

Project AGRI-TRANS: Transparency in agricultural vocational training

European Standards using the example of livestock farming (pig farming)
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The Polish vocational system using the example of pig husbandry

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Since the first may 2004 Poland is a member of the European Union. It encompasses 7,1% of the EU's surface. Poland places seven in the EU with about 38,1 million inhabitants but is first in the number of its rural population and counts the most agricultural farms (after Romania).

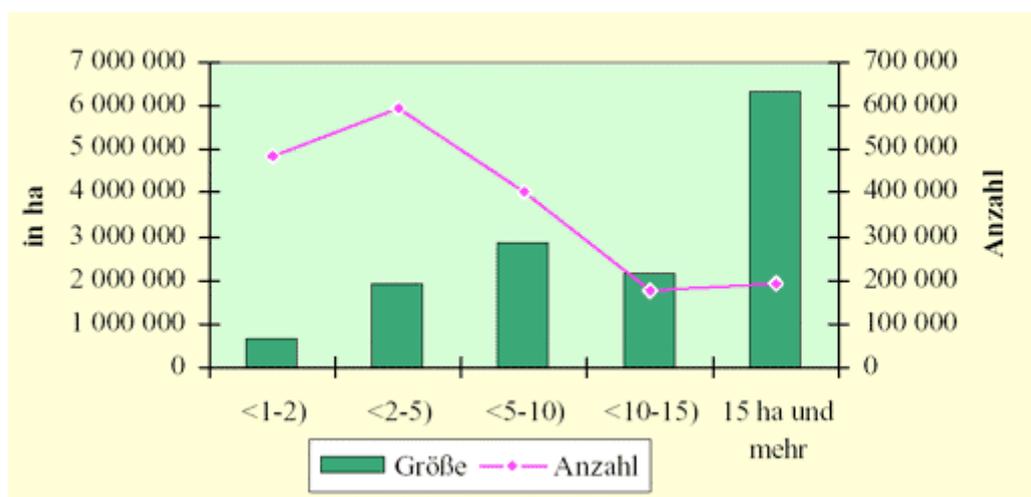
General characteristics of Polish agriculture

Polish agriculture consists mainly of small farms: The average size of a farm is 7,8ha arable land and half of all farms produce only or mainly for own purposes. 59,7% out of 31,3 million ha national surface were agriculturally used in 1996.¹

Most agricultural estates are privately owned (ca. 17,9 million ha). In 2004, the arable land was about 16,2 million ha of which 15,5 million ha were actually used. Farms with an arable land about one ha counted 1.808. Another big group of farms hold at least 100 ha arable land. In 2005, these farms comprised almost 3,5 million ha, means 21, 2% of all arable land. Moreover, they produced more than one third of all agricultural goods on the market. In the last years, the number of big commodities increased to 7.000,8.

Compared to 2002, small agricultural used lands of about 1 ha decreased about 7,6%. But simultaneously, farms with 50 or more ha increased about 25,5%. There are more than 24.000 such farms.

Anzahl und Größe landwirtschaftlicher Betriebe 2004 (nach Größenkategorien)



Quelle: Hauptamt für Statistik, 2005

Source: <http://www.polentoday.de/index.php/content/view/10/13/>, 24.11.2009

¹ <http://www.info-polen.com/wirtschaft/landwirtschaft.php>, 24.11.2009

Income of rural population

In 2007, only 33,7% of farms with more than 1 ha lived exclusively of their agricultural activity. Others had other income sources which are:

- Pensions and retirement benefits for fellow lodgers (51,5% of all farms)
- Wage labour of owners and the people living on the farm (51,5% of all farms)
- other activities (14,2%)

Despite weak soil and unfavorable agrarian structures Poland is an important producer of agricultural and horticultural products in the EU and the world.

Chart 1: Share and ranking of the Polish agriculture in the EU (27 members) and worldwide

Production of certain goods	Share in the World	Share in the EU	Ranking in the World	Ranking in the EU
Wheat	1,2	5,6	18	5
Rye	19,8	40,1	3	2
Potatoes	2,9	15,8	7	2
Sugar beets	4,5	9,7	7	3
Rape	3,4	10,3	7	4
Apples	3,6	20,2	4	1
Meat	1,3	8,3	14	5
Cow milk	2,2	8,1	11	4
Livestock:				
Cattle	0,4	6,2	45	7
Pigs	1,9	11,8	7	3

2007 all agricultural production gained 81,7 billion PLN Zloty (ca. 20 billion EUR) and was about 6,1% higher than in 2006. Livestock production increased about 2,6%. The share of agriculture of the GDP was about 4%.

After Poland became an EU member, the danger for Polish agriculture and food industry turned out to be not as bad as predicted. Polish food producer have used their chance after the opening of the European food market. After five years membership, the export of agricultural products increased from four to 11,3 billion EUR with a surplus of 04 to 1,5 billion EUR.

Pig husbandry in Poland

The biggest pig breeding industry lies in China (424 million), the USA (59 million), Brasil (32 million), Germany (26 million), Russia (24 million) and Poland (20 million). The pig stock is almost three times as high as the number of cattle (7 million). Pig breeding is concentrated in the regions Greater Poland and Kujawy where also most cows are hold on 100 ha. In the mountain region and the north east dominate cows and sheep. 44% of privately owned farms hold one to ten pigs and 36% of private

farms have 20 or more pigs. 650.000 farms produce and sell pigs. More than **300.000 small farmers, land owners and their families work in pig husbandry at 40 hours a week.**

Pig production in millions by years

	2000	2002b	2005	2007	2008
Pigs	17.122	18.629	18.112	18.129	15.425
thereof sows	1.577	1.918	1.813	1.767	1.367

Source: http://www.stat.gov.pl/cps/rde/xbcr/gus/PUBL_af_agriculture_2008.pdf

More than **the half of all farm's income stems from the sale of animals and their products.** The share of animal production of the agricultural production was about 60% in 2006, whereas pig breeding had a share of 21,5%. In Poland **foreign owners dominate the pig husbandry landscape.** One of the biggest in Poland and the world is the US-American company Smithfield Foods. In Poland, this company produces under different brandings united in the group PRIMA FARMS which consists of three agricultural breeding companies: Prima Sp. z o.o, Agri Sp. z o.o, Agri Plus Sp. z o.o.

Smithfields is the owner of the meat companies Animex Starachowice (the former Constar), ZM Mazury Ełk, ZM Morliny Ostróda and Agryf Szczecin. This investor owns some big farms for pig breeding and still opens new ones. Smithfield Foods-Animex aims for the monopoly on the market which it realizes by the takeover of process plants.

Besides this company, there is the Danish breeding company Poldanor, which owns more than 20 production sites in the voivodships Pomerania and West Pomerania. Poldanor is directly linked to the Prime FOOD in Przechlewa. Lately, another international giant appeared on the Polish market, the Danish society Danish Crown which is the biggest pig exporter worldwide and which owns stocks of the group Sokółów due to the fusion in 2000.

There are 107 farms in Poland which employ 7.000 workers. Then, there are other smaller farms which employ about 10.500 workers working directly in pig production.

The ministry of agriculture and the development of rural areas work out conditions and procedures for animal husbandry (beyond these is pig husbandry). Here, occupational health and safety standards of the EU seize whereas there are exceptions for small farms. Probably these instructions will be enacted end of 2009. These concern:

- Appropriate animal keeping and care considering a minimal space depending on the husbandry system;
- Health conditions to protect animals from injuries and body harms, free movement;
- Assuring appropriate light, temperature, humidity and no acoustic noise;
- Good access to water and food;
- Systematic removal of excrements and food rests as well as cleaning and disinfection of buildings;
- Sudden care for ill and injured animals, isolation in separated rooms.

These instructions concern the breeding and the accommodation of pigs, especially for sows, farrows, boars, etc.

EU guidelines are strictly considered and implemented in Polish legislation for pig breeding. They secure the protection and good condition of animals and demand for a sound knowledge and permanent training of workers and employers regarding the breeding and production of healthy food.

Training of agricultural craftsmen in Poland, thereof one third pig breeders

Students and graduates from vocational training schools for agriculture (Youth)

Students		Graduates	
2006/07	2007/08	2005/06	2006/07
4059	3734	1373	1418

Students and graduates of agricultural secondary school for youth

Students		Graduates	
2006/07	2007/08	2005/06	2006/07
1446	751	678	585

Students and graduates of technical schools: agriculture

Students		Graduates	
2006/07	2007/08	2005/06	2006/07
21440	21669	4361	4114

Veterinary sciences

Students		Graduates	
2006/07	2007/08	2005/06	2006/07
1576	1561	152	438

Students and graduates in general secondary schools with an agricultural focus

Students		Graduates	
2006/07	2007/08	2005/06	2006/07
6225	5830	650	1600

Agricultural university students and graduates

Year	Universities	Students	Graduates
2006/07	8	92000	19100
2007/08	8	89700	

University of agriculture faculty veterinary

Year	Universities	Students	Graduates
2006/07	2	39257	6335
2007/08	2	37648	7382

Further training after diploma in agriculture

Year	Listener	Graduates
2006/07	4393	2699
2007/08	4742	3425

Postgraduation – agriculture

Year		Post graduate	
2006/07		1516	
2007/08		1505	

Science and research

Following institutions deal with science and research on agricultural issues:

- Institute for scientific development – Supervision by the ministry for agriculture and the development of rural areas,
- Institute for agricultural economy and food industry in Warsaw
- Veterinary – Insitute in Pulawy
- Institute for animal production in Balice/Kraków
- Universities – Supervision by the ministry for science and school system
- 10 scientific unities of the Polish Academy of Sciences and other unities which are subordinated to other public administrative unities

Staff in research unities in agriculture which provide a great potential that supports agricultural polcies in Poland and the EU.

Employees in general:	17.913
Professors:	1.457
Postgraduates Hab. Dr.:	839
Postgraduates Dr.:	4.050

Agricultural secondary schools

In Poland exist about 600 different schools with an agricultural profile. Since 1st January 2008, 38 schools are autonomous after an agreement with the ministry for agriculture and the development of rural areas. At present, further seven agricultural schools are transformed to work autonomously. The pre-condition in return is that these schools function as example, work together with agricultural councils as well as other research institutes to create a modern agriculture.

Public agricultural counseling

Public units for agricultural counseling play an important role for vocational training. At present, 17 voivodeships have such councils which deal with their respective voivodes.

In 2007, about 5.426 employees worked in public counseling institutions for agriculture. Out of these employees about 4.410 persons had special vocational trainings. On behalf of the law on agricultural counseling, public counseling institutions were granted an independent legal status what intensified their activities. Support of employers for the application for financial EU aid was belong the basic

activities over the past years. Now, the most important task of these information centers is to give advice on agricultural programs and cross-compliance in particular spheres.

After evaluations in the training sector and research facilities in agriculture, it can be stated that the scientific sphere is actively supporting the restructuring of the agricultural system and the implementation of new methods. Advisors have to absolve a particular training and a final exam.

The financial means for scientific activities and development, trainings in agriculture, as in other research sectors too, come from the fund of the ministry of science and higher education, of the ministry for agriculture and the development of rural areas, of regional administrations and others, which participate in international technical programs and provide services.

Financial aid for agricultural trainings

Vocational trainings for employees in agriculture shall be improved. Special financial means are still negotiated in the ministry with agriculture and the development of rural areas in the frame of the EU program to the development of rural areas 2007-2013. This financial aid is for natural persons or an organization which are able and trained to do trainings and have experience in agriculture.

The aid is not for schools or counseling centers. But it will assure that training participants will not have to bear any costs (for training, housing, food, transportation costs, material etc.). The vocational training will improve with the new regulation coming into force.

Training programs in agricultural schools f. ex. pig breeder

Education programs for secondary schools are developed by the ministry for national education. Universities and other higher agricultural schools develop their programs by themselves but have to fulfill conditions required by the ministry. Since 10th January 2009, the development of education programs is decentralized but support by the ministry is still desired.

Training aims

During the training process students need to:

- get to know aims and importance of animal production in the food industry,
- collect knowledge on parameters on growth, development and animal production,
- explain principle functions of organs, systems and the whole animal organism,
- explain locations of important organs and systems of animal organisms,
- define the importance of organic and inorganic ingredients of animal forage,
- define the amount and nutritional value of forage and recognize forage types,
- principles for conservation, storage and preparation of the forage,
- define factors influencing health and productivity of animals,
- proof for economic use of animals,
- name criteria for the judgment of good husbandry,
- recognize the effects of animal husbandry on environment,
- evaluate breeds of cattle, sheep, goats, pigs, poultry and horses,
- plan and organize the reproduction of animals,
- describe nutrition and care for animals during lactation,
- collect knowledge on nutrition and care for pups,

- know the use of meat,
- apply regulations for protection of animals, fight against infectious diseases of animals, examination of animals for slaughter, and veterinary inspection,
- choose tools, machines depending on animals, their use and production size,
- mind ecological planning of animal production on the farms,
- describe production methods, stocking and sale of animal products in adhering to quality norms for healthy and safe food.

Learning materials

Previous knowledge

Goals, tasks and economic importance of animal production, animal production as compensating element in agriculture.

Anatomy and animal physiology

Construction and living activity of cells, tissue, and organs in animal organisms, construction and function of the systems: bone muscles, blood producing organs, respiration and alimentary organs, urogenital organs, and sense organs.

Animal nutrition

Healthy nutrition and productivity of animals, chemical elements of forage, factors influencing alimentary organs, metabolic processes, factors influencing nutritional values, saps, roughage, concentrated feed, self-produced feed, industrial produced feed, forage mixtures, and concentrates, premixes, herbs, probiotics, ecological feed, conservation and stocking of forage, acidifying, drying, forage costs.

Animal hygiene

Climate and soil influencing animal organisms, hygienic conditions for interior husbandry, micro climate of buildings, disinfection and rats removal, nutrition hygiene, watering, causes of infectious diseases, characteristics of symptoms, prevention of diseases, first aid for animals, resistance types of animals, use of veterinary equipment, proceeding with infectious diseases according to animal protection regulations, veterinary inspection of animals for slaughter according to latest regulations.

Pigs

The economic importance of pig husbandry and pig breeding, lineage and type of use of pigs, breeds in Poland, crossbreeds, use of reproductive activity of sows and boars, upbringing and feeding of farrows, upbringing and feeding of youngsters, feed calculation for fattening pigs, preparation of a feeding plan for a whole fattening period, technology for livestock production, classification of the pig's slaughtered bodies by the EUROP Skala,

Equipment and interiors, different types of livestock buildings, box types, choice of technical installations remove excrement, feed security, organization of work to care for pigs, pig diseases, ecological methods for pig husbandry, profitability of pig production, breeding research.

Independently of the described program (see above), themes for exercises, a respective literature, material and devices to support learning are recommended. Moreover, there are recommendations for didactics and methods for program realization and proposals for the reviewing of the students' theoretical knowledge and practical skills.

The timetable for the respective agricultural schools to realize their program in animal husbandry looks as follows:

- a four-year training in a technical school for agriculture after secondary school: 101 hours
- a three-year training in a technical school after agricultural vocational training school: 90 hours
- a two-year training in a secondary school (without a general qualification for entrance to universities): 109 hours
- an one and a half-year training in a special secondary school with a agricultural profile: 162 hours

Conclusion and observation

1. It is necessary to extend and improve the agricultural educational system in Poland, mainly in the animal breeding branch. Many technical secondary schools, vocational schools and also company-owned schools had been closed too fast. This process was connected with the dissolution of state-owned commodities. There is a lack of qualified employees (regarding basic qualifications) especially in the animal husbandry.
2. A major challenge is to improve the image of an animal (pig) breeder. Therefore, it is necessary to think of different activities and strategies, here f. ex. the media would be of help. Skilled and qualified workers are necessary to produce healthy food, animal feed and to protect the environment. Employees should receive occupational description and title according to certain qualifications and practical experience.
3. Furthermore, employees should receive diplomas or certificates or an international Jobpassport that recognize and acknowledge achieved qualifications and long-term experiences.
4. The project Agritrans under the organization of the IG BAU and the Peco-Institute will be very helpful to realize these goals.