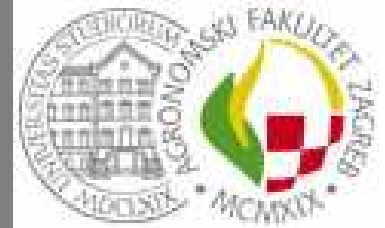


**Workshop of the ERFP Working Group Ex-situ  
Conservation Zagreb, 23-26 May 2012**

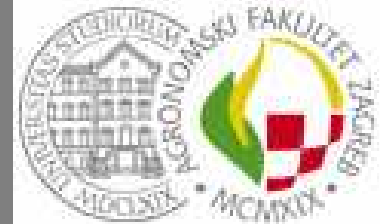


# **National Action Plan and Operational Plan to establish AnGR Gene Bank in Croatia**

*Ivanković A., Ramljak J.*

Faculty of Agriculture, University of Zagreb

# Operational Programme for the Establishment of a Domestic Animals Gene Bank in Croatia

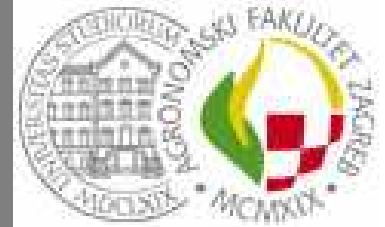


- **was developed in collaboration of several Institutions**

- *Ministry of Agriculture*
- *Croatian Agriculture Agency*
- *Faculty of Veterinary Medicine*
- *State Institute for Nature Protection*
- *Agriculture Faculty*

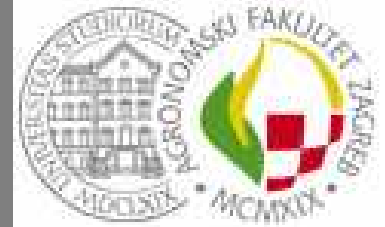


# Operational Programme for Establishment Gene Bank in Croatia – *Definition*



- is a well-designed and systematic set of procedures and measures aimed at collecting, processing and storing genetic material of interesting specimens with the function of their preservation.

# Operational Programme for Establishment Gene Bank in Croatia – *Components*



## **1. GB development guidelines**

- institutional framework, location, management and quality system, selection, collection and categorisation of genetic material

## **2. Genetic material**

- types of stored genetic material, maintenance of Gene Bank Collection

## **3. Performative structure of the GB**

- facilities, capacity of GB, protocol/methods of ... manipulation with genetic material, professional staff

## **4. Documentation and Information System (CRYO-IS HR)**

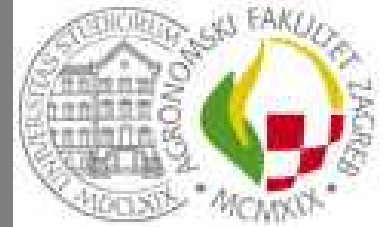
## **5. Sanitary measures and recommendations**

- at processing genetic material, at field work, additional testing for diseases

## **6. Legal framework**

- agreement with owners, access to GB Collection, International transfer

# Operational Programme for Establishment Gene Bank in Croatia – *Aims*



- to point out and enumerate the **main activities (measures)** required for the establishment of the GB (2012 – 2016)
- to support ***In-situ*** active programmes of conservation
- to **preserve genetic material autochthonous / allochthonous** breeds
  - Operational Programm includes 26 native and protected breeds →  
4 breeds = critically endangered
  - priority: to collect samples from critically endangered;  $N_e < 50$
- to conduct genetic and other types of **scientific research**
- **networking** of all interest groups (among or between countries)

# Operational Programme for Establishment Gene Bank in Croatia – *Organization part*



## Gene Bank

### Genetic material (reproduct. cells, tissue,...)

- in planned amount
- by accepted protocols for collecting
- processing
- storage

### CRYO-IS HR

- follows collection,... put records, informations,...
- selectively available to group of interest
- used in decision-making process for GB work

### Core collection (65%)

placed in CAA  
permanently stored in GB

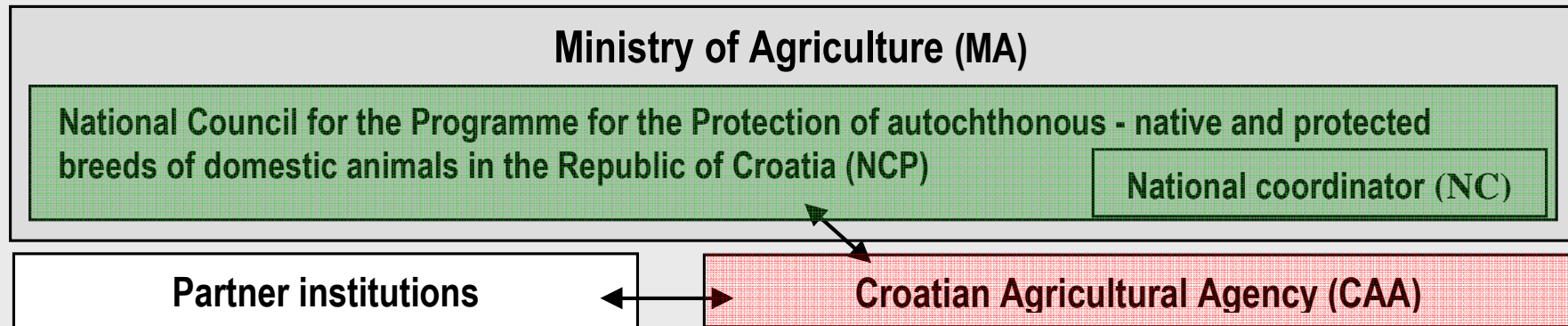
### Reserve collection (35%)

Location 2 (back up)  
purpose: support to the *In-situ*, needs of breeding org, research, ...

# Institutional framework of the Gene Bank and its organization – *Overseeing work of GB*



## State administrations bodies and public institutions



### Interest groups

Breeding organizations and breeders

Scientific and educational institutions

Regional government, local self-government and their institutions

Non-governmental organizations

### Activities

Implementation of the "National Programme"

Establishment and management of the Gene Bank

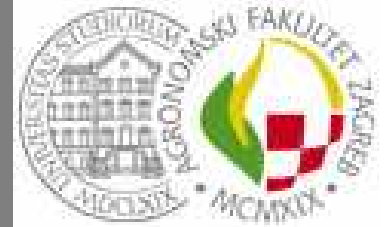
Development of measures for crisis situations

Development of protocols for collecting, storing maintaining the GB Collection

Research and education

Development of cooperation within the framework of GB

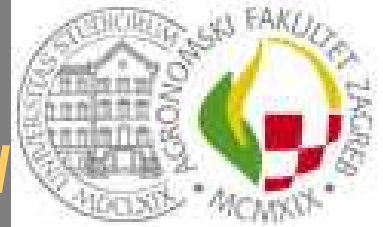
# Operational Programme for Establishment Gene Bank in Croatia – *Management and Quality Control System*



- is consisted of clearly defined rules for conduct in all segments of Gene Bank management
  - **Management Plan** → define **responsibilities and rights** of all subjects involved in process of managing the GB
    - state administration bodies and public institutions (Ministry; CAA, CHBC - Đakovo and Lipik National Stables), scientific and educational institutions, breeding associations, centers for A.I.
  - **Quality Control System** → for the **handling with Gene Bank Collection**
    - model of working is approved by the National Programme Council, which updates it once a year



# Operational Programme for Establishment Gene Bank in Croatia – *Selection and Collection of genetic material*



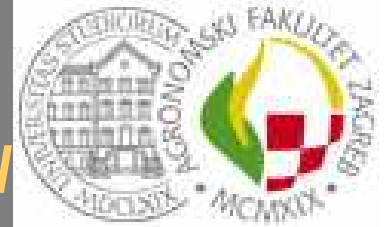
- **selection of genetic material** for the GB Collection:
  - the level of a breed's endangerment of extinction
  - the conservation value of a breed (genetic uniqueness, variability)
- **selection of specimens** for the GB Collection:
  - **genetic aspect**
    - lowest degree of kinship, documentation & genetic analyses
  - **reproductive aspect**
    - high fertility, vital offspring, good quality sperm
  - **sanitary aspect**
    - specimen does not transmit any diseases → must be healthy in accordance with legal provisions

# Operational Programme for Establishment Gene Bank in Croatia – *Quantity of Genetic Material*

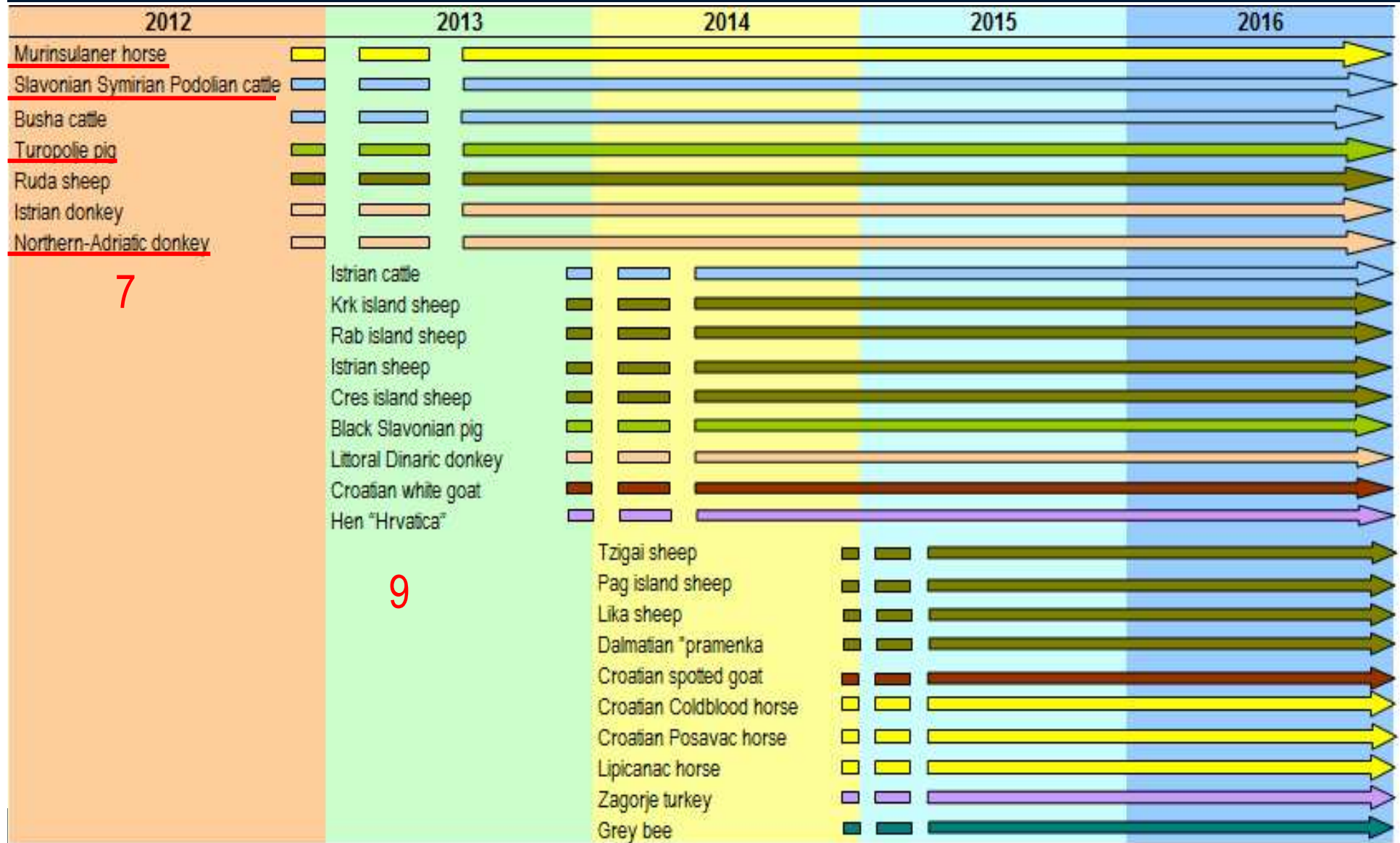


Material type	(fe)males / breed	Doses / animal	Total / breed	Function	Category	Location
<b>semen</b>	N=50	<b>300</b>	15 000			
		200	10 000	permanent reserve	I (One)	CAA, Loc2
		100	5 000	breeding program support	Category R	CAA
<b>oocytes</b>	N=50	<b>4-12</b>	200-600			CAA, Loc2
<b>embryos</b>			<b>100 embryos / breed</b>			CAA, Loc2
<b>body tissues (blood, somatic cells)</b>			<b>min 200 animals / breed</b>			CAA, Loc2
<b>semen of allochthonous breeds</b>			<b>200 doses</b>	interesting for breeding purposes (old bulls lines)		CAA, Loc2

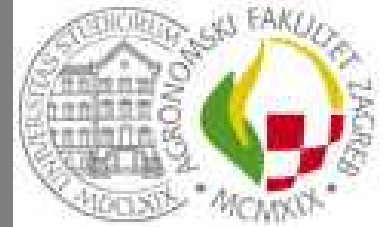
# Operational Programme for Establishment Gene Bank in Croatia – *Selection and Collection of genetic material*



- ***Collection Plan (prepared)***
  - collection of genetic material based on **an annual plan**
  - it is decision of **CAA** together with its **partner institutions** → must be adopted by the **National Programme Council**
  - **stresses the ratio of genetic material that is stored in the Core and Reserve Collection of the Gene Bank**



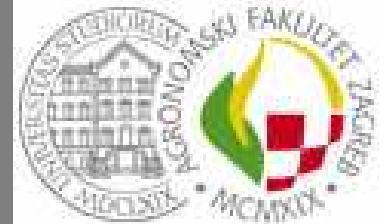
# Operational Programme for Establishment Gene Bank in Croatia – *Measures with tasks for GB Implementation*



- 6 main components → explained by measures and tasks
- the same procedure (status evaluation and choosing animals, taking samples, preparation) will be used for other species (adapted to a particular type of animal):
  - pigs, goats, sheep, donkeys, horses
  - Međimurje horse ( $N_e = <20$ ,  $N=57 \rightarrow 5$  stallions, 21 mares) - **ALL**

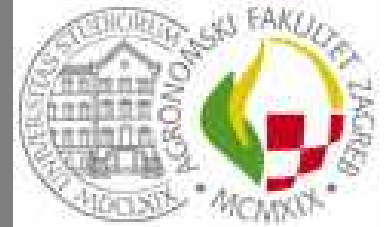
4.	Storage of samples		
4.1.	Cattle breeding		
4.1.1. A)	<u>Available deep frozen semen doses</u>	described procedures/purpose	Responsible institution
	Status evaluation	To see how many doses per native breeds bulls do we really have in Centres for reproduction	National council CAA Centres for reproduction
	Defining a number of samples for buy up	Determine what samples from which animal we want to buy, what type of tissue will be bought per available breeding animal	National council CAA
	Buying up and storage	Buy up certain number of semen dosages and storage at CBAG	CAA

# Operational Programme for Establishment Gene Bank in Croatia – *General items will be just enumerated*



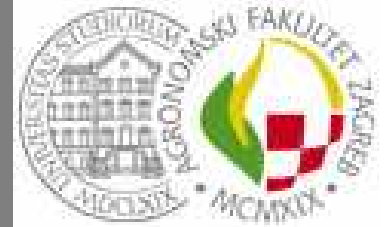
- **Labelling of Genetic Material**
  - depends on the type of genetic, packed with all informations
- **Replenishment and Extraction**
  - to National Programme Council → GB Manager → 2x / year give report collected quantities of the genetic material in the GB Collection
    - decides on the amount and structure of genetic material that can be used in the implementation of the breeding programme
- **Safety of the Gene Bank Collection**
  - facilities and equipment of good quality, no unauthorized access of persons to GB Collection and DIS, composed contracts / agreements with suppliers, contractors and authorities

# Operational Programme for Establishment Gene Bank in Croatia – *General items will be just enumerated*



- **Performative Structure of the GB**
  - facility ...for animal reception, sample collection, quarantine
  - procedures at processing, freezing of genetic material (tanks, cassettes)
- **Size and capacity of the Gene Bank**
  - medium storages / tank capacity: 400,000 – 600,000 sperm doses
- **Professional staff of the Gene Bank (qualified, educated)**
- **Methods of collecting, processing, storing, preserving and distribution**
  - are conducted according to procedures in the GB Quality Control
- **Sanitary Measures and Recommendations**
  - setting up a quarantine, stick with the procedures at ....., sanitary measures during field work (transferable refrigerator) and personnel – safety clothes,...

# Operational Programme for Establishment Gene Bank in Croatia – *Documentation and Information System*

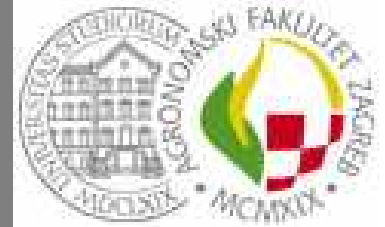


- **CRYO-IS HR**

- is a component of CryoWEB documentation and information programme (<http://cryoweb.tzv.fal.de/>)
- contains recorded genetic material of GB Collection
- data in CRYO-IS HR are properly entered by an associate (assistant) – authorized person!
- is set up on the CAA Internet page <http://cryoweb.hpa.hr>

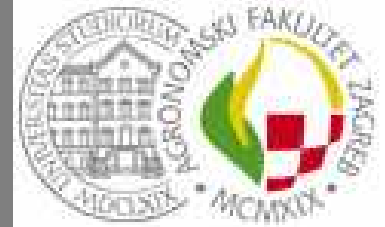


# Operational Programme for Establishment Gene Bank in Croatia – *Legal Framework*



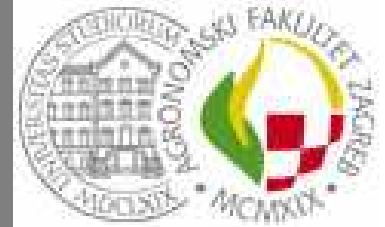
- **consist of: existing legal frame (>21 laws, orders, acts,...) + legal regulations that will be made**
- include **agreements** between the owner and the GB/users
  - several possibility to deal the ownership
    - can be bought, be donated, embargo
- needs to define the **guidelines for manipulation** with genetic material (collection, processing, storage and use of the genetic material)

# Operational Programme for Establishment Gene Bank in Croatia – *Legal Framework*



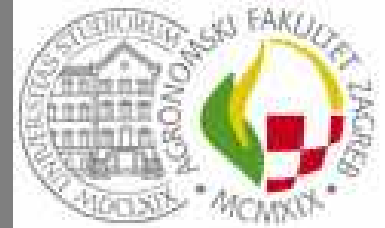
- **elements that should be taken into consideration:**
  - costs of collecting, processing and freezing (owner↔GB)
  - rights of intellectual property
    - GB is public property of a State → research results → available to the public without the requirement for intellectual property
  - veterinary / sanitary issues
    - contract on ownership → should contain the list of diseases that the animal has been tested, ...
  - data protection
    - the GB and Institutions decides which information about stored genetic material shall be available to the public

# Operational Programme for Establishment Gene Bank in Croatia – *Legal Framework*



- **International transfer of the genetic material**
  - attention should be put to the regulations which govern the issue of health aspect
    - main regulations are defined by the World Organisation for Animal Health (Office International des Epizooties, <http://www.oie.int/>) → our guidelines
  - protocols for transfer of genetic material in: Sanitary and Phytosanitary measures (SPS, [http://www.wto.org/english/tratop\\_e/sps\\_e/sps\\_e.htm](http://www.wto.org/english/tratop_e/sps_e/sps_e.htm)) → that measures should be adjusted with valid laws of the country and used

# Operational Programme for Establishment Gene Bank in Croatia – *Conclusion*



- to collect samples from critically endangered breeds
  - 4 breeds /
    - Međimurje horse
    - Slavonian Sarmian Podolian cattle
    - North Adriatic donkey
    - Turopolje pig
- further collecting will be continuous process and dynamics of sampling will depend on available financing resources





# Operational Programme for Establishment Gene Bank in Croatia



*Thank you for attention*