Health and Production of Greek Organic Pig Farming: Current situation and perspectives

PAPATSIROS (Β. ΠΑΠΑΤΣΙΡΟΣ) V.
Clinic of Medicine, School of Veterinary Medicine, University of Thessaly

TASSIS (Π.Δ. ΤΑΣΣΗΣ) P.
Farm Animal Clinic, School of Veterinary Medicine, Aristotle University of Thessaloniki

CHRISTODOULOPoulos (Γ. ΧΡΙΣΤΟΔΟΥΛΟΠΟΥΛΟΣ) G.
Clinic of Medicine, School of Veterinary Medicine, University of Thessaly

BOUTSINI (Σ. ΜΠΟΥΤΣΙΝΙ) S.
National Reference Laboratory for Parasites, Center of Athens Veterinary Institutions, Ministry of Rural Development and Food

TSIRIGOTAKIS (Γ. ΤΣΙΡΙΓΩΤΑΚΗΣ) G.
Farm Animal Clinic, School of Veterinary Medicine, Aristotle University of Thessaloniki

TZIKA (Ε. ΖΗΚΑ) E.

https://doi.org/10.12681/jhvms.15396

To cite this article:

PAPATSIROS (Β. ΠΑΠΑΤΣΙΡΟΣ), V., TASSIS (Π.Δ. ΤΑΣΣΗΣ), P., CHRISTODOULOPoulos (Γ. ΧΡΙΣΤΟΔΟΥΛΟΠΟΥΛΟΣ)
Health and Production of Greek Organic Pig Farming: Current situation and perspectives

Papatsiros V.G. 1, DVM, PhD, Tassis P.D. 2, DVM, PhD, Christodouloupolou G. 1, DVM, PhD, CertSHP, DipECBHM, DipECSRHM, Boutsini S. 2, DVM, PhD, Tsirigotakis G. 3, DVM, MBA, MPH., Tzika E.D. 3, DVM, PhD, DipECPHM

1Clinic of Medicine, School of Veterinary Medicine, University of Thessaly, Greece
2Farm Animal Clinic, School of Veterinary Medicine, Aristotle University of Thessaloniki, Greece.
3National Reference Laboratory for Parasites, Center of Athens Veterinary Institutions, Ministry of Rural Development and Food, Greece

ABSTRACT. For many years, outdoor pig farming has been one of the most important livestock production sectors in Greece. Since the 1960s, the introduction of high-yielding pig genotypes, under intensive production systems, has replaced almost to disappearance the traditional -based on the native pig breed- outdoor pig farms.

Organic pig production systems in Greece are growing in popularity over the last years due to the increasing interest of consumers for organic products. The National Greek projects for organic pig farming started in 2002 and since then it has increased, representing the 15% of total organic livestock production in 2007. According to the Directorate of Organic Agriculture in the Ministry of Rural Development and Food, the development of organic pig farming industry in West Greece, Thessaly and North Greece was impressive from 2002 to 2007. A significant but more gradual development of organic pig farming was seen in the island of Crete, while insignificant development was observed in the Central Greece. The development of organic pig farming especially in the Northern part of the country started from 2003-2004 onwards.

Short communication

Correspondence: Dr Vassilis Papatsiros
Clinic of Medicine, School of Veterinary Medicine
University of Thessaly, Greece 224, Trikala str., GR 43100, Karditsa, Greece
Tel.: 00302441066012, Fax: 00302441066053
E-mail: vpapatsiros@vel.uth.gr

Submission date: 01.02.2012
Acceptance date: 11.04.2012

Δημοσίευση: Σύντομη δημοσίευση

Correspondence: Dr Βασίλειος Παπατσίρος
Παθολογική Κλινική, Τμήμα Κτηνιατρικής, Πανεπιστήμιο Θεσσαλίας
University of Thessaly, Greece 224, Trikala str., GR 43100, Karditsa, Greece
Tel.: 00302441066012, Fax: 00302441066053
E-mail: vpapatsiros@vel.uth.gr

Δημοσίευση: Σύντομη δημοσίευση

Correspondence: Dr Vassilis Papatsiros
Clinic of Medicine, School of Veterinary Medicine
University of Thessaly, Greece 224, Trikala str., GR 43100, Karditsa, Greece
Tel.: 00302441066012, Fax: 00302441066053
E-mail: vpapatsiros@vel.uth.gr

Δημοσίευση: Σύντομη δημοσίευση

Δημοσίευση: Σύντομη δημοσίευση
ΠΕΡΙΛΗΨΗ. Για χιλιάδες χρόνια, η υπαίθρια εκτροφή χοίρων υπήρξε ένας από τους πιο σημαντικούς τομείς της οικόσιτης ζωικής παραγωγής στην Ελλάδα. Από τη δεκαετία του '60, η εισαγωγή χοίρων υψηλού γενετικού δυναμικού για τις ανάγκες της βιομηχανικής κτηνοτροφίας έχει οδηγήσει στην εξάλειψη της παραδοσιακής υπαίθριας εκτροφής χοίρων, προκαταρκτίζοντας ένα σημαντικά διαφορετικό σκηνικό για την ανάπτυξη και τις προοπτικές της βιολογικής εκτροφής χοίρων στην Ελλάδα.


Οι αυξημένες επιδοτήσεις για τη βιολογική κτηνοτροφία στην Ελλάδα, τα τελευταία χρόνια, παρουσιάζουν σημαντικό ανάπτυξης λόγω του αυξημένου ενδιαφέροντος των καταναλωτών για προϊόντα από αυτόχθονες εγχώριες φυλές χοίρων.

This report aims to present updated information about the health status, production and development of organic pig farming in Greece during the last decade, as well as the potential of this particular productive activity for future development.

Keywords: organic farming, pig farming, pork meat, consumer, Greece
Organic pig farming in Greece

INTRODUCTION – HISTORY

Organic animal farming is directly related to organic plant production because the nutritional needs of animals other than grazing are covered with organic feed. Greece has many comparative advantages in comparison to other countries in terms of organic farming, due to favorable pedo-climatic conditions, rich natural ecosystems in mountainous and semi-mountainous areas, as well as rich biodiversity of plant life (with a significant number of endemic plants in different geographical districts).

For thousands of years, outdoor pig farming has been one of the most important livestock production sectors in Greece. Since the 1960s, the introduction of high-yielding pig genotypes, under intensive production systems, has replaced almost to disappearance the traditional outdoor pig farming, that was based on the native pig breed. Organic pig production in Greece is growing in popularity over the last years due to the increasing interest of consumers for products considered as traditional or "naturally produced". The National Greek funding projects of organic pig farming started in 2002. The contribution of organic pig farming in total Greek organic livestock farming was minimal until 2004, but since then, it has been increased, representing the 15% of the total organic livestock production as it is shown in Table 1.

Initially, producers from West, Central and North Greece, and the Island of Crete joined the first Governmental projects in 2002. According to the statistic data of the Directorate of Organic Agriculture in the Ministry of Rural Development and Food (DOA 2012), the development of organic pig farming industry in West Greece, Thessaly and North Greece (Central Macedonia) was impressive from 2002 to 2007 (Table 2). Also, there was a significant gradual development of organic pig farming in Crete, and insignificant increase the rest – outside Thessaly- Central Greece. Since 2003-2004, the development of organic pig farming was remarkable in North Greece, especially in Central and West Macedonia, as well as in East Macedonia and Thrace (Table 2, Figure 2). Data referring to number of organic pigs in Greece are shown in Table 3, suggesting that the total the number of organic pigs increased significantly during the years 2006-2007. However, a significant reduction has been noticed since 2008 (Table 3, Figure 1), mainly due to the National funding cuts for organic pig farming, as well as the increase of feeding expenses. The prices of organic feedstuffs have increased remarkably during the last three years. Moreover, in many cases the training and specialization of organic pig farmers and their investments on modernization and equipment / housing facilities were insufficient, resulting in animal health problems, poor growth performance, poor carcass quality and high-cost production.

Genetic, diets, health problems!

Swine breeds used in the Greek organic pig farm-

| Table 1. Number of organic (free range) animals from 2002 to 2010 in Greece. |
|---|---|---|---|---|---|---|---|---|---|---|
| Animals | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
| Pigs | 1.288 | 3.628 | 4.469 | 126.003 | 110.096 | 175.004 | 60.918 | 54.631 | 42.991 |
| Sheeps | 56.374 | 95.824 | 133.619 | 216.897 | 259.275 | 408.576 | 316.243 | 357.499 | 288.923 |
| Poultry | 46.553 | 70.004 | 68.386 | 144.108 | 133.852 | 159.323 | 239.452 | 266.182 | 368.689 |


http://epublishing.ekt.gr | e-Publisher: EKT | Downloaded at 11/03/2021 13:39:49 |
ing are types of Greek domestic swine and various domestic pigs derived from crossbreeding between male Greek domestic pigs and improved breeds, such as Large White and Landrace.

According to the legislation in force about organic pig farming, all animals should originate from organic farms, except the cases that are required to renew the herd, so it is allowed to entrance conventional pigs in a percentage of 20% or in a percentage of 40% in cases of increasing the capacity or of changing of breeding stock. Therefore, the different Greek domestic swine breeds (which still exist up today in many mountainous areas) can be the initial breeding stock (sows and boars) of organic pig farms, that after a short period of just 4 months, could be a grandparent nucleus of sows which will be kept in the farm for producing its own organic gilts (Papatsiros 2011). In organic pig farming, organic feed have to be used, preferably from the same unit or another organic unit. However, it can be used to 30% transition feed, except where the feed from the same farm where the percentage is until 100%. Therefore, the function pig units, which produce their organic feed, could contribute significantly to securing the required quantities of feed and at the same time reducing production costs.

The most common health problems in Greek organic pig farming are respiratory problems, gastrointestinal problems, claw and skin problems, parasitic infections and high piglet mortality. The housing condition of organic farming may predispose animals to various infectious micro-organisms, which are rarely an issue for indoor intensive production systems where strict hygienic measures are taken (Papatsiros 2011).

High piglet mortality is observed in suckling and weaning piglets, mainly due to skin traumas or crushing of piglets by the sow, as well as diarrhoea syndromes. Moreover, respiratory diseases, arthritis and endoparasites are also frequent health problems in weaned pigs. Diarrhea syndromes in weaned pigs are caused by *Escherichia coli*, *Clostridium perfringens* infections and parasites, related hygiene of outdoor or indoor areas. In addition, respiratory problems in growing and finishing pigs, usually with pneumonia signs, are caused mainly by *Mycoplasma Hyopneumoniae*, *Actinobacillus pleuropneumoniae* and Porcine Reproductive and Respiratory Syndrome Virus (PRRSV) infections (Papatsiros 2011).

Leg problems (lameness, hoof injuries and abscesses), reproductive disorders (variations in litter size and
Abortions or returns-to-oestrus) and poor body condition are common health problems in sows. Genetic factors, diseases, ground condition in outdoor areas and mating management (increased social activity resulting in trauma) are the main risk factors for lameness in sows. Poor mating management regarding oestrus and pregnancy testing, synchronisation of oestrus in sow batches and poor body condition are regarded as important risk factors for reproductive problems in the herd. Similar findings are referred from other studies in organic pig farms in Europe (Feenstra 2000, Vaarst et al. 2000, Kampshof and Steverink 2001).

Parasite infections from Sarcoptes scabei, Trichuris suis and Ascaris suum are very common in Greek organic pig farms. Studies have shown high prevalence of helminth infestations in organic outdoor pig production (Roepstorff et al. 1992, Carstensen et al. 2002). Another important risk factor in organic pig production is the frequent contact with rodents. Rodents are tank of several pathogens, some of which are hazardous to public health, such as Trichinella spp, Toxoplasma gondii, Salmonella spp, Campylobacter and Leptospira.


<table>
<thead>
<tr>
<th>Region / Prefectures</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>West Greece</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aitolokarnania</td>
<td>1.367</td>
<td>7.624</td>
<td>8.338</td>
<td>9.437</td>
</tr>
<tr>
<td>Achaia - Itea</td>
<td>178</td>
<td>157</td>
<td>157</td>
<td>160</td>
</tr>
<tr>
<td><strong>Thessaly</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Larissa</td>
<td>1.093</td>
<td>4.437</td>
<td>5.812</td>
<td>4.676</td>
</tr>
<tr>
<td>Trikala</td>
<td>93</td>
<td>927</td>
<td>882</td>
<td>1.168</td>
</tr>
<tr>
<td>Karditsa</td>
<td>-</td>
<td>803</td>
<td>863</td>
<td>234</td>
</tr>
<tr>
<td><strong>North Greece</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thessaloniki</td>
<td>345</td>
<td>2.152</td>
<td>2.870</td>
<td>3.583</td>
</tr>
<tr>
<td>Chalkidiki</td>
<td>98</td>
<td>2.527</td>
<td>2.083</td>
<td>1.691</td>
</tr>
<tr>
<td>Serres</td>
<td>72</td>
<td>1.127</td>
<td>2.173</td>
<td>3.443</td>
</tr>
<tr>
<td>Kilkis</td>
<td>-</td>
<td>-</td>
<td>339</td>
<td>900</td>
</tr>
<tr>
<td>Pieria</td>
<td>-</td>
<td>186</td>
<td>1.080</td>
<td>1.273</td>
</tr>
<tr>
<td>Imathia</td>
<td>220</td>
<td>459</td>
<td>299</td>
<td>438</td>
</tr>
<tr>
<td><strong>Central Macedonia</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grevena</td>
<td>57</td>
<td>712</td>
<td>3.972</td>
<td>6.120</td>
</tr>
<tr>
<td>Kozani</td>
<td>60</td>
<td>302</td>
<td>332</td>
<td>422</td>
</tr>
<tr>
<td>Florina</td>
<td>-</td>
<td>155</td>
<td>317</td>
<td>464</td>
</tr>
<tr>
<td><strong>West Macedonia</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kavala</td>
<td>-</td>
<td>402</td>
<td>697</td>
<td>927</td>
</tr>
<tr>
<td>Drama</td>
<td>11</td>
<td>1.118</td>
<td>1.615</td>
<td>2.183</td>
</tr>
<tr>
<td>Evros</td>
<td>-</td>
<td>541</td>
<td>1.185</td>
<td>2.101</td>
</tr>
<tr>
<td><strong>Crete</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rethymnon</td>
<td>427</td>
<td>564</td>
<td>829</td>
<td>938</td>
</tr>
<tr>
<td>Heraklion</td>
<td>-</td>
<td>170</td>
<td>113</td>
<td>48</td>
</tr>
</tbody>
</table>

spp. During 2009, a total of 826,618 pigs were tested for Trichinella spp. at slaughterhouses, including 2,892 samples from free range organic pigs. According to the National Reference Laboratory results, two positive samples were detected [one for Trichinella britovi and one for Trichinella spp. (unspecified)] in free range pigs’ samples. It is alarming that one of these cases was connected with clinical signs of Trichinellosis in five persons of a family in northeastern Greece, who consumed undercooked wild boar meat from an organic pig farm (Boutsini and Kontos 2011).

**Trends and Perspectives**

**Factors in pork meat market**

The supply and demand for organic pork in the Greek market are one of the most significant factors affecting the survival and development of the Greek organic pig farming. In recent years, the sufficiency of Greece in pork meat is approximately 50%, which suggests that there are considerable opportunities in Greek swine industry development.

“Market competition” of organic and conventional pork meat can influence further development of the Greek organic pig farming. This competition is based on the lower prices of conventional pork and purchasing power of Greek consumers. An important advantage of organic pork meat is its high quality and the similar-to-conventional taste. Investigations in the Greek organic market have shown that consumers are willing to pay a 20-30% price increase for organic products, if they are sure that these products are of high quality and safety.

The ‘new “kind” of consumer’, the “green” consumer is the main target group of organic pork meat market. “Green” consumer is environmental-sensitive and prefers environmentally-friendly or eco-friendly products. According to Koniari 2008, Greek women seem to be more sensitive than men on environmental aspects of meat production. Also families with dependent children, as well as Greek consumers in the age groups of 29-39 and 51-60 years and people with 30,001 —40,000 € income/year show high environmental – sensitivity according to the same study.

There is no much available data for the prices of organic meat and meat products as prices diverge depending on the country and on the product. For instance, farmer price for organic pork in 2002 was about 2.46 €/kg on EU-15 average, but some countries had significantly higher prices like Greece (5.00 €/kg), Ireland (3.49 €/kg) and the United Kingdom (3.22 €/kg) (Napolitano et al. 2009). The average price premiums in EU for organic pork meat are about 62 %. Consumer price premium for organic pork cutlet (81 %) is higher than average farm gate price premium and ranged extremely from 0 % in Portugal to 165 % in Greece. The high divergence in consumer prices and price premiums reflect often the different sales chains used, i.e. consumer prices are usually much higher in organic food shops than in supermarket chains (Napolitano et al. 2009).

Furthermore, the higher production cost of organic pork meat, affects the development and market expansion possibilities significantly. Production costs can be

---

Table 3. Number of organic (free range) pigs from 2002 to 2010 in Greece.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number</td>
<td>1.288</td>
<td>3.628</td>
<td>4.469</td>
<td>126.003</td>
<td>110.096</td>
<td>175.004</td>
<td>60.918</td>
<td>54.631</td>
<td>42.991</td>
</tr>
<tr>
<td>Sows</td>
<td>18</td>
<td>752</td>
<td>2.557</td>
<td>**</td>
<td>20.345</td>
<td>18.200</td>
<td>17.066</td>
<td>16.315</td>
<td>13.630</td>
</tr>
<tr>
<td>Other pigs *</td>
<td>32</td>
<td>1.228</td>
<td>6</td>
<td>**</td>
<td>2.082</td>
<td>87.624</td>
<td>25.017</td>
<td>23.525</td>
<td>17.926</td>
</tr>
</tbody>
</table>

(* Including estimated young animals, (**) no published data

http://epublishing.ekt.gr | e-Publisher: EKT | Downloaded at 11/03/2021 13:39:49 |
reduced by reducing maintenance costs and increase productivity of organic pig farming. The cost of maintenance can be reduced by using various coppices or woodland (mainly oak). The labor cost (less time spent on animal feeding) can be reduced also since organic - outdoor pigs are able to excavate the ground for roots, bulbs, etc. In addition, productivity growth in organic farms can be increased by improving the rearing conditions (eg construction of simple and well-designed facilities, use of infrared lamps for newborns in farrowing buildings) and the implementation of preventive measures (e.g., vaccination programs, treatments with phytotherapeutics) that reduce morbidity and mortality rates (especially during winter). Such interventions that reduce production cost and increase performance parameters were critical for organic pork farms’ development in mountainous regions of North and Central Greece.

Factors of major significance in organic pork meat production

Good animal health and welfare is an important goal for organic husbandry, since animals are not just parts of the farming system: they are also sentient creatures and as such they should be given special moral considerations. The goals and principles of high animal health and welfare as well as the production of healthy and safe animal products of high quality present a challenge for organic livestock farming. Farmers have to develop a farming system, where animals are allowed to live in harmony with the surroundings and to experience a good quality of life, e.g. to allow the herd to perform natural behavior, emphasizing in the harmony of the group and the freedom of animals to make as many choices as possible. Farmers in such systems have to intervene when necessary and at first signs of disharmony in any aspect of the herd. Another major challenge is to avoid biosecurity risks when producing food from animals, because of the outdoor access and the group rearing which could lead to greater exposure to environmental contaminants. A potential conflict is the presence of zoonotic organisms, such as Trichinella spp., Salmonella spp., Toxoplasma gondii, Campylobacter spp., Escherichia coli, etc because organic herds have outdoor soil access and therefore there is greater risk of contamination by such bacteria than conventional herds.

The organic pig farming is facing the problem of the absence of many organic slaughterhouses. There are regions like Crete where the absence of organic slaughterhouses consist the major problem of organic pig farming.

Most Greek consumers do not seem to be aware of the meaning of balanced nutrition, but food borne hazards is the greatest worry (Zervas 2007). Their basic concern, apart from other personal selection criteria, is food safety that affects their preferences for specific types of animal products, according to value and trust criteria.

Disease prevention is a key point in organic (and conventional) livestock production. Health management by identifying and controlling the level of risk factors is therefore significant for organic farmers (Arsenos et al. 2004). Health and welfare problems in organic pig production may differ from problems in conventional pig herds as a result of differences in management. Control of animal health problems in organic herds includes restrictions in medicine use and prophylactic medication as well as the high risk of wildlife contact and difficulties in cleaning and disinfection due to animals’ free access to outdoor areas.

The implementation of a health management and disease prevention program based on Hazard Analysis Critical Control Point (the HACCP concept) can be the basis for ensuring food safety and high quality of organic pork meat, through regular monitoring of disease-risk factors. The development of a HACCP system in organic farms requires the quantification of risk factors by means of epidemiological studies or alternatively by an expert panel (Bonde and Sorensen 2004). HACCP systems are characterized by continuous monitoring of the risk factor level in the operational health management on-farm. Instead of such monitoring the routine control of risk factors like hoof trimming at regular intervals to prevent hoof disorders causing lameness may be an alternative. Other options could be breed selection based on disease resistance or in general choosing more robust breeds in the production system. The general health status in the herd might also be improved by implementing Good Farming Practice codes such as sanitary measures, quarantine facilities for recently purchased animals as well as good rodent management measures (Meerburg et al. 2004). Disease monitoring by means of abattoir recordings or regular...
blood or faeces sampling, followed by standard corrective actions in case of problems should be included in farms’ health management programme.

The advantage of HACCP in herd health management is the preventive approach focusing on risk factors. The application of integrated veterinary management in organic pig farms will ensure the quality and safety of the produced organic pork, contributing beneficially to the competitiveness of this particular meat market. Furthermore other certification and quality assurance schemes (e.g. Agro 3 quality standard published by Agrocert 2008) based on the standards of “transparency” and “traceability” of the produced organic pork from “stable to the table” can be used in addition to an on farm HACCP system.

The financial and scientific support of Greek farmers could improve the current conditions in organic pig farming. National - Governmental financial assistance and educational training programs (especially in young farmers) along with the creation of farmers’ groups could lead to an increase of organic pig farming in Greece. According to Greek Marketing Academy the problems of Greek organic farming does not seem to be related with the product as such and how it is perceived by the consumer, but rather to the holistic functioning of the market (Photopoulos and Cristallis 2002). For this reason authors believe that to achieve a better development for the organic sector a spirit of cooperation among all interested groups and a high degree of confidence is required especially because there are several economic, social and psychological obstacles to overcome.

REFERENCES