


Univerza v Ljubljani
Biotehniška fakulteta
Oddelek za zootehniko



Pedigree verification and parentage assignment using genomic information in Krškopolje pig


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XI International Symposium on the Mediterranean Pig
11-14 October 2022, Vodice, Croatia



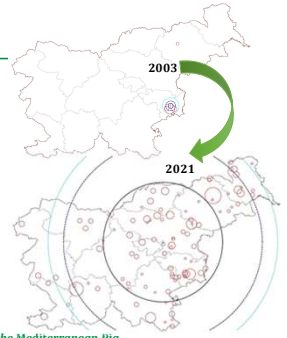

PROGRAM RAZVOJA
PODZEMLJA
Evropski kmetijski sklad za razvoj podeželja Evropska unija in sodelujoče države



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Krškopolje pig

- Local pig breed in Slovenia
- Breeding was banned between 1970 and 1980 – bottleneck
- Herd books since 1993
- 400 breeding sows and 65 boars



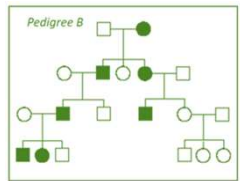
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Herd book keeping

- Calculation of relatedness
- Prediction of breeding values
- Prevention of inbreeding

- Negative effects on:
 - Vitality
 - Reproduction
 - Survival
 - Inherited defects

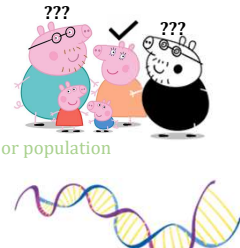


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Genomic information

- Meat verification
- Breed assessment
- Pedigree verification
- Genomic selection
- Genes of large effect (QTL)
- Genetic variability of an individual breed or population
- Population studies




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Material



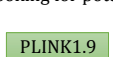

- Genotype:
 - 1.553 tissue samples
 - Gene Seek Genomic Profiler 80K ≈ 65,000 SNP
 - After standard QC
 - 40.002 SNP
 - 1.493 tissue samples
- Pedigree information:
 - PiggyBank




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Pedigree verification

- 1) Tripels from pedigree
 - 
- 2) Pedigree verification
 - 
- 3) Looking for potential parents
 - 
 - 



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Pedigree data structure

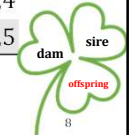
Number of samples	Sire	Dam
Pedigree - herd book		
1154	✓	✓
78	-	-
Triplet - genomic information		
625	✓	✓
224	-	✓
204	✓	-
440	-	-

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Complete triplet

Parentage assessment			
Sire	Dam	Number	Percent (%)
✓	✓	501	80,2
✓	-	49	7,8
-	✓	40	6,4
-	-	35	5,5





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Incomplete triplet

Parentage assessment			
Sire	Dam	Number	Percent (%)
✓	?	187	91,6
-	?	17	8,4
?	✓	198	86,1
?	-	32	13,9





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Conclusions

- Parentage assignment
- Reduction of pedigree errors
- Carefully and correctly kept herd book
- Breeder feedback is reliable if we have the correct data:
 - Calculation of the relationship coefficient
 - Prediction of breeding value



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