

## DESCRIPTION OF MEAT PRODUCTION IN SOUTH AMERICA

ROMÁN A.V., LUKEŠOVÁ D., NOVÁK P., ŽIŽLAVSKÝ M.

### *Abstract*

*Increasingly, areas meat production in South America is being transformed into a mosaic of human dominated land uses with cattle and pig livestock meat production. Different professionals may debate in years to come whether or not there was such a thing as the "Green Revolution" in South America in the late twentieth century. Certainly, the high profile of environmental issues in the 1980s and 1990s has been tempered by new public issues such as zoohygiene and transport safety. However, if we scratch the surface, we will find that the environment is still the key issue and that any reduction in public pressure is partly based on a belief that something is now being done. Even the new concerns of food security reflect on how we manage the environment and not least of all how we manage agricultural wastes within the environment as epidemiological studies show. Whether it is irrigation of river water onto salad crops or the need to spread manure on tolerable land, the link between poor practice and contamination is all too clear. The message remains the same; we neglect our environment at our peril as poor practice and a deteriorating environment will eventually come back to haunt those who dismiss necessary measures in favor of other short-term benefits.*

**Key words:** Production system, meat production, monogastric, polygastric, zoohygiene, Colombia.

### INTRODUCTION

Environmental research continues across South America albeit at a less frantic pace, although some issues still remain to be resolved. National programs share much in common reflecting a similar concern about the environment in many countries (Loughlin & Barlaz, 2006); not surprisingly, this has been reflected in research programs commissioned by the treated of, MERCOSUR, ALCA, NAFFTA, which seek common solutions for the whole of South America (Grugel, 2004). However, there are differences at the national level (and even the local level) that imply that universal solutions are unlikely to work equally effectively across South America unless there is some degree of flexibility. It may be better to look at objectives or targets rather than to rely on specific measures (Mattli, 2005). And so arise the purpose for collaboration in which benefits can be drawn by all working together in areas of common interest to understand the South America-wide nature of the problem. This is the case with livestock manures and the use of treatment in their management, the subject of this revise article.

A large, modern and successful livestock industry is an important feature of all South America countries. Not surprisingly, many of the problems in satisfactorily derailing with the large amounts of manure produced as an inevitable by-product from this industry occur in the same countries as well. However, the focus of this communication and the South America-sponsored collaboration that has led to its production go further than issues of good farming practice (Gonzales, 1990). The pressures on farming are increasing and in some cases, existing methods are not enough by themselves to adequately deal with the environmental problems

arising from livestock manure. This had led increasingly to the option of treatment being considered. The layout of this communication has been arranged as two chapters following this introduction. It ends with the main findings presented in the conclusions. Before any treatment system can be considered, it is important to understand the context of livestock farming at present and the associated treatment systems Chapters 1 and Chapter 2 are given over to reviewing the descriptions of systems in South America can be spread by wastes and the risks that they present to livestock and the general public.

#### **1. Treatment systems: for profit or loss?**

There should be no doubt that there can be tangible benefits from the good management of livestock manure (Webb, Menzi & Pain, et. al., 2005). In some cases, a financial value can be ascribed to this such as energy savings from the use of generated biogas, sales of organic by-products or reduced purchases of inorganic fertilizer (Vaña, Muñoz & Havrland, 2005). However, it remains unlikely that treatment systems can fully pay for themselves especially if all related costs are included. A financial reward to the farmer is sometimes implied with biogas plants and indeed a net earning of money can be demonstrated. However, this is often only possible with grants to support the initial capital investment and a high valuation of the electricity generated. Furthermore, in such calculations it is tempting to overlook a host of related costs such as labor charges and land value as they often do not cause an actual cost to the farm. (Muñoz & Havrland, 2004)

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As a rule, any treatment package thought be seen as bringing an overall financial charge: to the farmer. This can be expressed as a charge per animal produced or, more specifically, a percentage of the earnings per animal. It follows that there will be a limit to the manure management measures that farmers can afford while remaining competitive. Admittedly, these costs can be partly defrayed by some of the benefits achieved thus bringing the net charge down perhaps to a more affordable level. Nonetheless, it will remain in most cases that justification for use of a treatment system will primarily be based on pressure from environmental regulations and support by grants, rather than from any financial incentive to gain a return. The initiative for the promotion and enabling of such environmental technology will thus continue fall to local authorities and national governments.

### ***The systems classification aims at:***

- Delineating and defining elements of a classification of livestock production systems.
- Quantitatively and qualitatively describing each livestock production system in terms of feed and livestock resources livestock commodities produced; production technology; product use and livestock functions; area covered; geographic locations; and human populations supported.
- Providing insights into the importance of livestock systems across world regions and agro-ecological zones and related trends in order to provide orientation to decision-makers involved in livestock development.

## **2. Description of systems**

This section provides a summary of each system, with quantitative estimates of the magnitude of the resources involved in each system defined, together with the major outputs and a set of productivity indices. This information is supplemented by a brief description of the main features of each system as well as the development paths along which these systems are evolving.

### **2.1 Landless livestock production systems (LL)**

The developed countries dominate the picture of landless intensive production with more than half of total meat production as shown in Chart 1. Brazil is already contributing some 76 percent and Colombia 5,6 percent, with the latter recently in sharp decline.

### **2.2 Landless monogastric production system (LLM).**

This system is defined by the use of monogastric species, mainly chickens and pigs, where feed is introduced from outside the farm, thus separating decisions concerning feed use from those of feed production, and particularly of manure utilization on

fields to produce feed and/or cash crops. This system is therefore open in terms of nutrient flow.

Landless monogastric systems are found predominantly in South America countries with 58 percent of the total population in landless monogastric and 42 percent of the landless pork Chart 2. In the case of pig production, Colombia is ninth, with 2 percent of the South America total. To a large extent, this geographic distribution is determined by markets and consumption patterns in addition to levels of urbanization.

The prerequisites for development into large-scale vertically integrated production include the use of appropriate breeds and strains, feed quantity and quality, housing and disease control, as well as assured markets both at home and abroad. Globally, landless monogastric production and pork production systems account for the majority of the output in developed countries and their share is rapidly increasing in developing countries given their high supply elasticity in the short term. The system is typically competing with traditional land-based production systems for shares in the urban markets. It must be kept in mind that poultry and pork are close substitutes for beef and mutton, thus also interacting with the ruminant systems. In a broader sense, the demand for cereals created by these systems is also competing for land resources with land-based ruminant systems.

### **2.3 Grassland-based livestock production systems (LG)**

The importance of grassland-based systems in different South America regions is shown in Chart 3. Brazil dominate the Chart in terms of cattle meat production, together accounting for more than two-quarters of the South America's production and Colombia only 5 percent.

#### **2.3.1 Temperate zones and tropical highlands grassland-based system (LGT).**

In these areas, the grazing system is constrained by low temperatures. In the temperate zones, there are one or two months of mean temperatures, corrected to sea level, to below 5°C, whereas in the tropical highlands daily mean temperatures during the growing period are in the range of 5° to 20°C. Locations in the tropical highlands comprise parts of the highlands of South America.

#### **2.3.2 Humid and subhumid tropics and subtropics grassland-based system (LGH).**

The LGH system is defined as a grazing system found in regions with more than 180 days of growing period. It tends to be concentrated more in the subhumid zone, particularly in regions where access to markets or, for agronomic reasons, crop production is limited. By definition, only very limited cropping is considered for subsistence. The LGH system is found mostly in the tropical and subtropical lowlands of South America: in the llanos of Colombia and Venezuela as well as in the

cerrados of Brazil. Dual-purpose milk-beef systems in Argentina is also typical cases of this system. The subhumid and humid regions, cattle are clearly the dominant species, and in very high rainfall areas, such as the Amazon River. In the subtropics, wool sheep are an important component of the system, for example, in Brazil, Argentina, Colombia. The system is predominantly market-oriented. Improvements in road infrastructure and new technologies to allow the establishment of pastures with commercially worthwhile nurse crops are making the ley farming systems, involving rotations of crops and pasture, a potentially attractive pathway into mixed-farming systems (Thomas et al., 1992).

### CONCLUSIONS

Livestock industry (especially pig and cattle meat production) in South America is concentrated in Brazil characterized by Landless monogastric production systems (LLM) and Grassland-based livestock production systems (LG).

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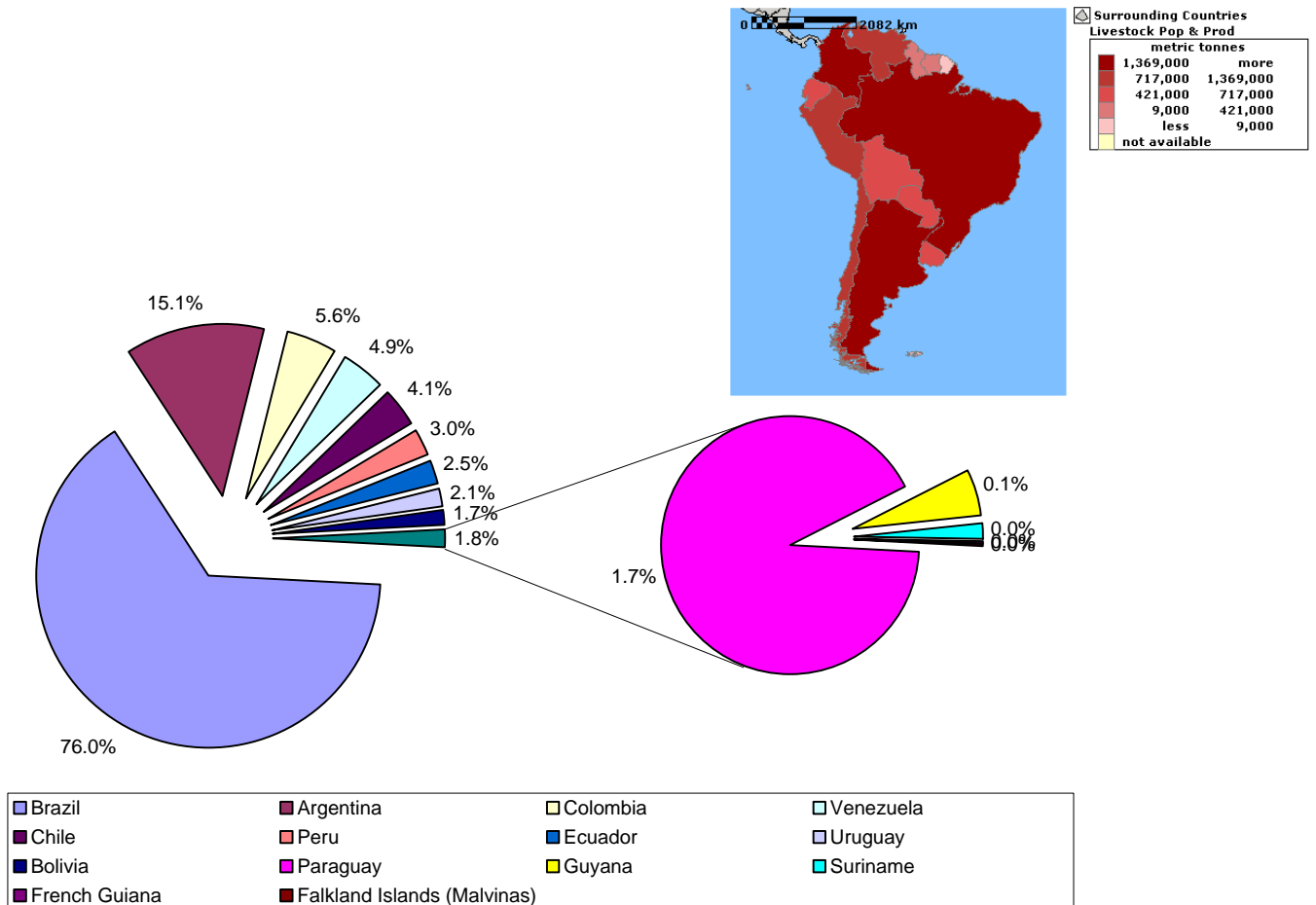
Corresponding author:

**MSc. Román A.V.**

Czech University of Life Sciences Prague  
Institute of Tropics and Subtropics  
Department of Animal Science and Food Processing in Tropics and Subtropics.  
165 21 Prague 6 – Suchbátka, The Czech Republic  
E-mail: andrey@itsz.czu.cz;  
andreyroman@hotmail.com

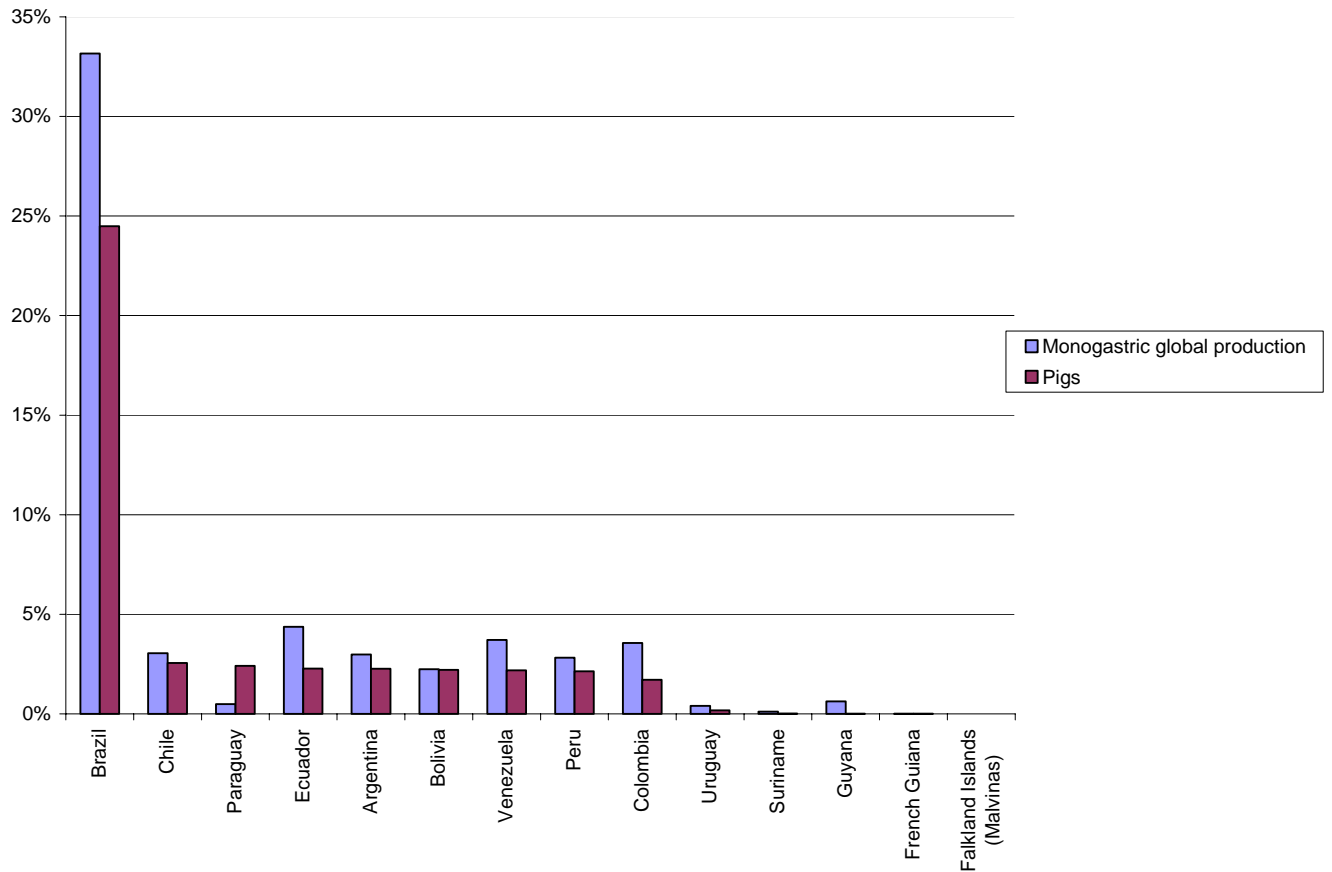
Chart References

Chart 1. All livestock production meat of South America in 2004\*



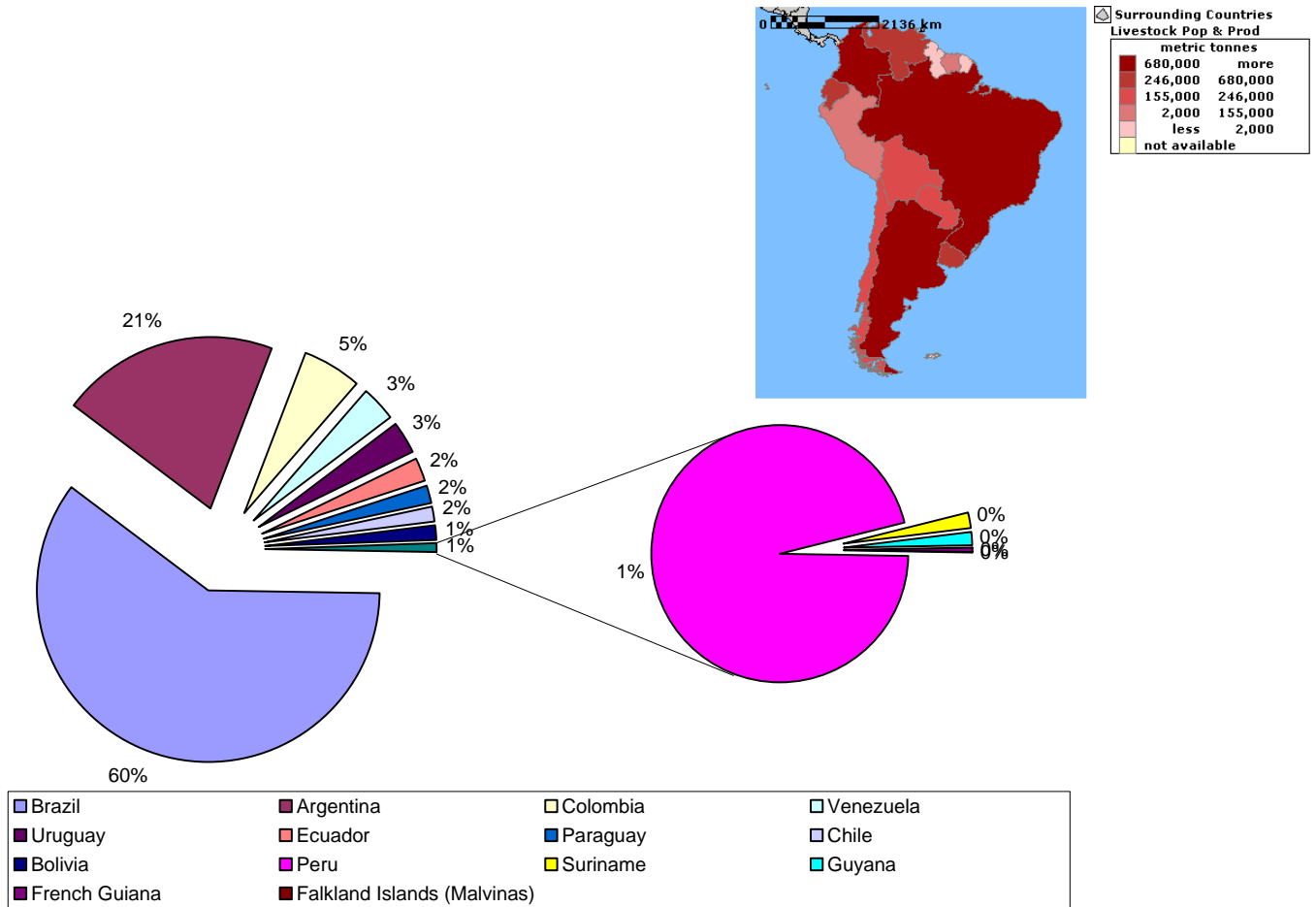
\*Source: from GLIPHA 2006. [www.FAO.org](http://www.FAO.org). (Adjusted by Author)

**Chart 2.** Landless monogastric meat production system [in South America](#) in 2004\*



\*Source: from GLIPHA 2006. [www.FAO.org](http://www.FAO.org). (Adjusted by Author)

**Chart 3.** Total cattle meat production of South America in 2004\*



\*Source: from GLIPHA 2006. [www.FAO.org](http://www.FAO.org). (Adjusted by Author)