

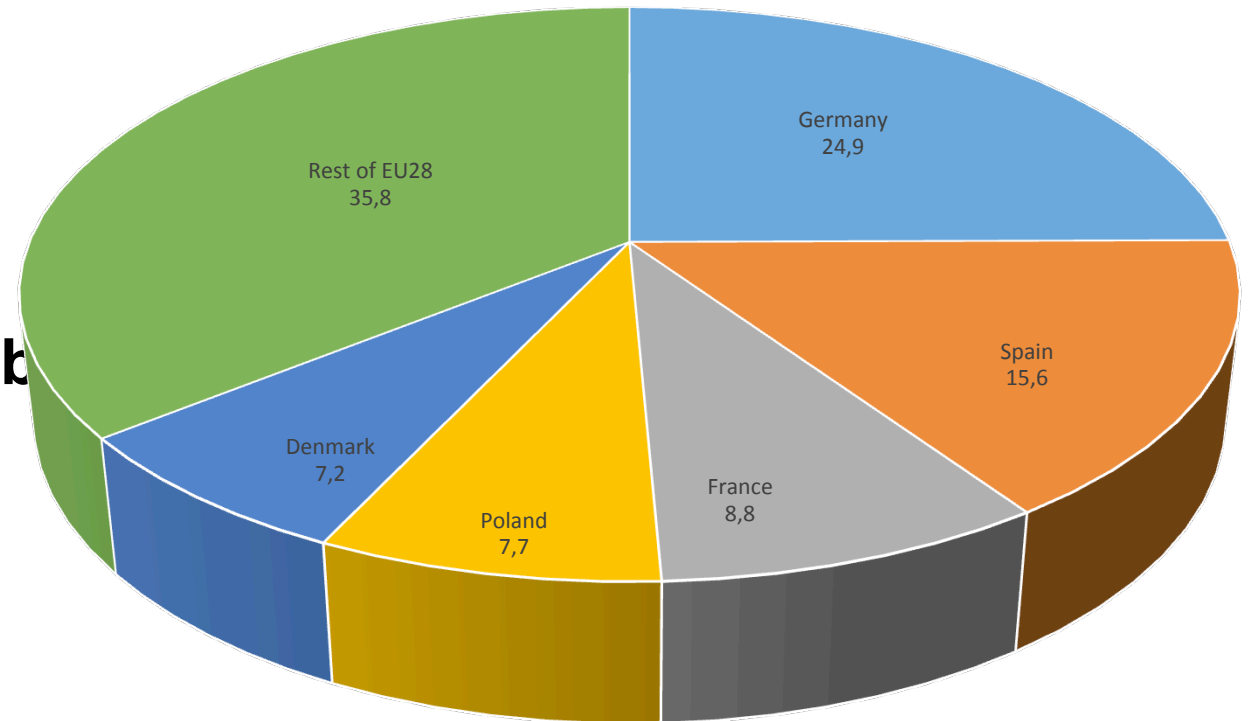
LOCAL PIG BREEDS AND PORK PRODUCTS IN CROATIA AND SLOVENIA – UNEXPLOITED TREASURE

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Pig meat is the main product of meat sector in the European Union

- Production in 2013 \approx 22 million tonnes - three times higher than the production of beef/veal (Eurostat, 2014).
- Pork production by countries:
- EU self-sufficiency \approx 110%
- export \approx 12%
- EU = the world's second largest producer of pig meat and the biggest exporter

Pork production in European Union



Modern pig production is very complex and in the need for a variety of experts

- **Common issues:**
 - **herd health,**
 - **production management,**
 - **waste management,**
 - **reproduction,**
 - **genetics,**
 - **nutrition,**
 - **meat quality and safety,**
 - **business management**
- **and more...**

Modern hybrids vs. local breeds

- Such situation caused spreading of genetically improved, productive pig breeds on a global scale and a reduction of population size in many local breeds which are less performing and some of them are nowadays close to extinction.
- These trends led to certain problems:
 - lower quality of their products,
 - lower resilience and robustness,
 - handling of animal wastes (pollution)
 - animal welfare issues (increasingly important for the consumer).

Where this leaves our Ivan and Janez?



Alternative, new paradigm of pig production - Horizon 2020 project



Start of the action: 1 April 2015

Duration: 48 months

Budget: 3,395,986.75 EUR

25 partners from 9 countries

Coordinator: Kmetijski inštitut

**Slovenije = Agricultural Institute of
Slovenia**

www.treasure.kis.si



Funded by European Union
Horizon 2020
Grant agreement No 634476



- Aim of TREASURE:
 - to improve the knowledge, skills and competences necessary to develop existing and create new sustainable pork chains based on European local pig genetic resources (local breeds)
- How to achieve this?
 - To establish the value of traditional local breeds and belonging production systems
 - To determine the value of local breeds and their diversity in the food chain?
 - To find the way to bring biodiversity to the market and ensure that the consumer will recognize this value and appreciate it?

objective of this talk: to present the project activities scheduled for three, mainly untapped breeds and their products from Croatia and Slovenia



Phenotypic characterization of selected breeds from Croatia and Slovenia

- First step - the basic phenotypic characterisation and establishing of population census.
- already existing information will be completed with new data collected during the project.
- We will try to collect also production data reflecting various production traits (growth performance, reproductive traits, body composition, and product quality).
- In addition to these standard traits we will establish also collection of some new types of data as adaptability, gut microbiota and some metabolic parameters.

Genetic investigations on breeds from Croatia and Slovenia

- the basic information about the genetic richness of the populations - high throughput genotyping - high density SNP chips; already existing information about STR allele frequencies will be also collected.
- allele frequencies of the known major genes will be estimated (IGF2, RYR1, MC4R, PRKAG3, LEPR, MC1R, KIT, CALP, FTO)
- DNA markers useful for breed authentication and traceability of animal products will be developed
- DNA chip for cheap genotyping of loci informative for breed identification and for characterisation of important production and adaptive traits will also be developed
- some pilot functional studies on gene expression in pig populations with the best developed characterisation of specific products will be performed in the aim to identify population specific physiological processes affecting product quality.
- changes in gene expression related to diets, immunocastration and some technological parameters will be investigated using RNA sequencing
- using massive parallel sequencing technology (e.g. Illumina's MySeq or Roche's 454) 16S rRNA sequences in gut microbiota will be characterised in order to establish proportions of main microbial taxa in different combinations of host genotype and specific diet.

Performance and management of Black Slavonian, Turopolje and Krškopolje breed in their production systems

- housing and nutritional requirements of local pig breeds - general lack of information (unlike in modern breeds)
- In Europe - wide variety of productive systems for local pig breeds: indoor, outdoor housing, organic production, silvopastoral systems, deep litter.... all worth investigating systematically
- For small scale pig production farms or family farms it is assumed that a simpler, less capital-intensive systems are more suitable,
- If their products have higher quality (as expected by consumers) the chances of profitability can be increased.

Black Slavonian pig

Experiment:

- outdoor vs. indoor (deep litter) housing system in rearing of Black Slavonian pigs
- studied traits:
 - growth characteristics (S-curve),
 - fattening traits,
 - carcass traits
 - meat quality trait

It is expected that information crucial for decision making in the production of Black Slavonian pigs and pork products will be collected and shared with scientific and professional public.

Turopolje pig

- Research directed at high quality meat products development as a new and effective model for recovery and long-term conservation of this still endangered breed
- Goal: to establish the link between the traditional production systems and its natural feed resources (e.g. forest, pasture) with the distinctive physical, sensory and/or nutritional attributes of product.
- Experiment: the influence of traditional feeding resources of oak (*Quercus robur*) acorns in outdoor production system will be investigated in relation to various aspects of Turopolje pig breed performances and meat/product quality.

Krškopolje pig

- Experiment: comparing performance, carcass and products' quality from Slovenian Krškopolje pig fed different diets and raised in different production systems (conventional and organic, indoor, outdoor).
- In addition - a collection of data for multicriteria evaluation (productivity, welfare and environment) of Krškopolje pig in different production systems.

High quality pork products with regional identity from Black Slavonian, Turopolje and Krškopolje breed and their market value

- Overall impression - better eating quality of meat originating from traditional breeds
- Consumers with certain ethical attitudes believe that meat originated from pigs raised on organic farms or in outdoors systems is more nutritious, tasty, healthy and even safer compared to pork produced at hi-tech farms
- European label “Protected designation of origin” promotes the use of indigenous pig breeds kept in traditional outdoor or free-range systems
- TREASURE outcome - common toolbox for sensory, healthy, technological and typical qualities of pork and products

Black Slavonian pig

- The description of intrinsic quality of pork originating from Black Slavonian pigs
- database on carcass and meat quality traits → development of breeding programme
- Experiment: influence of housing system (outdoor vs. deep litter) on carcass composition and quality of traditional pork products
 - emphasis on Slavonian kulen, product with national PGI label.

Turopolje pig

- Collection of different data with regard to carcass traits and quality of fresh and processed meat of Turopolje pigs related to animal diet and traditional feeding resources, such as acorn
- the acceptability and preference tests of health related innovations in traditional meat products (e.g. products with healthier FA composition and/or less smoked products)
- development of harmonised protocols for consumer sensory studies

Krškopolje pig

- No specific product is associated with the breed
- Evaluation of carcass traits and quality of fresh and processed meat of Krškopolje pigs using a common toolbox
- database on carcass and meat quality and breeding programmes adapted to local pig breeds
- studies on consumer preferences and marketing strategies with local products.

CLOSING REMARKS

- Preservation of small local breeds from extinction by direct payments from governments can help but is not sustainable therefore efforts should be made to make them sustainable through marketing.
- TREASURE aims to acquire the knowledge and build up the skills and competences necessary to develop existing and create new sustainable pork chains based on the European local pig breeds
- This is in line with the highest consumer demands for quality and healthiness of pork products, and social demands regarding animal welfare, environment and rural development.
- The project deals with 20 local pig breeds from 9 countries, among them also Black Slavonian, Turopolje and Krškopolje breed
- Besides research, activities of knowledge transfer and networking of academia, professional and public sectors is expected to build up the capacities.
- One of the biggest challenges and ambitions of the project → an umbrella trademark of all the breeds and their products expected to increase their market recognition.

ACKNOWLEDGEMENT

- TREASURE project is funded under European Union's Horizon 2020 research and innovation programme, grant no. 634476. The content of this presentation reflects only the authors' view and Research Executive Agency is not responsible for any use that may be made of the information it contains.



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Thank you for your attention