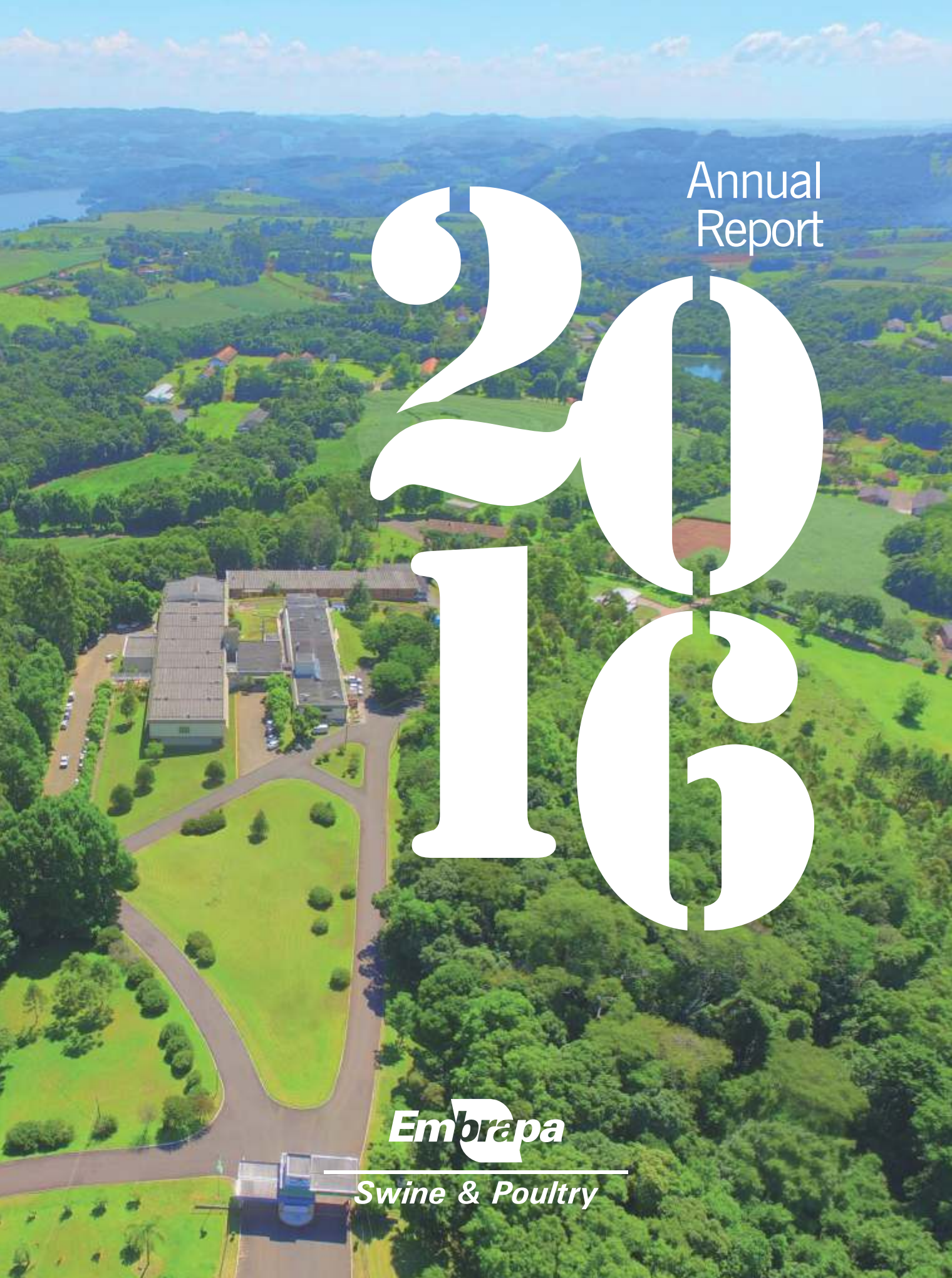

Annual Report 2016

Embrapa

Swine & Poultry

PRESENTATION

Embrapa Swine and Poultry reports a description of its main activities to the Society, every year. Herein, we have brought together the main results of our work throughout 2016. They are related to projects, activities, initiatives and collaborations to the poultry and swine productive chains, reflecting directly the whole society.

In 2016 we operated in a scenario of budget reduction, forcing to work with creativity and to look for alternatives and ways to strengthen our partnerships. At the same time our work also contributed to several sector opportunities, constraints, and demands in different areas. They were research work, participation in discussion forums and representative committees, all toward to solutions for the poultry and swine productive chains.

We highlight the efforts to reactivate the Suruvi Experimental Station in order to guarantee the health status of Embrapa genetics. The Feed Mill was another facility that had commitment of improvement and should be carried throughout 2017. The disposal of dead animals in the farms was also an important topic for research solutions from our scientific team.

With this report we want to show the commitment of Embrapa Swine and Poultry to contribute to the evolution of swine and poultry farming, ensuring that the final product meets the needs of the whole society.

Janice Reis Ciacci Zanella
Director-General at Embrapa Swine and Poultry

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**US$ 1 = R$ 3.156, August 2017 average value*

Embrapa

Swine & Poultry


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Analysis | 2016
Production Statistics

12.9 million

Brazil produced 12.9 million tons of broiler meat in 2016, the world's second largest production. Exports reached 4.39 million tons, the largest in the world. Domestic production decreased by 1.8% compared to the 2015 figures.

3.73 million

Domestic production reached 3.73 million tons of pork in 2016, the fourth largest in the world. Exports were 732.9 thousand tons, also the fourth largest in the world. Compared to 2015, exports from Brazil increased by 32%.

39.1 billion

Brazil produced 39.1 billion eggs, a result 0.8% lower than in 2015. Exports were 10,411 thousand tons (-45.5% compared to 2015). Per capita consumption reached 190 units and reached a 1% lower level compared to 2015.

322 thousand

The Brazilian turkey meat production was 322 thousand tons, facing a decrease of 1.5% compared to 2015. The export of turkey meat reached 139.7 thousand tons, which represented an increase of 3.4% compared to 2015, keeping Brazil among the world's leading producers.

Scenario
ONE OF THE MOST DIFFICULT YEARS

Lower profitability reached from producers to retailers

Swine and poutry supply chains were deeply affected in 2016 by internal and external forces, resulting from political instability, economic recession, institutional crisis and international prices. In the pork sector, 2016 seems to start a new level for Brazilian exports, which in 2014 and 2015 represented close to 17% of production and jumped to more than 24% in 2016, an amount that should be maintained or even increased in 2017.

Despite a growth of almost 42% in export volumes, total revenue, in dollars, increased by only 7.7% due to drop in pork meat export prices (-23.8%). Likewise, this new positioning of Brazil in the international market was fundamental for the survival of pork meat supply chain. It is also necessary to be aware of maize supply, the main feed ingredient, which presented a significant drop in the 2016 harvest and had large volumes exported in recent years.

Embrapa analysis indicates a tight supply of this grain until the first half of 2017.Crises serve to improve economic activities by preparing them to reap better results in good times, which is believed to occur with the pig production. Brazilian broiler farms had more modest results, but also important considering the current crisis in the country.

While in the first half of 2016 production growth was 3.55%, the volume exported increased by 14.10%. The fall in economic activity in the country, the income of the population and the resulting increase in unemployment, which has lasted more than two years, have weakened domestic demand.

It is expected strong demand on international market next year. There is concern about slowing China's economic growth, but even if this does occur the expectation is that the market will remain warm in 2017 due to the health problems that are occurring in the United States and Mexico, the growth of the Indian economy, and the recovery in economic growth of the United States of America and Japan. Brazil is expected to remain the world's largest exporter, which has been happening for more than 10 years. The Brazilian domestic market is still expected to decline in 2017, once again demanding a caution in the broiler supply chain.

Socioeconomic Inteligence Center
New website marks 5 years of CIAS

The Embrapa Swine and Poultry Intelligence Center (CIAS) completed five years in 2016 with the launch of a new website in June. Now, in addition to the monthly swine and broiler cost of production index calculated by Embrapa (ICPSuíno and ICPFrango), new sections are available: production costs (since 2007 for swine and 2010 for broilers), prices (for soybean meal, maize, live pig and broiler for six Brazilian states), statistics section, maps section, selected publications on poultry and swine supply chains, market update and studies on competitiveness. Embrapa research team have also chosen trends in future developments in poultry and swine research in animal health, genetics and genomics, management, nutrition, animal welfare and environment. Finally, it is also possible to download the app Custo Fácil – Integrado (Easy Cost – Integrated, Android version) and the production cost spreadsheet (for computer). Access can be made at https://www.embrapa.br/suinos-e-aves/cias.

Administrative Management

QUALITY SYSTEM REMARKS THE AGENDA

Action was in the structure improvement

The year 2016 was a special year for the management of Embrapa Swine and Poultry for the consolidation of administrative management practices and internal procedures, mainly in the increase of actions of the quality system, as in the search for investments and improvements in infrastructure.

One of these actions was the effort for the certification of the Feed Mill Plant. Under external consulting, technicians underwent training, auditing and preparation of documents to meet the Good Manufacturing Practices Manual.

This work included the first step to comply with the Normative Instruction - IN 4 of the Agriculture Ministry, which will be targeted in 2017.

Another important administrative management issue was the consolidation of the actions for the reactivation of the Suruvi Experimental Station, which will guarantee Embrapa Swine and Poultry the maintenance of the replica of the Conservation of Avian Genetic Nucleus (NCGA), in accordance to the Agricultural Ministry legislation.

In addition, Embrapa Swine and Poultry obtained with the Agricultural Ministry and CIDASC (Integrated Company for Agricultural Development of Santa Catarina) authorization for poultry rearing at the Tamanduá Experimental Station. In relation to infrastructure, the Swine Artificial Insemination Unit and the Breeding Laboratory are being finalized.

Further, Embrapa Swine and Poultry is building the Biotechnology and Nanotechnology Laboratory and it has finalized the Laboratory of Dead Animal Disposal Technologies (TEC-DAM LAB), which was built in partnership with the Brazilian Association of Animal Protein - ABPA.

Internally, administrative management focused on the consolidation of the Integro System, which is linked to Embrapa Priority Agenda. It was necessary to adapt planning tools,personnel and projects. In 2016, the Unit worked under a cost reduction scenario, which challenged the Administration team in the search for alternatives and new partnerships, in addition to reviewing strategies and actions.

Planning

Strengthen partnerships

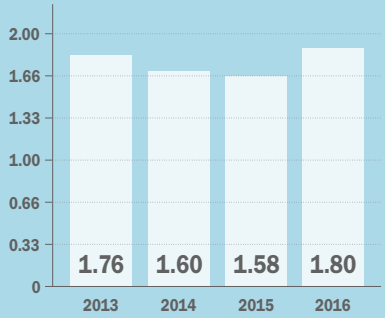
The year 2017 already shows important highlights for the Embrapa Swine and Poultry agenda, which will continue to focus on cost reduction, process improvements and partnership strengthening.

At the end of the year, the Unit got authorization to sign a new technical cooperation agreement with Copérdia for the swine herds.

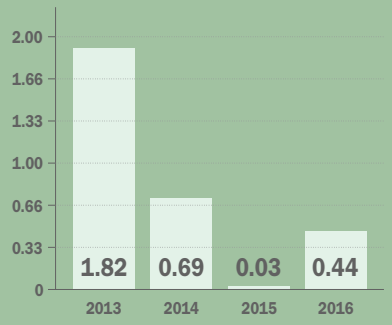
The objective is the herd maintenance technology transfer, similar to the contract established for poultry farms. Important work agendas will be finalized in cooperation with the agroindustry in order to strengthen partnerships for research.

The Feed Mill Plant adequacy is another priority of the Administration to obtain the Agricultural Ministry certification.

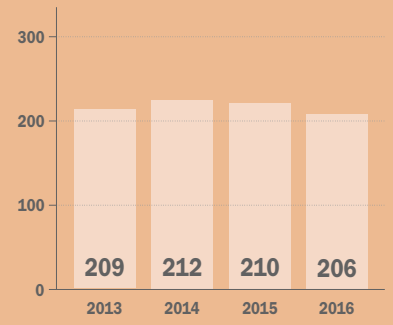
Total costing
in US$ million



Investment
in US$ million



Employees
in December 31



Production

Contributing to knowledge

In 2016 Embrapa Swine and Poultry offered many important results from several projects. Most of the results may be classified as contributions to knowledge, followed by contributions to public policies and agricultural practices and processes. The development of an environmental management software based on several agricultural data inputs was one of highlighted results. Also, as a result of studies conducted to assess environmental impact potential an the generation of new methodologies for assessment of environmental pollution source, transport and destination led to new reactors and other equipments. Overall, more than 39 results were achieved.

Water

Manual and videos teach the best management

The development of publications and videos on the subject of water management contributed to fundamental aspects and key points for the development of a sustainable swine production. In order to help technicians and producers, Embrapa together with Sindicarne and the Catarinense Association of Swine Producers (ACCS), prepared a manual entitled Water Management in Swine Farming, which can be freely downloaded at Embrapa Swine and Poultry website. Besides the manual, two videos on the same subject were produced and can be downloaded from Embrapa YouTube channel.

Research

RESEARCH AGENDA CONCLUDED 8 PROJECTS

Results met productive chain demands

Embrapa Swine and Poultry 2016 research agenda worked with 38 projects that were under its direct coordination and 23 projects which had other research center leadership. Compared to 2015, this represents a 61% increase.

Considering the ongoing projects, eight of them were finished in 2016, showing important results in Virology, Bacteriology, Reproduction, Genomic and Economy.

From the finished projects it can be highlighted:

- Development and enhancement of methods and inputs for swine viral diseases diagnostic, prevention and control. Also in this area our researchers worked on swine Seneca virus characterization in USA and Brazil, and validation of molecular technology for vaccine evaluation against bronchitis virus in laying hen.
- In Nutrition, the projects were related to the evaluation of composition of diets for poultry considering commercial enzymes on performance efficiency, and also the thermoprocessed cottonseed meal evaluation in swine feeding.
- Another project finished in 2016 was in Bacteriology, where our researchers studied the contribution of *Campylobacter* sp. on food borne diseases. It can be highlighted the evaluation of synchronization of ovulation in sow fecundation.
- A project in Genomic was also concluded, where researchers studied a genomic and epigenomic expression on swine osteochondrosis. Prospection studies of swine production in South and Midwest regions of Brazil were also finished.

Productivity

Twenty-nine articles were published in high impact, scientific peer-viewed journals (CAPES Qualis A).

The total number of **articles** published in international peer-viewed journals was **31**.

It was published **26 media articles** and **49 short papers** in scientific meetings.

A total of **100 conference articles** and other technical information were published.

Seventeen chapters were published in technical-scientific books in 2016.

Fourteen folders and pamphlets were published and **nine publications** were edited by the technical staff.

Ongoing and approved projects in 2016

Projects under Embrapa Swine and Poultry direct coordination	
Development and improvement of methods and biologicals for the diagnosis, prevention and control of viral diseases of swine	Embrapa MP2
Wild Boar	Embrapa MP2
Tecnology for biogas and fertilizer production on animal manure for carbon slow agriculture	Embrapa MP2
Review and modernization of ante and post mortem inspection applied to pig's slaughterhouse with federal inspection	Embrapa MP2
Development of a new virosomal antigen delivery system and its effectiveness in the local and systemic immune response	Embrapa MP2
Technologies for destination of dead animals	Embrapa MP2
Methods of cell immortalization for the establishment of new cell cultures aplied to the diagnosis and synthesis of reagents for animal pathogens research	Embrapa MP2
Review and modernization of the inspection system applied to avian's slaughterhouse with federal inspection	Embrapa MP2
Evaluation of indicators and strategies for valuing environmental services in watersheds with intensive livestock production	Embrapa MP2
Fixed-time artificial insemination in sows: fertilization, embryo quality and female reproductive tract assesment using different protocols of ovulation synchronization	Embrapa MP3
Associated factors with losses during the pre-slaughter handling of pigs	Embrapa MP3
Validation of new molecular technology for evaluation of vaccines against avian infectious bronchitis virus	Embrapa MP3
Campylobacter sp. involved in foodborne diseases in Rio Grande do Sul, Brazil	Embrapa MP3
Development of a real-time PCR for rapid multidetection of Salmonella and evaluation of the infection dynamics under controlled conditions	Embrapa MP3
Evaluation of recycled broiler litter with reference to the survival and infectivity of pathogens	Embrapa MP3
Improving poultry production in Ethiopia through production system studies, breed characterization and implementation of improved practices	Embrapa MP3
Evaluation of the nutritional composition poultry diets on the efficiency of commercial enzymes and the effect on performance	Embrapa MP3
Development of new genomic methodologies to analyse data from next generation sequencing	Embrapa MP3
Identification of genes and polimorphysms associated with hernias in pigs using the combination of exomic and RNA sequencing	Embrapa MP3
Use of microalgae biomass (*Prototheca moriformis* sp) to feed swine	Embrapa MP3
Gene expression and epigenetics on the manifestation of osteochondrosis in swine	Embrapa MP3
Development of nanostructured coating for table eggs	Embrapa MP3
Development of software for environmental management of swine farms	Embrapa MP3
Deposition of ractopamine residues in tissues of swine fed meat and bone meal containing this additive	Embrapa MP3
Proteases effect (ProAct and Poultry Grow) in broiler diets on performance and cutting income	Embrapa MP3
Research and development of mobile slaughterhouse for swine and ruminants.	Embrapa MP3
Evaluation of different enzymes and dosages on swine performance, nutrient digestibility and bone composition	Embrapa MP3
Evaluation of term processed cottonseed bran in animal nutrition	Embrapa MP3
Effect of different levels of dietary selenium on quality in gene expression and fertility in roosters	Embrapa MP3
Characterization of Seneca Valley virus circulating in the US and in Brazil	Embrapa MP3
Transference of technology supporting ATER net involved in production, processing and marketing of meat, milk and eggs in ecological based family agriculture	Embrapa MP4
Good management practices in commercial egg production	Embrapa MP4
Prospecting technologies for the production chain of broilers	Embrapa MP4
Support to the poultry and pig production chains to access the drawback system benefit	Embrapa MP4
Prospecting the future of swine production systems: competitiveness and income at typical swine farms at Southern and Central-West Brazilian regions	Embrapa MP5
Water as a sustainability factor in poultry production	FAPESC-EVERT
Development of a low-density SNP panel for swine traceability	FAPESC-RAST
Projects which had other research center leadership	
Identification and use of genes of interest in production systems	Embrapa MP1
Metagenomics applied to characterizing the microbiome associated with livestock animals	Embrapa MP1
Development and application of bioinformatics tools for supporting animal breeding and production systems	Embrapa MP1
Quantitative tools and methods for using genomic information in livestock improvement and production systems	Embrapa MP1
Reproductive biotechnologies for the emerging production systems in Brazil	Embrapa MP1
Development of new technological plataforms in reproductive biotechnologies	Embrapa MP1
Studies about Safety in Nanoproduct Applications	Embrapa MP1
Implementation and Monitoring of Quality Systems in the Microorganisms Network (QUALIMICRO)	Embrapa MP1
Institutional Collections of Microorganisms	Embrapa MP1
Ex situ conservation of animal genetics resourses	Embrapa MP1
Management and digital curatorship of Animal GRIN (Alelo Animal) Database	Embrapa MP1
Technolgical basis for development and agronomic evaluation of organic mineral fertilizers based on agricultural residues in Brazil	Embrapa MP2
Evaluation of risk factors for specific pathogens and ripening time in Brazilian artisanal cheeses to ensure their safety	Embrapa MP2
Modulation of the immune system to control haemoncosis in sheep	Embrapa MP2
Breeding oats, rye, triticale and dual purpose wheat for agricultural systems in southern Brazil.	Embrapa MP2
Technological solutions to optimize the use of waste and biomass as source of agricultural inputs in organic production systems	Embrapa MP2
Development of MALDI-TOF methods for detection and classification of *Brucella* spp., *Mycobacterium* spp., Salmonella e *Escherichia coli* in bovines	Embrapa MP3
Metaproteomics of ignocellulolytic enzymes from ruminal microbiota of Morada Nova sheep	Embrapa MP3
Technology Transfer in iLPF systems in RS and SC states	Embrapa MP4
Development and implementation of strategies for managing the Animal Health Portfolio	Embrapa MP5
Development of alternative fertilizers to support the agro ecological management of family-based agriculture production systems in Goiás State	Embrapa MP6
Characterization of handmade cheese produced in municipalities within the Green Corridor Mantiqueira - generating income to family farmers and safe food for consumers	Embrapa MP6

SA-SuAve
Evaluation of Environmental Services

The project "Evaluation of indicators and strategies for valuation of environmental services in animal-intensive watershed regions (SA-SuAve)" organized two important courses in 2016.A capacitation on APOIA-NovoRural methodology to help to estimate the impacts of environmental into the scope of the project was organized in March, 2016. In October, another course was conducted to help how to identify and quantify algae and cyanobacteria. This later course provided basic knowledge on the collection, identification and quantification of these organisms and how these information associates with current environmental legislation. Latter in November, a seminar was offered to city admnistrators, farmers, technicians and students to discuss the bases and strategies for the preparation of a payment for environmental services project.

Sistrates
Agreement guarantees validation

In 2016, the National Bank for Economic and Social Development (BNDES), through the Research and Development Support Foundation, Embrapa Swine and Poultry and the Agropecuaria Master signed a contract to validate one of our technologies to manage swine wastewaters in field scale.The project is entitled: "Biotechnological processes in the treatment system of swine effluents - Sistrates". Briefly, the technology is one of the most promising approach to treat effluents from swine farming and capable of removing carbon, nitrogen and phosphorus. The Federal University of Santa Catarina (UFSC) is partner in this project and in the development of the patent.

Environment
BIOGÁSFERT NETWORK PRESENTS ITS RESULTS

The project offered new technologies to improve the production of biogas and fertilizers

The research network called BiogásFert is a multi million dollar effort that involves a complex team of professionals from Academia, industry, research and from other institutions. Along four years, the project studied several technologies and methodologies in attempt to manage agricultural wastes into biofuel (biomethane) and fertilizer. In a broader picture, the project was established in attempt to reduce greenhouse gas emissions from animal production in the atmosphere. One of the projects within BiogásFert leaded by Embrapa Swine and Poultry was "Technologies for the production and use of biogas and fertilizers from the treatment of animal waste under the ABC plan". The project had the participation of 13 other Embrapa units and the partnership with Binational Itaipu Plant as well as nine other institutions. The main objective of this complex project was to bring new technological solutions for the integrated production and use of biogas and organic and organo-mineral biofertilizers from wastes derived mainly from animal farming.

Different agricultural production systems were critically studied and analyzed in attempt to generate income alternative sources while reducing emissions and providing options for a modern and sustainable agriculture. BiogásFert will soon have a new webpage located inside the Embrapa Portal. Therefore, it will be possible to learn about the project main outcomes. For instance, information will be available on how to generate better and more efficient composts and biofertilizers; how to treat swine effluents and produce valuable products such as microalgae and biomethane; how to storage, transport and apply biogas; how to determine the cost-benefit of technologies through evaluation of the net product value (NPV) and so on.

Moreover, many other important information on biomethane production potential including maps, technical coefficients, on line courses, lectures and videos will be found in the new webpage.

Swine production and the environment
Embrapa proposes a new management model

Embrapa Swine and Poultry proposed a new model for nutrient management in the soil. The project led by Embrapa with collaboration of universities and other research institutions contributed to better feed conversion and reduced excretion of nitrogen, phosphorus and potassium, as well as other nutrients through swine manure. The proposed model was presented in 2016 to farmers, technicians, and legislative players throughout the country. The official launch of the software is planned for the first quarter of 2017. The first version will calculate nutrient demands for any determined agricultural area taking in account farm size and other associated variables.The software will incorporate pre-existing information from any specifics agricultural area thus aiding additional information on how to design lagoons, biodigesters, composting systems, soil monitoring and geostatistics. There are already two technical cooperation signed agreements. One is between Embrapa and Aincadesc for software transfer and training in the state of Santa Catarina. The other is between Embrapa and Fatma for adoption of the software by determination of environmental regulations.

Watch a video about the environmental management model for Brazilian swine farms by accessing https://www.youtube.com/watch?v=9lYuAH-7GJw

At layer farms

FOCUSING ON THE BEST PRACTICES

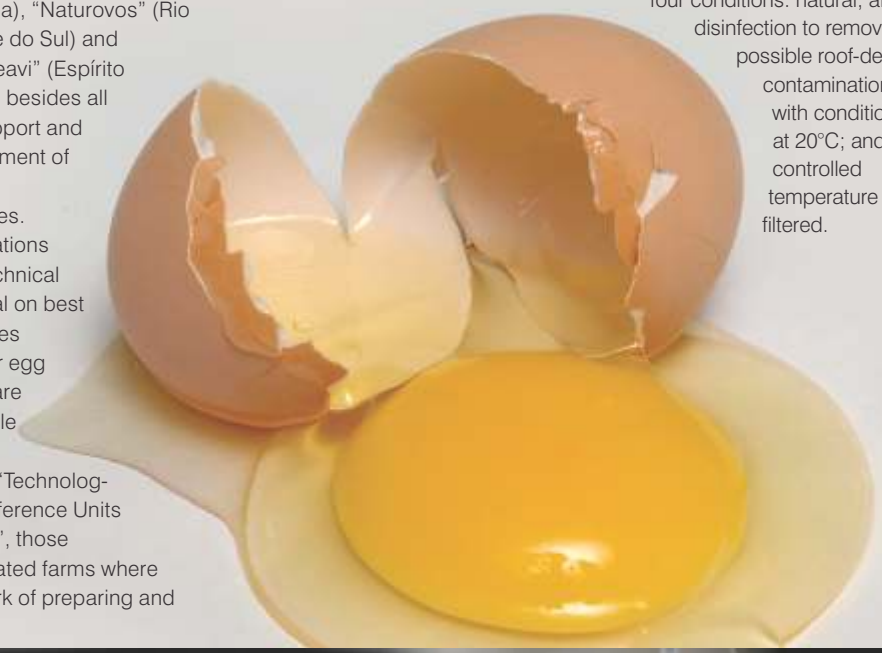
Project aims to improve egg production

Providing information and training to egg producers has been a constant work of Embrapa Swine and Poultry. Focusing on biosecurity, environmental preservation, food quality, and the health and well-being of poultry and rural workers, is the key issue of the project "Best Practices in Egg Production", in progress since the beginning of 2016.

For Embrapa, implementing good practices in egg farms and establishing partnership are two important goals. The project strengthens the actions through teamwork, providing a significant improvement to the egg chain because it combines research and direct action at the field.

The work also focused on egg business sustainability, sanitary issues, training, standardization of procedures and technology transfer. The main objective of the project is to develop a management model based on the best practices for egg layer farms.

The training activities are occurring through involvements in the associated farms: "Pedal Farm", "Uberti Eggs" and "Guarani Eggs" (Santa Catarina), "Naturovos" (Rio Grande do Sul) and "Coopeavi" (Espírito Santo), besides all the support and involvement of official agencies. Publications and technical material on best practices forlayer egg farms are available for the called "Technological Reference Units (URTs)", those associated farms where the work of preparing and standardizing documents and forms for the farm regulation is being conducted. Communication and support materials were also provided.



Water Quality

Storage and use of rain water

Embrapa started at the end of October a poultry experiment in order to evaluate animal performance of the birds submitted variations in thermal conditioning of the drinking water. The project entitled "Water as a sustainability factor for poultry production" is developed in collaboration with SinoxTec and financed by FAPESC. The experiment uses water stored from rain and its use to poultry in four conditions: natural; after disinfection to remove possible roof-derived contamination; with conditioning at 20°C; and with controlled temperature and filtered.

Genetic stock

Cryopreservation allows gene backup for research

Embrapa Swine and Poultry has maintained for serveral years chicken and swine genetic stock (pure lines), which are important for the Brazilian pig and chicken production industries.

Pure lines of chicken were selected for several important economic traits and they are maintained in controlled systems, free of the main patogens present in the chicken industries.

With the potential for improving the animal genetic conservation techniques, Embrapa Swine and Poultry is already working on the development of tissue transplantion technique to regenerate chicken populations of interest for genetic conservation. The technique involves the cryopreservation of ovary tissue and transplantation to receptor chicks when necessary.

The activities speeded up in 2015 with a trainning course on chicken gonads cryopreservation, thought by investigators from Embrapa Labex-US and from the Agricultural Research System of the US Agriculture Department-USDA.

The second phase of the trainning course took place in 2016 in the Animal Biotechnology Center of USDA, in Beltsville, Maryland, with the participation of one Embrapa Analyst who was trainned in the transplantation of the cryopreservated gonads into the live chicks, in order to start this work in 2017.

To have access to the TEC-DAM project page on the internet, access www.embrapa.br/suinos-e-aves/tec-dam. There are several available documents, videos and a booklet with the recommendations defined so far.

Novelty

SEARCHING TECHNOLO FOR DESTINATION OF D

Composting, dehydration and biodigestion are alternatives

A problem that affects most swine, avian and cattle farms is the disposal of carcasses from animals that die from routine or catastrophic causes. The general concern is due in particular to the lack of specific regulations for removal and disposal that address health, environmental and economic aspects.

In order to assist producers and regulators, Embrapa Swine and Poultry has been involved in the evaluation of some practices and technologies identified as technological routes, such as accelerated composting, anaerobic biodigestion, dehydration, incineration and industrial rendering for the production of fats, fertilizers and other co-products of added value.

However, these technological routes need validation so they can be officially indicated by regulatory agencies. The evaluation of the routes is carried out within the framework of the Technologies for Disposal of Dead Animals (TEC-DAM), with the participation of Embrapa Dairy Cattle and the Ministry of Agriculture, Livestock and Food Supply (MAPA).

Biosecurity and risk analysis are essential in the decision

There are two strategies for the correct disposal of dead animals: the treatment within the farm or the removal to treatment plants. In both cases, it is necessary to evaluate the scenario and the conditions in which the death occurred. If the death occurs within the farm, the producer can choose among the technological solutions already mentioned. On the other hand, the removal

Pilot Project

Santa Catarina proposes actions

Santa Catarina was the first Brazilian State to propose a pilot action to evaluate a strategy of removal and transportation of dead animals from farms. The Agriculture State Secretary through its Integrated Company for Agricultural Development of Santa Catarina (Cidasc) and Embrapa Swine and Poultry presented to MAPA a pilot project for the removal, transport and use of dead animal carcasses in the manufacture of meals destined for production of fertilizer, exclusively.

This pilot project will start its operation in March 2017 and it will be followed by Cidasc, MAPA and Embrapa, providing traceability from the rural property to the destination of the products generated, which will be fats destined exclusively for biodiesel and meals for organomineral fertilizer manufacturing.

GIES
EAD ANIMALS

strategy still lacks specific regulation in Brazil. Currently, this theme is the subject of a Working Group established by MAPA with participation of Embrapa and the Proposed Law No. 5.851 / 2016 that is in discussion in the House of Representatives. The option to remove dead animals must be made in a careful way, following biosecurity recommendations, officially legalized and regulated, with traceability accompanied by the Official Veterinary Service. If done correctly, the removal can bring positive impacts to the productive chains, with economic benefits, to the environment and to the workers in the properties. It is important to emphasize that the Official MAPA Veterinary Service must be informed if death is caused by a notifiable disease.

The TEC-DAM project also provides risk analysis, an important tool used by veterinary epidemiology to identify and quantify risks of processes or production systems for one or several infectious diseases.

The use of this tool will enable public and private managers to make decisions with greater security and better knowledge of risks. In addition to considering the risks of the removal and transportation process, the study will involve risk analysis in the process of producing meals and fats for animal nutrition.

The research team is preparing a proposal with minimum criteria to mitigate risks of contamination and dissemination of infectious agents in pig farms for slaughter, with positive impacts for the biosafety of the farms. Thus, the necessary minimum conditions will be created for the implementation of strategies for collecting and transporting dead animals, if they are to be regulated by official bodies.

The activities related to the production of meal produced from dead animals and their use in animal feed are in an advanced stage of execution.

Preliminary results indicate that the flour production process efficiently controls the microorganisms. The oxidation aspects are assimilated to the conventional system and can be controlled through the use of antioxidants.

Contamination by biogenic amines has been a major concern, even when the carcasses are kept under refrigeration. In this regard, an important auxiliary tool is the use of infrared spectroscopy (NIR) analysis.

This is a fast and rather inexpensive method that is being developed to assist in the understanding of processes and decision making regarding the most appropriate use of this meal.

Options

Target public and production scale

The evaluation of technologies is being carried out considering different types of producers according to their production scale. For small-scale production, researchers have recommended traditional composting, in compost lines or cells, as a safe, efficient and inexpensive route. However, they must be operated at the appropriate location within the rural property. Among the innovations evaluated are the composting of whole bovine carcasses and carcass grinder, seeking new solutions for small producers with medium and large animals.

Evaluations

Large scale production

Other technological solutions are being validated for larger production scales, such as accelerated composting, dehydration and anaerobic biodigestion. Accelerated composting is the same process as the traditional composting, but performed in equipment that allows greater process control, with temperature, humidity and aeration regulation.

Anaerobic biodigestion can also be recommended, provided it meets some conditions pointed out by the researchers. Dehydrators are recommended as an alternative for the heat treatment and reduction of the volume of dead animals and also as a pre-treatment for biodiogestion. Incineration is also recommended for the treatment of wastes with high biological risk. This equipment must comply with the quality parameters related to the emissions of gases and other wastes according to Conama/Ministry of Environment regulations.

Mobile slaughterhouse
New round of evaluation

The swine mobile slaughterhouse, developed by Embrapa Swine and Poultry and the Engmaq Máquinas e Equipamentos, of Peritiba, SC, with the compliance of the Cidasc and financial support of Fapesc, was launched in 2015 and passed through another validation and technical evaluation in December 2016 in the IFC - Concordia Campus where it is parked. The slaughter unit still needs to be recognized and legally authorized by the official inspection services, and this validation will be the challenge for 2017 in order to get final approval.

Fish and aquaculture
Embrapa validates slaughter facility

There was a validation and the technical evaluation of the mobile fish slaughter facility, one of the mobile slaughterhouse models developed by Embrapa and Engmaq. The validation happened in a small rural community in Concordia. The mobile fish slaughter facility was bought by a company named Piscis, of Ceara state, which will process tilapias produced in net tanks in large dams. The mobile fish and aquaculture slaughter facility project was developed by Embrapa Fish and Aquaculture and Engmaq, with contributions of Embrapa Swine and Poultry. The validation trial was accompanied by Cidasc, Fatma and Emater of the Federal District.

Sustainability
TO IMPROVE ANIMAL WELFARE

MAPA will release US$ 380,000 for research and training

Investing in animal welfare, while maintaining compatible productivity and production costs, is one of the main challenges of swine production system. Embrapa is concerned about this subject and held in 2016 events in partnership with MAPA in order to discuss a collective gestation of swine matrices.

The technical seminars addressed the role of Embrapa Swine and Poultry in the transition to the collective gestation system, the experiences of agroindustries that have already implemented this change and the strategies of the official veterinary service and industries for its adoption. The collective housing system is the one encouraged by animal welfare practices.

The intention is to use technological and knowledge advances to rationalize and specialize labor force, prepare the production chain for external market requirements, align public policies and engage stakeholders, increasing animal welfare, adding value to products, maintaining food safety and guarantee sustainable production.

In addition, Embrapa signed two Decentralized Execution Terms with MAPA, through the Secretary of Social Mobility, Rural Producer and Cooperativism, in the amount of 1.2 million Brazilian reals (US$ 305,100) for the conduction of three years of welfare research and activities regarding commercial laying hens and sows. Among the actions to be developed by Decentralized Execution Terms, it can be mentioned the technical training of producers, technicians and agroindustry professionals.

Also, at the beginning of the year, a series of animal welfare booklets were published by the Brazilian Association of Swine Breeders in the production of pigs with the participation of the Unit.

The booklets refer to three stages of the process: on farm, during breeding; on shipment and transport from farm to industry; and at landing, reception and slaughter in the abattoir.

In December, Embrapa launched two more folders on pre-slaughter manage-ment equipments and the importance of pre-slaughter fasting of pigs, which can be downloaded from the Embrapa website.

Swine production
Extraction and analysis of ractopamine

Meat and bone meal is often used to replace soybean meal in swine diet. However, these meals may deposit ractopamine residue in tissues when animals are fed with them.

The influence of ractopamine contained in meals and its deposition in swine tissues, is questioned and must be within the maximum residue limits (MRL) established by national and international legislation. Otherwise, the commercialization of swine products may be impacted.

Embrapa is focusing in research projects aiming at developing extraction methodologies to determine ractopamine residue in urine, meat, liver, kidneys and lungs by high performance liquid chromatography coupled to mass spectrometry (LC-MS/MS).

These tools are important to ensure accurate results that will directly impact on the safety of these meals in pig diets and consequently to humans.

Wild Boar

CONTROLING AND MONITORING ACTIONS

Embrapa has developed a system for support the work

The occurrence and dissemination of exotic invasive species like wild boar and its hybrids represents a threat to environment, agriculture and livestock. Consistent actions in invasive species monitoring and control demand for a prompt production, storage and recovery data system.

In order to improve the process, Embrapa had developed the "System of Information for Monitoring of Invasive Fauna - SIMAF" that will monitor wild boar occurrence data management in Brazil.

In addition, data about control measures will be recorded, enabling the monitoring.

SIMAF is being implemented for Brazilian Institute of the Environment (Ibama) operation. The system computerizes the processes previously settled by Normative Instruction - IN 3 of 01/31/2013/Ibama and the

National Wild Boar Management Plan/MMA. SIMAF functionalities cover declarations and authorizations emission; generation of specie distribution maps and control actions reports to management department.

In addition to the system, Embrapa had organized events to different audiences, from wild boar controllers to official veterinarians.

The major objective was to internalize guidelines and training people in control actions and biological sampling for sanitary monitoring and prepare them for quick reaction face to wild population's diseases. Some documents with relevant information were elaborated in order to support these trainings.

All activities have been developed as part of the project "Epidemiological surveillance program and population management of wild swine (*Sus scrofa*) in Classical Swine Fever free area" coordinated by Embrapa.

Senecavirus

Studies generate new results

Since November 2014, outbreaks of vesicular disease and neonatal mortality in pigs have been described in Brazil and associated with Senecavirus A (SVA) infection. Many aspects of the biology and epidemiology of infections are still unknown and a partnership between Embrapa Swine and Poultry and the South Dakota University (SDU) in the United States States of America, was established to enrich this study. The partnership evaluated clinical and environmental samples collected from affected and unaffected herds by SVA in both countries. The results of the study drive to relevant information for the development of disease prevention and control.

Laboratory

Elisa test for IBV

Embrapa, in partnership with the Federal University of Pelotas (UFPel), developed an Enzyme Linked Immunosorbent Assay (ELISA) test that allows the diagnosis of IBV (Infectious Bronchitis Virus) through the detection of antibodies produced in animals infected with the virus. The biological diagnostic test is undergoing patenting process and appears promising for routine use in laboratories that performs diagnostics for IBV.

Meat Inspection

Revision and modernization are research subjects

Among Embrapa research demands in 2016, the revision and modernization of the Official Meat Inspection Service in slaughterhouses was worked in two projects, one for swine and other for poultry. The goal is to modernize the inspection procedures ante and post mortem based in risk assessment.

After condemnation official database analysis, pork risk attribution study and legal regulation revision the swine project, started in 2015, carrying out field investigation along 2016. The focus was to determine the prevalence of microorganisms associated with foodborne diseases in carcasses surface. Currently, these diseases are the main concern about food safety. In addition, the diagnostic of pathogens involved in lesions observed by the Official Meat Inspection Service initiated in 2016 and it will continue throughout the next year.

The poultry project, which started a year later, had the activities concentrated in database analysis for risk assessment. The next step is to evaluate the prevalence of important pathogens as *Salmonella* spp. and *Campylobacter* in poultry carcasses. In this way, the research work will provide technical and scientific bases to elaborate a modernization proposal with a new set of rules for swine and poultry Official Meat Inspection.

Partnership

Consolidating operation in PR

Embrapa Swine and Poultry is one of the members of the Strategic Committee of the Joint Research and Technology Transfer Center Unity (UMIPTT) in the Southwest of Paraná state, located in the city of Francisco Beltrão. The unit is a result of a partnership, signed in May, 2016, by Embrapa, Federal University of Technology – Paraná (UTFPR) and the Agronomic Institute of Paraná (IAPAR) and it was created to aggregate competences to generate and provide technological solutions that can strengthen the production arrangement in the region. The UMIPTT will concentrate initial efforts in the dairy cattle, fruit and vegetables production and familiar agroindustry.

UMIPTT represents an important step towards the consolidation of the innovative concept of institutional arrangement that promotes the development of regional agriculture.

Embrapa Genetics

Market share in 2016

051 Laying Hen

1.700 million sold birds

11.4% related to 2015

5.6% of the national market of brown-egg laying hens

2.1 percentage points related to 2015

MS115 Boar

533 sold boars

-43.1% related to 2015

6.8% of the national market of terminal males

-5.2 percentage points related to 2015

Technology Transfer

FROM RESEARCH TO THE FARMER

Team works on actions that bring results to the countryside

The Technology Transfer (TT) area of Embrapa Swine and Poultry has worked to validate and transfer technological solutions for the development of the swine and poultry production chains. The team focuses on actions to measure the impact of these solutions, also has identified improvements and opportunities, which are used to support new projects that will meet the real needs of the sector.

One of TT's main efforts in 2016 was the consolidation of priority projects, either in progress, or in the proposition of new works. One of these activities was the Egg's Best Production Practices project, which installed Technological Reference Units (TRUs) in several farms in Santa Catarina, Rio Grande do Sul and Espírito Santo, and involved technicians and analysts in the follow-up and execution of the works.

Still in poultry production, another work that Embrapa Swine and Poultry carries out alongside the egg production chain is supported by the Technology Transfer project to attend the ATER networks that operate in the production, processing and commercialization of meat, milk and eggs in familiar agriculture Ecologically based. There are more than 30 TRUs distributed in several regions of Brazil, in partnership with the Center of Embrapa for Temperate Climate Agricultural Research (Pelotas / RS) and Cerrados (Planaltina / DF). One of these TRUs is located at Ouro, a small town in Santa Catarina, and houses about 700 birds in a free range system. This action also meets the objectives of the partnership with Copérdia, in a poultry genetic contract.

With the aim of disseminate the knowledge developed by research, the team formulate new projects, which are expected to start in 2017, to help small pig farmers to improve production and to act in niche market. One of them contributes to the improvement of the supply of safe pork through the implantation of good practices of sustainable production of pigs and the strengthening of the networks of ATER interested in these systems. Another project is about environment conservation, which will continue the action of BiogasFert, with a focus on technological solutions transfer. 2016 was also a year of articulation and formalization of partnerships, such as the renewal of contracts with Eletrosul, Gramado Avicultura, Copérdia, Biribas and Instituto Federal Catarinense.

TT and Communication team visiting the TRU at Ouro/SC

Technology Transfer Revenue - 2016

Technology Transfer - US$ 25,031.69
Foundations of Research Support - US$ 525,396.96
Contract Copérdia Swine and Poultry - US$ 530,099.48

Total TT Contracts - US$ 1,080,528.13

TT Actions - 2016

Courses	13
Booklets	14
Technical Meetings	03
Lectures	184
Seminars	40

Information Technology and Communication

ACCESSIBLE SERVICE AND INFORMATION

Software and videos brings knowledge to the public

The communication for the Technology Transfer of Embrapa Swine and Poultry has counted on diverse tools to take information to farmers. Combining content, form and technology, the production of softwares and videos has supported the actions taken by the team. In 2016, three softwares were made available: Custo Fácil - to contribute to the improvement of production cost determination, Granucalc - software used in granulometry analysis and DiagSui - that provides guidelines for veterinarians on the diagnosis of the main swine diseases. They all can be downloaded at address bit.ly/suinoseaves-applications. Another novelty, which in test phase, is the SGAS, a software for the environment management of swine farms, serving to both the farmer as to the official environmental agencies to speed up and qualify environmental licensing for the operation of the farm.

The development of softwares also includes public and private institutions. One of these cases is the Wildlife Management Information System - SIMAF, software developed by Embrapa and licensed to IBAMA, which will assist the country in the organization and implementation of a program of epidemiological surveillance and population management of wild boar in the classical swine fever free area.

Other tools easily accessible to the public are videocasts. In 2016, the following titles were made available to the public: “Planning swine production in flocks” and “Simplified spreadsheet production costs for integrated farmers”.

Also in that year, three videos of virtual tour were released, showing the differences of conventional, dark house and negative pressure poultry housing. All videos are available at www.embrapa.br/suinos-e-aves/videos.

In Ethiopia

Collaborating with egg production

Embrapa analysts were in Adis Ababa, Ethiopia, at the end of 2016, to follow up the activities developed in the project " Improving poultry production in Ethiopia through production system studies, breed characterization and implementation of improved practices". The project integrates the Africa-Brazil Agricultural Innovation-MKTPlace platform, led by the Ethiopian Institute of Agricultural Research - EIAR and Embrapa since January 2015.

The main objective of it was to visit an egg production unit that is being used as a Technological Reference Unit (TRU) for the diffusion of production techniques. Also, lectures on management, nutrition, facilities and biosecurity were presented. The program also included a visit to the Debre Zeit Research Center, which is part of EIAR.

Technical capacitation

Events congregate a thousand participants

The Technology Transfer area of Embrapa Swine and Poultry organized nine events in Concordia in 2016, hosting around 1,000 participants among farmers, students and technical personnel from agroindustries, cooperatives, public agencies, research institutions and associations representing poultry, swine and dairy production chains.

Among these, it can be highlighted the “Seminário Catarinense sobre Sistemas Integrados de Produção” (Crop-livestock-forestry Integration) and the Workshop on Technologies for Disposal of Dead Animals (TEC-DAM), both in November, which together gathered 480 people.

Also, it can be pointed out the Forum on Low Carbon Emissions, the Water Seminar, technical meetings for the evaluation of impacts and indicators of sustainability, diagnosis of diseases in swine and the workshops on rainwater harvesting, opportunities and challenges for the production of added value pork meat and egg's good production practices.

7
external events

Embrapa Swine and Poultry participated in 7 external events in 2016, among fairs, exhibitions and technical symposiums. In each event, technologies and services were presented to the public through publications, scale model and videos.

873
mentions in the press

Embrapa Swine and Poultry had 873 mentions in the press in 2016,including a citation from The Economist, one of the most influential magazines in the world, on the "development of lower fat swine breeds".

20,233
interactions

Embrapa Swine and Poultry released 226 posts in 2016, reaching a total of 498,075 people, 9,097 video views and 20,233 interactions.

1,900
students

Throughout 2016, around 1,900 students were assisted by Embrapa & Escola, a program focused on lectures made by Fritz and Toni characters, staged voluntarily by two employees. They visited 44 schools. Also in this program, Embrapa receives students in its facilities, where these characters interpret well humoured region citizens talking like German and Italian descendants about important subjects comprising environment and sustainability.

1,708
calls

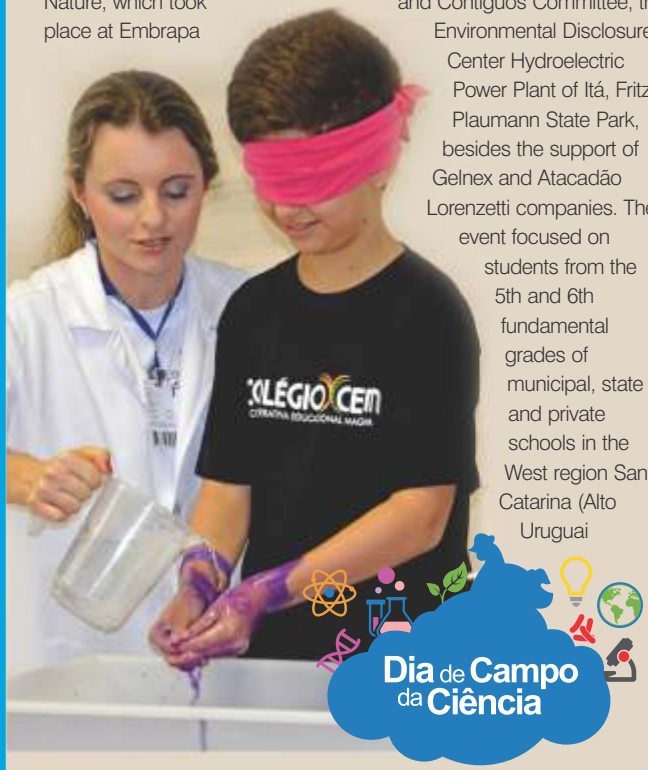
The Service of Attention to Citizen (SAC) received 1,708 calls in 2016. The requests were made by email, telephone, letter and social media.

Communication

SCIENTIFIC REACHING YOUNG STUDENT

The event counted with the presence of 780 students

"A tour through environmental and scientific world"was how some students and teachers described the second edition of Science Field Day: The Child and Nature, which took place at Embrapa Swine and Poultry from 4th to 6th October. The event was organized by Embrapa and Lambari Consortium, with the partnership of the Rio Jacutinga and Contiguos Committee, the Environmental Disclosure Center Hydroelectric Power Plant of Itá, Fritz Plaumann State Park, besides the support of Gelnex and Atacadão Lorenzetti companies. The event focused on students from the 5th and 6th fundamental grades of municipal, state and private schools in the West region Santa Catarina (Alto Uruguai Catarinense).



A total of 780 students from 34 schools, accompanied by teachers, joined the event. Out of 16 cities in the region, 14 were present. The event was organized as a Field Day, following the theme of the National Week of Science and Technology: "Science feeding Brazil". The students visited five different stations. At the Poultry and Swine Science Station the topic was egg and pork quality. The presence of bacteria in food and in human body was discussed at the Laboratory Science Station. At the Science in the Environment Station: Native Fruit Species, the students learned about several native species of the region and how to plant them. Alternatives for home gardens were presented in the Environmental Science Station: Agroecological Alternatives to Control Pests and Diseases. Also, there was a station called Environment Science: Monitoring of Water Quality, where the focus was on techniques for water monitoring.

Scientific Research for University Students

JINC is a featured science

JINC is an event dedicated on the discussion of science and research, with a focus on scientific initiation and disseminating and valuing the knowledge generated in educational institutions. The event was organized by Embrapa Swine and Poultry and the University of Contestado (UnC), with support from the Federal Institute of Santa Catarina – Concórdia Campus. This event is part of the National Week of Science and Technology in Concórdia, Santa Catarina state.

The students are encouraged to submit papers about any knowledge area, which are analyzed by a Scientific Committee and presented in the form of oral and poster communications.

In the day of the event there is an opening speech with a professional from one of the research areas covered by the event. In 2016, JINC took place on October 18, and the opening lecture was "The Challenges of Scientific Publicity in the 21st Century", given by Professor Sônia Bertol, from the University of Passo Fundo-RS. After, 97 posters approved by the Committee in this JINC edition were presented. From this amount, 20 were selected for oral presentation.

Jinc 10 anos
Jornada de Iniciação Científica

Embrapa

Personnel Management

EVENT MOTIVATES CREATIVITY AND TALENT

Integration and fun are the highlights of the Talent Show

The fifth edition of Embrapa Swine and Poultry Talent Show was held at the end of August, at the closing of the 40th Internal Week for Accident Prevention and 15th Life Quality Week. Traditionally, the event takes place every two years and employees, trainees, collaborators and family members can be registered in different artistic modalities that suits them best and better represent their talent or skill, such as vocal and instrumental music interpretation, plastic arts, photography, staging and artistic interpretation, literary tales, poems, jokes, group or individual dances.

The Organizational Communication Area is responsible for assembling the event. Each year, they use a well known TV series as model, where they mimic different characters and the audience join the spectacle. More than 35 employees and collaborators went up the stage.The Talent Show started in 2009 and its objective is to integrate internal staff.

Administration and laboratory employees acting on the stage.

Internal Campaigns
Health in focus

Embrapa Swine and Poultry carried out two important campaigns to stimulate health practices among its employees. Women walking was one of them, followed by stretching and circular dancing, to mark breast cancer awareness during Pink October. A video was also presented, which included personnel testimony from co-workers who overcame the disease. Then, on November 18, it was the turn of the men walking. Prostate cancer awareness actions were during that month, called Blue November, which is marked by men health campaigns.

Professional qualification in 2016

- **61** events
- **552** participations
- **5,085** hours
- **US$ 25,082.56** in investment

Training
Fire fighting

During the 40th Internal Accident Prevention Week, it was organized a fire-fighting training, which consisted in explaining how to perform workplace evacuation in case of an emergency. The instructions were given by members of the Accident Prevention Internal Commission and by voluntary firefighters from Concordia city.

Public Health
Actions against *Aedes aegypti* mosquito

Adhering to the national campaign to combat *Aedes aegypti*, Embrapa Swine and Poultry carried out several actions in order to alert its employees and nearby residents of Embrapa.The first action was the internal mobilization to verify possible sites of mosquito development, where all employees and trainees worked as a task force. Seminars and an internal campaign through e-mail were also part of the taken actions.

Complementary actions focused on the surrounding community, in the District of Tamanduá, where the headquarters of Embrapa is located. At the end of the afternoon of March 31, members of this Community visit Embrapa to attend a lecture on Aedes aegypti, presented by Embrapa employees. Also in the nearby communities, lectures to residents, including elderly and youth, took place, and visits to the surrounding cemeteries and community houses were taken in order to identify possible places of mosquito development and providing orientation regarding the diseases transmitted by mosquito: dengue, zika and chikungunya.

Information Management
Safety in question

Information Security is a serious matter all over the world. For this reason, the National Network of Teaching and Research, through its Security Incident Response Center, defined October as the month of Information Security in Brazil. A series of events were scheduled during the month in all branches of Embrapa all over the country. At Embrapa Swine and Poultry, the actions included, in addition to communication insertions in internal publication and personal e-mails, lecture/training with Jackson Laskoski, specialized in Computer Network Administration and Applied Informatics to the Business Environment.

In Embrapa Swine and Poultry, actions are done by a Local Committee, which has been formally constituted in 2015 and has been establishing improvements in the following areas: information technology infrastructure, physical infrastructure, documents and personnel.

Education
Embrapa has young apprentices

In 2016, Embrapa Swine and Poultry hired 5 young apprentices, who work in the offices of poultry and swine farms, in the laboratory of Animal Health and Genetics and in the Supply Sector. The Young Apprentice is a technical-professional program that provides theoretical and practical activities under the pedagogical guidance of a qualified entity in professional technical training. In the case of Embrapa, this assistance is done by the Integration Center Company School of Santa Catarina state.

Investments
US$ 441 THOUSAND IN INFRASTRUCTURE

Priority was the revitalization Suruvi Experimental Station

Although 2016 was another year with strong financial restriction for Embrapa Swine and Poultry, it was possible to apply US$ 441,006.45 (R$ 1,391,816.39) in constructions and investments. That was three times more the amount when compared to 2015 (US$ 139 thousand), but half of investments made in 2014 (US$ 909 thousand).

The improvements in the Suruvi Experimental Station were established as a priority.The area, located nine Km from Embrapa headquarters, comprises 34.5 hectares with 12 poultry houses (around 6,000 m²) and it was utilized for research and poultry rearing until the end of 2010.

The investments in Suruvi Experimental Station reached US$ 392,823.29 (99% of the total amount for 2016) that will be used for renovation and constructions of entrances, aviaries, composting and logical network. It is included, also, the execution of the electric project, with an electric power substation (112 kVA), measurement on demand (low voltage) group to group, diesel electric power generation motor and power factor automatic compensation (US$ 44 thousand). The Suruvi Experimental Station will host the Embrapa's poultry genetic conservation nucleus.

The Embrapa Swine and Poultry infrastructure sector also received a dump trailer (US$ 3.7 thousand) that can be connected to a tractor to be used for transportation.

INVESTIMENTS - 2016	US$
Renovation and constructions of entrances, aviaries, composting and logical network in Suruvi Experimental Station	392,823.29
Execution of the electric project of Suruvi Experimental Station	44,412.56
Dump trailer	3,770.60
TOTAL	**441,006.45**

International

VISITORS FROM USA, EUROPE AND ASIA

Among activities, partnership in research projects

In 2016, Embrapa Swine and Poultry continued its policy to sustain international collaboration through encouragement of collaborative studies and development of joint proposals. The company hosted researchers, representatives of government and companies, professors and students from abroad.

In March, the director of South Korea's National Institute of Animal Sciense (RDA), Dr. Bohsuk Yang, and the researcher Dr. Joonki Hongreally from the swine industry were hosted at Embrapa. During their visit it was discussed possible arrangements involving collaborative studies between institutions. They also presented a seminar on technology innovation in animal biotechnology and its applications and benefits human health.

Additionally, these same researchers presented Korean strategy to define Innovation and technology transfer and the development of local and traditional market in Korea. Two other international seminars were held in May. The first, with University of Nebraska vice-president Dr. Deb Hamernik, addressed the subject "University of Nebraska and Embrapa: opportunities to work together". Then, Dutch researcher Dr. Rika Jolie, global technical director of MSD Animal Health, who presented the trends for swine vaccines. In august Embrapa hosted a scientist from USDA expert in soils, Dr. Ariel Szogi, who presented a seminar showing lines of the research being conducted in the Northeast of the United States of America, more specifically in North Carolina. At the end of October, Embrapa hosted Dr. David Gerrard, from Virginia Tech University (USA), who made a technical visit and presented a seminar in the area of animal genomics. In December, researchers and technicians from Córdoba, Argentina, visited our institution to learn about research topics that are in progress at Embrapa in areas such as biogas, composting, soils and the destination of dead animals.

Lastly, 32 students from the Department of Geography from the University of Innsbruck, Austria came to Embrapa to learn about Brazilian swine and poultry industries.

Cooperation

NAI wants to go international

The International Articulation Group (NAI) of Embrapa Swine and Poultry is responsible for prospecting, disseminating and conveying opportunities for collaboration abroad. In 2016, NAI submitted four international proposals and joined the FAO-Leap (Environmental Performance of Swine Supply Chains) as well as the United Kingdom (Biogas Innovation Center). During these visits, NAI established three memorandum of understanding with US institutions, United Kingdom, and Mexico. In order to strengthen Embrapa Swine and Poultry recognition as a research institute and thus to call the attention of important international players, NAI faces the challenge to continue its role of being proactive into foster opportunities in new bilateral demands that are of significance to company strategies.

Global costs

InterPIG meeting in Spain

Since 2008 Embrapa Swine and Poultry represents Brazil at InterPIG, a global network of research institutions, representative associations, universities and consultors from main swine producer countries, where production costs are discussed and analyzed. In 2016 the meeting was held in Mataró, Spain. The results are available at CIAS site (www.embrapa.br/suinos-e-aves/cias). Still in Spain, Embrapa participated in the Agri Benchmark Pig conference, showing the market situation and future prospects.

Wildlife

Researcher is OIE focal point

The researcher Virgínia Silva began to exercise in 2016 the function of focal point for wild animals with the World Organization for Animal Health (OIE). The primary responsibility was to create and maintain a network of information on the health of animal wildlife, involving various institutions and professionals working in the area, providing the global information system for animal health (WAHIS / OIE) and subsidizing the Animal Health Department to adopt measures and policies to preserve animal health in the country. Virgínia leads the project "Structuring a program of epidemiological surveillance and population management of feral swine (*Sus scrofa*) in the classical swine fever free area", known as the Javali project, held since 2012.

Biosecurity

Lanagro and CTNBio partnerships

The general concepts and the commission biosecurity, in addition to of experiences in the implantation of the OIE Reference Laboratory for Avian Influenza and Disease of Newcastle were the themes of a seminar and meetings of the Lanagro officers (Official Laboratories of MAPA), with the of the Avian Health Thematic Nucleus of Embrapa Swine and Poultry, in November. They also met to discuss possibilities of partnership validation areas in identification methods of salmonella and the production of biological reference inputs for Newcastle disease and Avian Influenza.

TEC-DAM

Congressman knows the project

In November, the Congressman Valdir Colatto (PMDB-SC) visited Embrapa Swine and Poultry to know more about the research under development in Concórdia. The main interest in his visit was the TEC-DAM project that is studing the destination of dead animal carcasses. Congressman Colatto, who belongs to Environment, Sustainable Development and Agriculture, Livestock, Food Supply and Rural Development Commissions in 2016, also visited the experimental facilities of Embrapa Swine and Poultry.

Awards

TEAM RECEIVED SIX PRIZES IN 2016

Two honors were made to individual researchers

In April, Dr Everton Krabbe received during the fair AveSui, in Florianópolis-SC, the prize "Technical personality of swine industry", granted by Gessulli Agribusiness for his contribution on the development on Brazilian swine industry development.

The scientific works "Effect of algae oral administration on laboratory rats" and "micro-algae extract Acude toxicity on laboratory rats", with the participation of Dr Alexandre Mathiensen, conquered the first prize in the III Agrarian Science and Biological Science Scientific Show of the Missões Regional Integrated University (URI Erechim-RS).

Dr Rejane Schaefer in the XXVII Brazilian Congress of Virology that was held in Pirinópolis-GO presented the paper Genetic characterization of influenza viruses circulating within Brazilian swine between 2009 and 2016 and received the prize of best oral presentation. In October, during PorkExpo, Dr Osmar Dalla Costa received the prize ¨Best of Swine Industry 2016" granted by the magazine Pork, category "Researcher". The prize highlights the best representatives of Brazilian swine industry.

The scientific paper "Tetracycline compounds interference and persistence in co-digestion of animal manure and cellulosic wastes", from Dr Ricardo Steinmetz, Dr Vanessa Gressler and Dr Airton Kunz, won the prize best paper presented as poster on XII Latin American Workshop and Symposium on Anaerobic Digestion in Cusco, Peru. In November, during Avisulat, in Porto Alegre-RS, the paper "Domestic maize supply: necessity for intelligence systems for stock monitoring", from Dr Jonas dos Santos Filho, Dr Gerson Scheuermann, Dr Dirceu Talamini and Dr Teresinha Bertol received the award in the category agribusiness.

Appointment

Researcher integrates Embrapa Strategy Governance Committee (SGC)

The researcher and General Director of Embrapa Swine and Poultry, Dr Janice Zanella, was appointed to the Embrapa Strategy Governance Committee (SGC), in October. The SGC is a consultative collegiate board, part of the Embrapa Governance System (EGS), established to advise the Executive Board on monitoring the strategic focus, identifying relevant information from its external and internal environments, integrating this knowledge and making available strategic orientations for its agents in research, development, innovation and technology transfer and institutional management.

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Embrapa

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