SAVE foundation
Safeguard for Agricultural Varieties in Europe

European Seminar on Agrobiodiversity
&
Annual Meeting of the SAVE Network
9th to 11th September 2024 - Turin, Italy

R.A.R.E.
Associazione R.A.R.E.
Razze Autoctone a Rischio di Estinzione

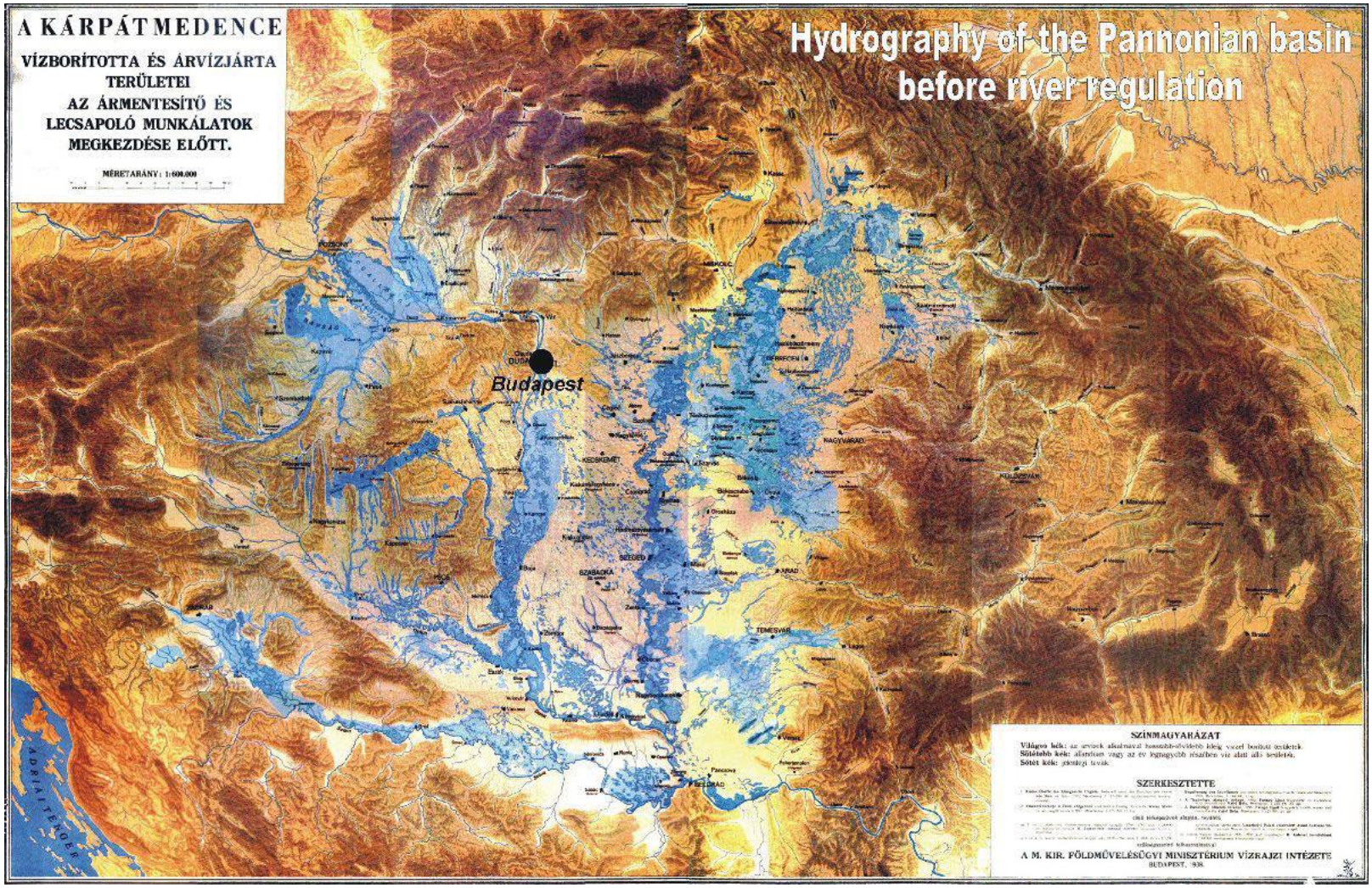
For pitch talks: Hungarian project, initiative or research linked to the topic of this year

"Traditional livestock breeds and crop varieties in times of climate change„

By András Gáspárdy

Climate regulations

- Regulations of the European Parliament and Council (Nature Restoration Law, Green Deal)
- National Government measures (Climate Law)
- Climate Policy Institute (Mathias Corvinus Collegium - MCC), Agricultural Chamber
- Plant cultivation, reservoirs, irrigation (5%), adaptation strategies (no-till farming, precision tools)
- Animal production (biodiversity, genetic resources, methane emissions, manure treatment, afforestation, precision livestock farming, dynamic rotational grazing, heat tolerance,


A KÁRPÁTMEDENCE
VÍZBORÍTOTTA ÉS ÁRVÍZJÁRTA TERÜLETEI AZ ÁRMENTESÍTŐ ÉS LECSAPOLÓ MUNKÁLATOK MEGKEZDÉSE ELŐTT.
MÉRETARÁNY: 1:600.000
Hydrography of the Pannonian basin before river regulation
Budapest
SZÍNMAGYARÁZAT
SZERKESZTETTE
A M. KIR. FÖLDMŰVELÉSÜGYI MINISZTÉRIUM VÍZRAJZI INTÉZETE
BUDAPEST, 938

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- Feeding, housing, genetic improvement, transport, food processing, animal welfare, human health, adaptation (heritage breeds)

Hungarian project

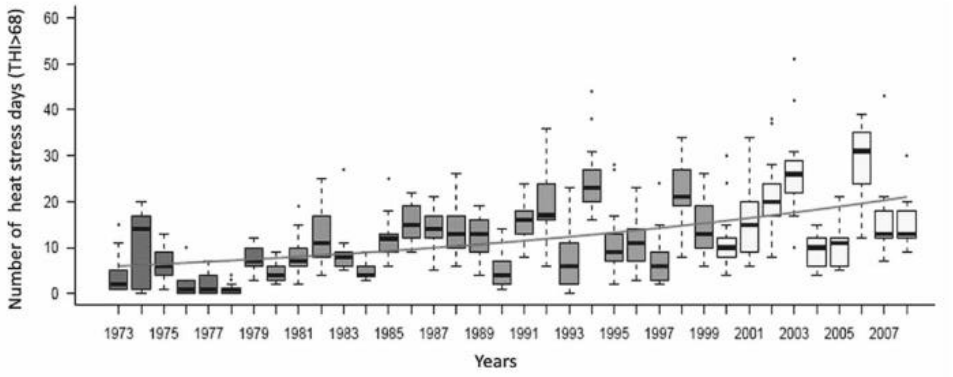
N'Dama (*Bos taurus*)

Gujarat (*Bos indicus*)

Acta Biologica Hungarica 62(1), pp. 65–72 (2011)
DOI: 10.1556/ABiol.61.2011.1.6

POSSIBLE GENETIC SIGN OF HEAT STRESS ADAPTATION IN HUNGARIAN GREY *BOS TAURUS* BREED

Á. Maróti-Agóts,[1]* I. Bodó,[1] L. Jávorka,[1] Alice Gyurmán,[2] N. Solymosi,[3] Petra Zenke,[1] Marita Skogseth[1] and L. Zöldág[1]



Heat stress adaptation:

- difference in heat shock protein (HSP70) ***gene***
- difference in its ***transcription***
- difference in ***expression*** level
- difference in heat shock ***protein*** (HSP70) in the cellular ***regulation*** of heat tolerance and in heat stress

Polymorphism in the promoter region of the HSP70.2 gene:

	n=253	n=20	P <0.001
Wild type allele freq.	**0.86**	**0.50**	
AP2 mutant allele freq.	**0.14**	**0.50**	

Hungarian Grey (*Bos taurus*)

Norsk rødt fe (*NRF; Bos taurus*)

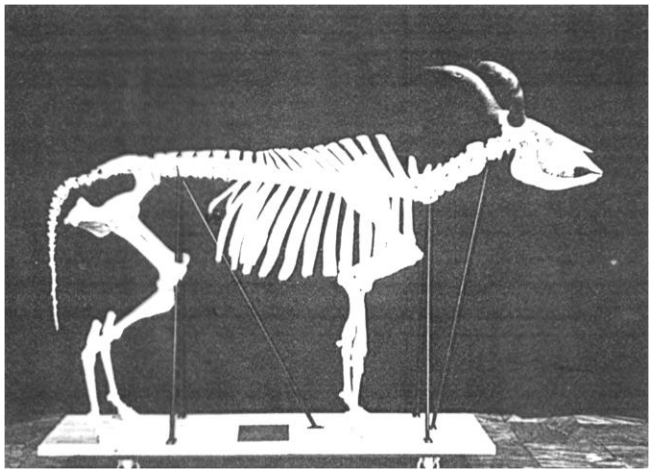
Hungarian initiative

Reasonable cryopreservation:
integrated utilization of genetic material that has been deep-frozen for a long time.
Initiation was accomplished by the Hortobágy Nature- and Gene Preservation Nonprofit Ltd. and Association of Hungarian Grey Cattle Breeders.

- To renew the blood of the herd,
- to revitalize narrowed sire lines,
- to control changes in characteristics,
- to check success of deep-freezing.

- Sixty- two heifers were fertilized in March 2020, with the genetic material of the breeding bulls that born in the 1950-'60s. With sperm frozen for 50 years, a good fertilization percentage was achieved, because 45 of the animals included became pregnant. About 40 calves have been born in the breeding program 2021, which lasts for three years.
- First 11 young bull candidates of 3 years of age are now judged.

Hungarian research



- In the 1960s, the Grey Cattle herd in Hungary consisted of only 6 bulls and 200 cows, which has increased to today's herd of 18,000. These animals must be preserved for posterity according to the gene reserve protection rules.
- 1963 – 270 families
- 1995 – 180 families, 37 haplotypes
- 2023 – 109 families, 15 haplotypes

Research: Mitochondrial D-loop and CytB gene studies for phylogenetic purposes in the Hungarian Grey Cattle breed on a fully representative sample-pool (2023-2024).

This study was supported by the strategic research fund of the University of Veterinary Medicine Budapest (Grant No. SRF-001.)