain clean the surroundings, organized without the presence of rubbish, the use of rodenticides products properly registered in MAPA and the adequate control of flies through proper composting, among others (10). Thus, the veterinarian must always be aware of the monitoring of poultry, especially regarding the supervision, inspection, and possible adjustments and the necessary accompaniments.

It is worth to highlight that with the accelerated and continuous growth of the poultry systems it has become more important to care about the health of herds, since this growth is related to multiplication, dissemination and perpetuation of the various pathogens in poultry, which could lead to losses on several spheres, including the economic (11).

The management of poultry litter used in the production is a practical example of this. According to Brazilian legislation, in poultry farms of commercial cutting poultry it is permitted reusing treated poultry litter, for example, with quick lime, provided it has not been observed health problems that might endanger the next lot to be lodged, the national squad poultry or the public health , after the veterinarian or the official inspection (8,10).

It is important to keep record of the activities of management and health for a period not less than two years at the disposal of the official agency, such as transit of birds (copy of GTAs), health actions performed, medication and vaccination protocols utilized, date of the visits and recommendations of the technical in charge and the official veterinarian (7).

Regarding the annual performance of the physical, chemical and bacteriological analysis of water, the reuse of beds and the record of the management activities and health conducted, it was found that all farms comply with the protocols of the federal legislation, but none of them has written protocols with measures taken, so they were considered non-compliant (Table 3).

Table 3. Health management adopted in commercial poultry farms at Campo Verde/Mato Grosso according to surveys made in 2008 by the Institute for Health Defense of the State of Mato Grosso – INDEA.

Item	C (%)	NC (%)
Dry terrain of sheds with adequate declivity	92,9	7,1
Control access of people, vehicles and materials	78,0	22,0
System 'all in' 'all out' and health break	100,0	0,0
Composting of waste treatment	100,0	0,0
Cleaning and disinfection of sheds, water tanks and silos*	0,0	100,0
Annual physical, chemical and bacteriological water analysis*	0,0	100,0
Reutilization of poultry litter*	0,0	100,0

* Non-conformity due to the absence of written protocol in poultry farms, however it was found that all integrated comply the other items established by Normative Instruction 056/2007 (BRAZIL, 2007)
C – compliant; NC – non compliant; NA – non applicable.

Technological innovation has increased agricultural productivity by generating a prominent position in the agribusiness sector. Regarding the poultry industry, new technologies have been aggregated constantly, so that, if associated with a correct health management it increases the productivity without generating a greater risk of disease. This meant that poultry stand among various agribusiness segments (12).

In other words, it is important to note that health problems may compromise the export of poultry products, but the use of biosecurity measures focuses on achieving better health and economic outcomes in relation to productivity and commitment of the sector with the regional and national production (9). Thus, reflecting on this issue is essential for ensuring the health of the birds and to give quality to the final consumer.

The terrain of the sheds should be permeable soil, dry and with proper declivity. Its location should allow for ventilation, low incidence of sunlight and adequate flow of personnel, animals and supplies. It should not be located in lowlands subject to water accumulation or excessive moisture and must have a good level of health insulation via vegetation (7,8,10).

Infrastructure

Brazilian law, mainly through the NI 002 2007, 056 2007 and 059 2009, specifies in detail the characteristics related to infrastructure suitable for commercial production of poultry on farms, in order to produce poultry with greater safety and less risks to consumers.

It was verified a large proportion of producers in non-compliance (49.2%) (Table 4). This is related to the cultural issues of the regional producers, mainly in relation to the use of fruit trees around the poultry farms. Taking into account the need to meet normative instructions in force, it was explained the importance of respecting the health legislation in order to provide continuing education to these producers. The legislation in relation to shading sheds by trees determines that they shall be located at a minimum distance of three meters from the side of the shed, being forbidden the use of fruit trees (8).

The farms that were visited 89,4% were in compliance. The remaining poultry farms were old that needed reforms in its physical structure. The sheds should be constructed of materials that allow for easy cleaning and disinfection and be supplied with protection from the external environment with the installation of mesh canvases measuring no more than 2.54 cm, in order to prevent the entry of birds, domestic and wild animals (13). For installations with mesh screens to 2.54 cm, most (72.8%) were accordingly, due to the integrator orientations. The majority of non-conformities were related to poor physical structure of the screens (Table 4).

It is important to highlight that the non-compliant farms were suggested adjustments related to improvements of the whole structure mainly in order to facilitate the procedures for cleaning and disinfection. It was explained that producers who did not make the appropriate corrections could not register his farm in INDEA / Mato Grosso.

At the time of this research, poultry farms should have fence insulation with a unique access with at least 1.5 m in height around the shed, with minimum separation of 5 m, and the transit and presence of animals of other species are not permitted inside (7,10). Thus, it was found that in Campo Verde–Mato Grosso only 22.9% of producers were in compliance with the legislation in this item (Table 4).

It is important to mention that before the NI 056 2007, no farm in the municipality of Campo Verde had an entry with unique access, which contributed to the low rate of compliance observed. Furthermore, in the non-compliant farms, the work is usually done by the owner's family, making it difficult to control the flow of people. Therefore, it is necessary to conduct continuing education on the part of veterinarians in charge to the owners of these farms and their families, in order to show the health risks and benefits of adopting such measures mentioned in the normative instruction.

More recently, the minimum height of the insulation fence was changed to 1.0 meters by NI 059/2009 of the MAPA (13). This example indicates that laws also adapt to reality, in order to adapt the productive sector. This occurs because the creation of appropriate and efficient programs of biosecurity need to be established on the basis of normative instructions so that they justify the practice on the field and in daily activities performed by veterinarians in poultry industry (14). In this regard, it is highlighted that the new measures are important, and certainly will be beneficial to producers in the region, as well as reducing the risk of disease occurrence, will also benefit from the economy of the county and the state, since the measures aimed at ensuring market for products in this sector. Moreover, these measures are intended to protect human health, since the biosecurity and food safety stands out in this business as a way to ensure the placement of healthy and good quality products on the table of the consumer.

Regarding the floor of the shed, this should be done in compacted earth or cemented. The height of the floor above the ground level should be at least 15 cm in order to adequate

the flow of the waste water (8). In the present study it was found that 65.7% of the farms were in compliance with this item (Table 4).

The short wall should have a minimum height of 30 cm and it should be masonry and beveled with proper finish to facilitate cleaning and allow no perching birds, apart from not being permitted cracks or holes (8; 10). Moreover, between the short wall and the roof must be placed screen and the end walls of the poultry must be closed to the ceiling, and in hot climates that have no wind currents emanating from the south, it is recommended that the fence posts be with screens on the sides, fitted with curtains. The fence posts should be protected from the sun rising and setting and the walls painted with bright colors, shaded by vegetation, eaves or shadow protection. Depending on the region, the fence posts can be wood, corrugated roofing, fiberglass, the Styrofoam blades or masonry (10). Of the total of facilities studied 61.4% of them are compliant (Table 4).

The ceiling height should have a minimum of 3.20 m and may be different depending on the air conditioning and the technology employed (8). In other words, facilities that do not have the ceiling height in accordance with the regulations need to provide greater comfort to the birds through humidifiers, fans or larger areas of shading. Moreover, they need to control the temperature of the poultry using thermometers. During inspections in 2008, it was found 78.1% of farms comply in this question. As the city of Campo Verde has a hot and dry climate, the majority (82.4%) of the farms already have humidifiers and fans providing the welfare of the birds and consequently higher productivity (Table 4). For those who do not possess and exhibit ceiling height smaller than the legal size it was recommended adaptation to what is provided by the legislation.

The roof should be made of impermeable material, to allow cleaning and disinfection, which may be clay tiles, aluminum, aluzinco, cement or other technically approved material. It is forbidden to use vegetal coverage in aviaries and materials containing asbestos. The edge of the roof should be at least one meter long (8). On this item, it was obtained 58.7% compliant, and it was recommended the adequacy to the 41.3% who do not comply with legislation (Table 4), mainly by means of repair and exchange of roof eave.

The side curtains should completely cover the sides of the aviary and be appropriate to seal out sunlight and rain. Drinkers and feeders should be easy to handle and allow appropriate cleaning and disinfection. It is suggested that the drinkers must be pressure type for chicks and pendulous for chickens, both with a capacity of 80 birds or automatic nipple with capacity for 12 birds per nipple. Already feed tanks should be constructed with waterproof material to allow its proper cleaning and disinfection, and in order to prevent the entry of rodents (8). On these items, it was observed that all poultry producers in Campo Verde were in accordance with the law (Table 4).

It is important to elucidate that the farms in Campo Verde were built before the Normative Instruction 056/2007, 002/2007 and 059/2009. Thus, by the results of this study it was detected the presence of many inadequacies, and these will have to be revised so that the poultry industry of the municipality and the producers should not be penalized. The establishing of written protocols by the visited farms was considered as the item of the greatest deficiency. The deadline for the necessary adjustments was the year 2012.

We must also highlight that the veterinarian is crucial in this whole process so that biosecurity programs are based on current legislation and reflect the needs of poultry farms as well as the market in order to provide a higher quality to the product and safety to the consumer.

Table 4. Infrastructure available in commercial poultry farms in Campo Verde/Mato Grosso according to surveys made in 2008 by the Institute for Health Defense of the State of Mato Grosso – INDEA.

Item	C (%)	NC (%)
Shading	50,8	49,2
Materials used in the construction	89,4	10,6
Insulation inside the shed from the external environment	72,8	27,2
Isolation fence with single accession	22,8	77,2
Floor of the shed	65,7	34,3
The short wall	61,4	38,6
Ceiling height	78,0	22,0
Roof	58,7	41,3
Air humidifiers and ventilation	82,4	17,6
Silos	100,0	0,0
Curtains	100,0	0,0
Drinkers	100,0	0,0

C – compliant; NC – non compliant; Note: no item not applicable.

CONCLUSIONS

It was possible to observe that the commercial cutting poultry farms in the integrated system of the municipality of Campo Verde –Mato Grosso seek a greater efficient system through the implementation of biosecurity measures, however, they need to be adjusted due to the new ever more demanding regulatory instructions, especially regarding the registration of the protocols of biosecurity measures adopted.

Thus, with the completion of these observations and notes made during the surveys, many producers have already started the necessary adjustments. Much of these adjustments is due to the integrator of the municipality along with its integrated and the defense agency of state.

However, it is known that some adjustments identified in this work will be more difficult to resolve. For the effectiveness of these, it will be required the health education of the producers, and especially technical support by the veterinarians in the region.

The deadline for the necessary adjustments was the year 2012. However, the work must go beyond that this year. Farms must receive continuously supervision for the improvement of this sector and the veterinarians in charge of inspections need to be updated about new Normative Instructions and should emphasize the importance of check lists and written protocol in the farms.

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