# Macedonian Busha Cattle

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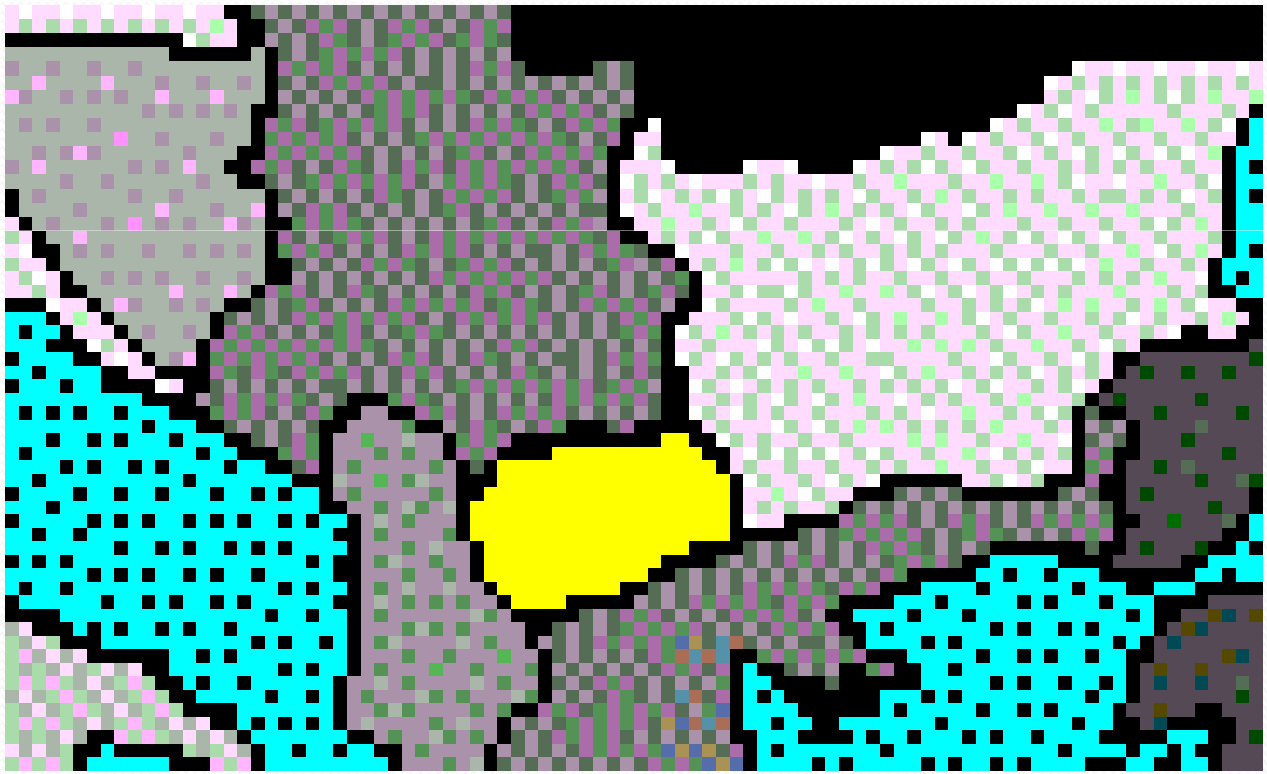
R. of Macedonia

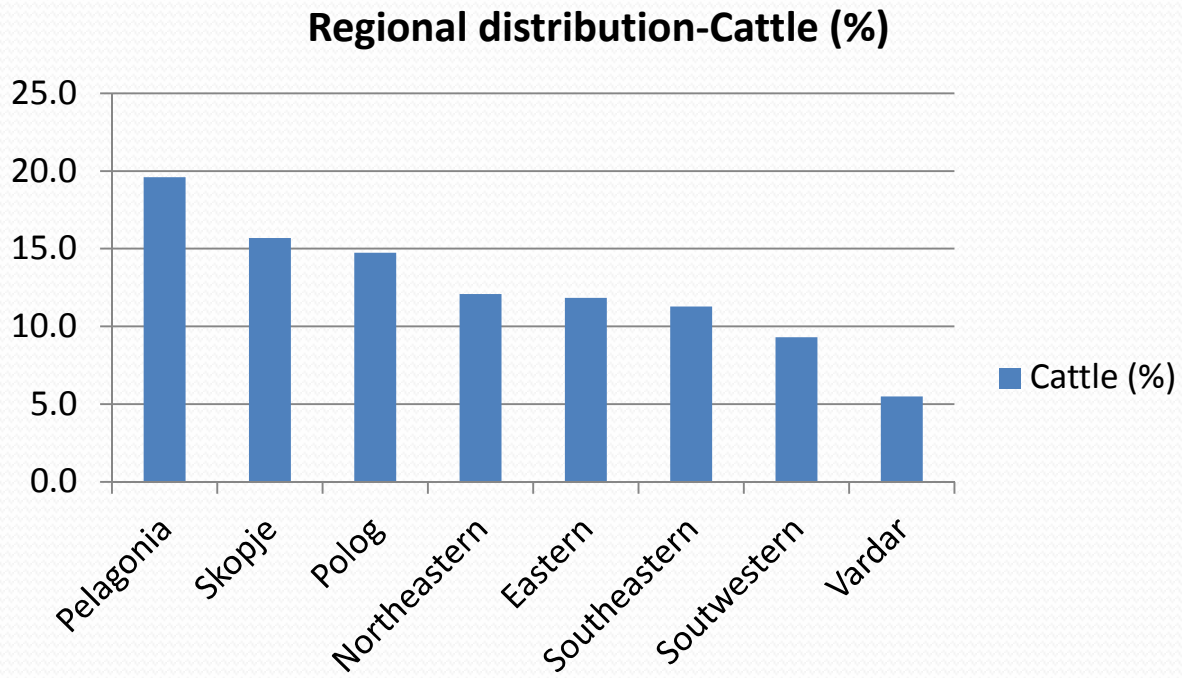
Regional position of Macedonia



## Introducing R.of MACEDONIA

- Area: 25.713 km$^2$,
- Population: 2.100.000,
- Climate: 3 kinds (mediter-ranean, continental, high mountain),
- 2/3 is hill-mountain area,
- highest mountain: Korab (2864 m);
- maintain borders for climate maintaing;
- Rains: 680 mm/year;
- Sunshine annual quantity: 2100-2450 h;
- Altitude: average = 829 m (70% up to 1000 m);
- Soils: delluvial and alluvial, red, brown and salty soil;


Northeastern Region
Skopje Region
Eastern Region
Polog Region
Southwestern Region
Vardar Region
Southeastern Region
Pelagonia Region


Regional distribution-Cattle (%)
25.0
20.0
15.0
10.0
5.0
0.0
Pelagonia
Skopje
Polog
Northeastern
Eastern
Southeastern
Soutwestern
Vardar
Cattle (%)

# Macedonian surface area and population

| | | |
|---|---|---|
| *Agricultural land* | *1.244.000 ha* | *49,2% from total land* |
| **Pastures** | **658.000 ha** | **50,8%** |
| **Areable land** | **610.000 ha** | **49.2%** |
| *Woodland* | *997.000 ha* | *38,8%* |
| *Swapland* | *330.000 ha* | *12,0%* |
| Population employed in agricult. | *226.498* | *11,6%* |
| Inhabitants per $km^2$ | *76* | |
| Population in rural area | | *39%* |
| under systems of irrigation of agricultural land | 370.000 ha | 24,5% |
| domestic originated water capacity | 84% | |

| Farm size (classification ha) | % of farms |
|---|---|
| up to 3 ha | 86,0 % |
| 3-8 ha | 11,5 % |
| *over 8 ha* | 2,5 % |

- *AUTOHTONOUS BREEDS:*
- Cattle: Busha;
- *Horse: Macedonian hill-mountain breed;*
- Pig: sishka;
- Goat: balkan pied;
- Sheep: pramenka with 3 strains;
- Poultry: Domestic breed of chicken,
- Bee: Apis Meliphera Macedonica,
- *Domestic buffalo;*
- *Dog: sarplaninec;*
- *Domestic donkey,*
- *Domestic chicken, …*

# Present potentials of cattle in Macedonia

- Population: 255.000 heads of cattle, i.e. 155.000 heads of pregnant heifers and cows;
- Under AI: 25-30% of cows,
  - 3 cows/farm (for more than 80% of cattle);

**Beef**: Production – 8.000 t/year (27,9% from total meat production - 25.971 t);

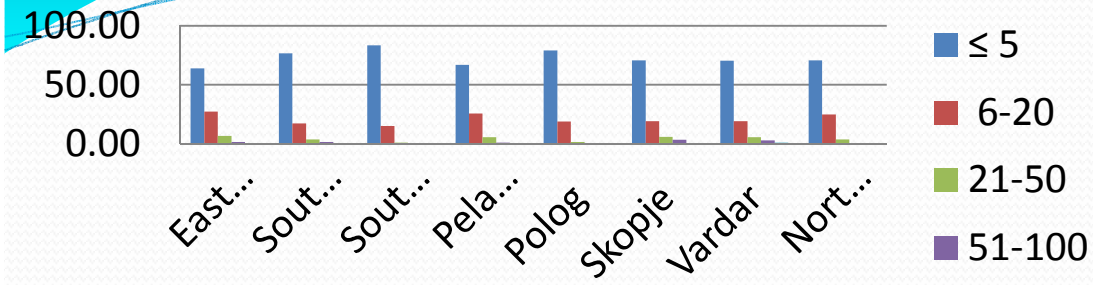
**Milk** production: 370.000 t (310.000 t - cows milk),

- milk consumption per capita - 64,8 kg/year;
- import of alive cattle –2,438,000$,
- big farms - generator of genotypes;

# Common features of our cattle production

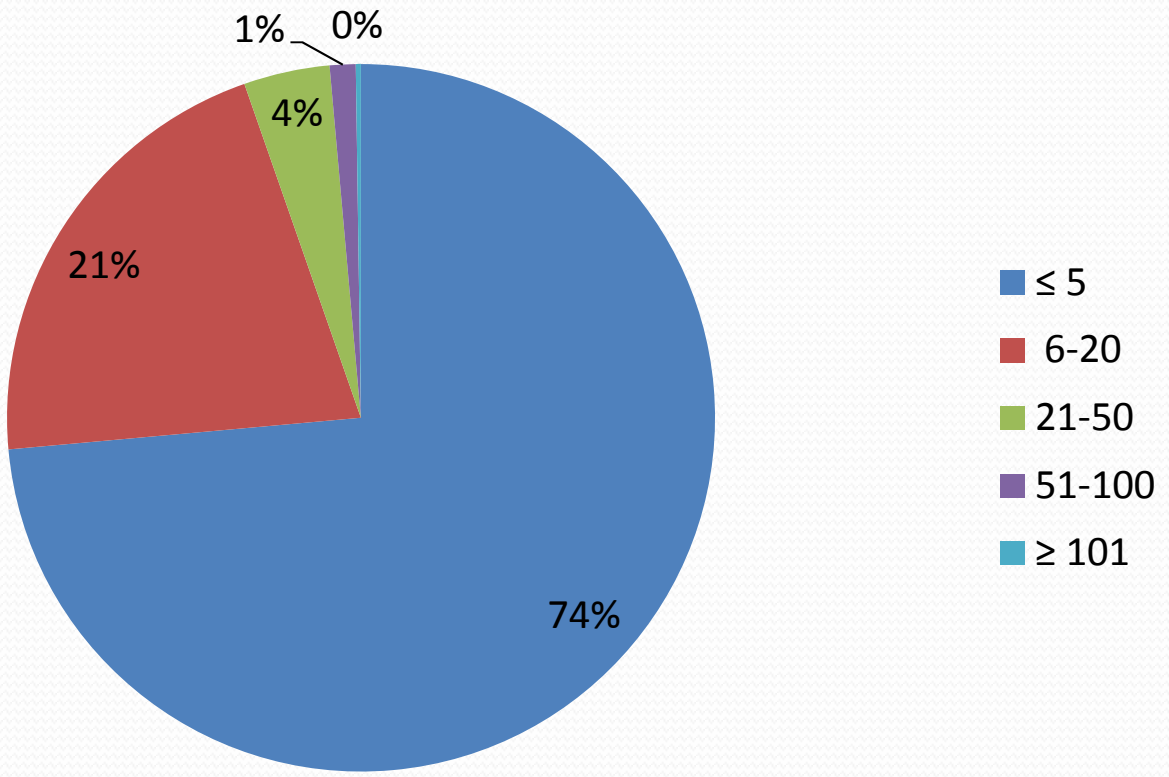
- Low milk production per cow (2.880 kg/cow – 5.600 kg);
- early slaughtering of cattle (230 kg);
- small % of forage land (8%);
- small % of A/I and control of prod. traits of cows,
- large import of Holstein cows,
- low experience in rearing of high-productive cows;
- problems in prod. of high-quality forage crops,
- unorganized market and uncontrolled import,
- spending lot of money for importing meat and live animals,
- changeable policy of state for farmer supporting,
- ununificate quality of animal products etc.

## CATTLE FARM SIZE IN DIFFERENT REGIONS (%)

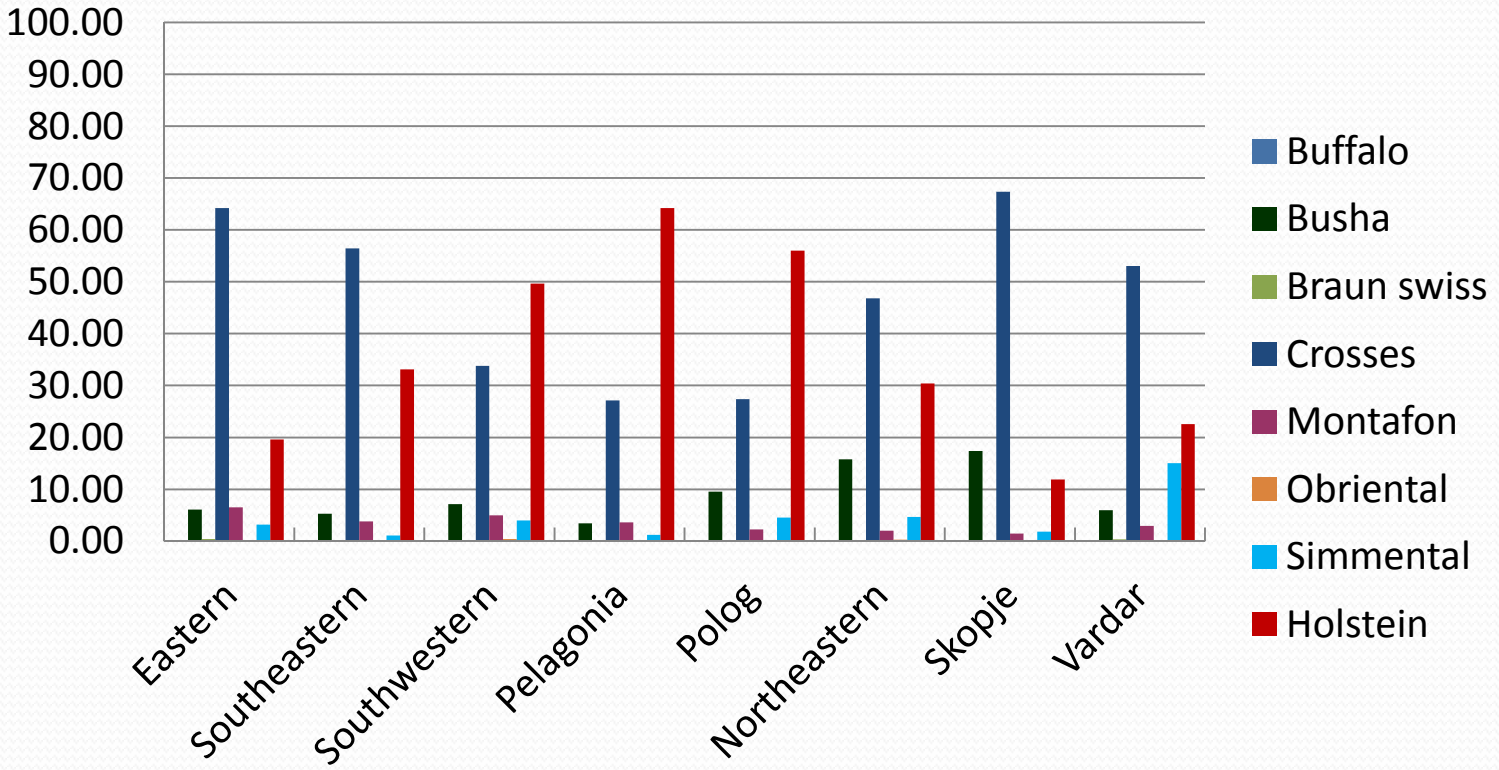




## CATTLE FARM SIZE (%)



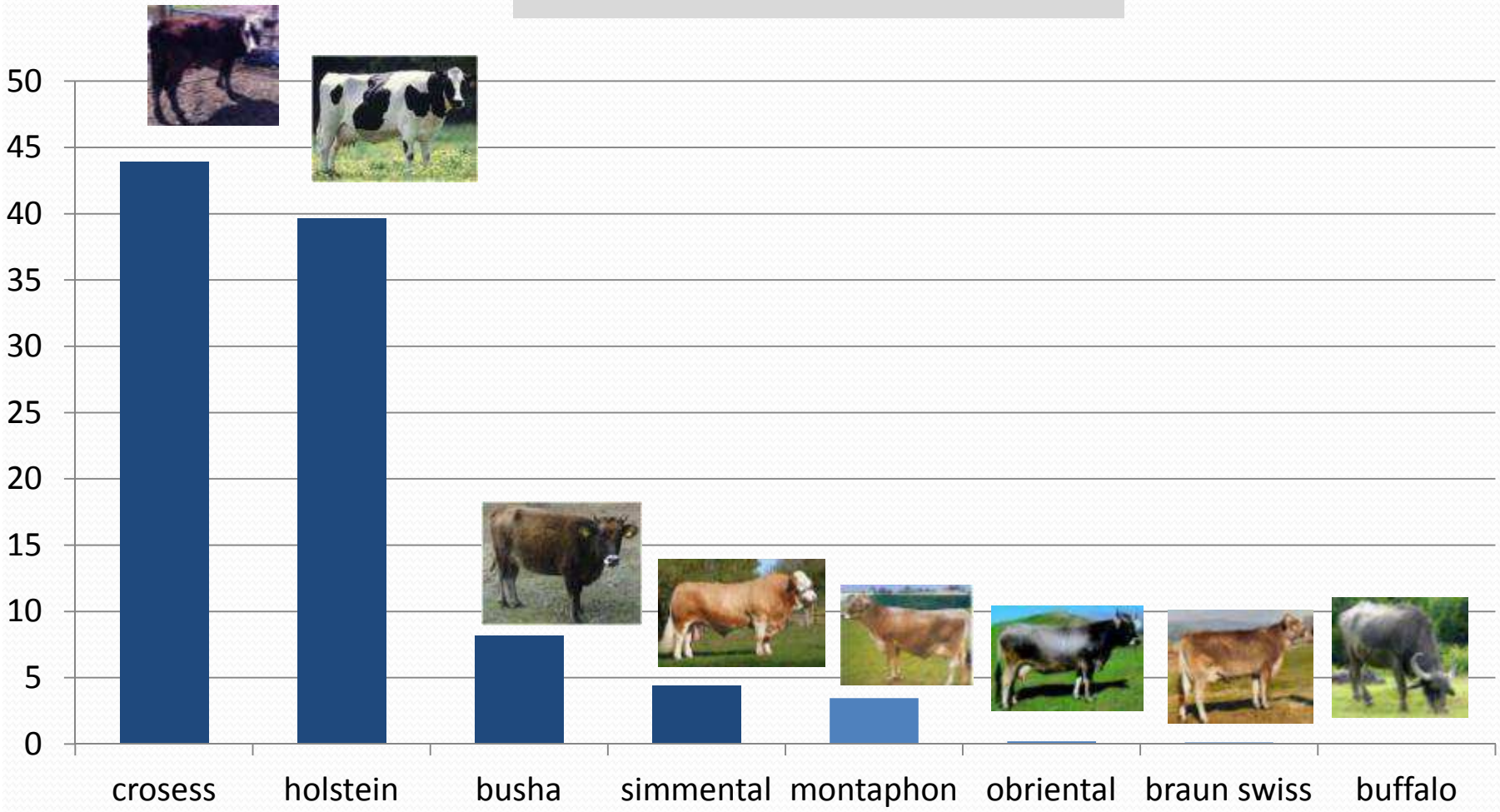

## CATTLE BREED/POPULATION DISTRIBUTION (%)



| Breeds of cattle | 2008 | | 2009 | | 2010 | |
|---|---|---|---|---|---|---|
| | No. of heads | in % | No. of heads | in % | No. of heads | in % |
| Black and white | 101843 | 41,80 | 109525 | 42,49 | 112012 | 41,57 |
| Simmental | 12310 | 5,05 | 13778 | 5,35 | 14068 | 5,22 |
| Brown | 9437 | 3,87 | 10334 | 4,01 | 10201 | 3,79 |
| Grew Tyrol | 674 | 0,28 | 689 | 0,27 | 685 | 0,03 |
| **Busha** | 29535 | 12,12 | 27990 | 10,86 | 27242 | 10,11 |
| Beef breeds | 64 | 0,03 | 264 | 0,10 | 158 | 0,06 |
| Crosses | 89707 | 36,82 | 94934 | 36,84 | 104961 | 38,95 |
| Other breeds | 97 | 0,03 | 210 | 0,08 | 116 | 0,27 |
| Total | 243667 | 100,0 | 257724 | 100,0 | 269443 | 100,0 |

# CATTLE BREEDS/POPULATIONS

**(263 283 heads)**



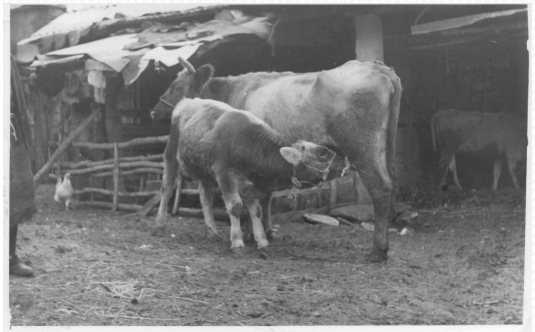
# Black and white breed (40%)

# Simmental breed (5,2%)

Brown (Montafon) breed (3,7%)

# Grey Tyrol (Oberintal) breed (0,03%)

Busha (domestic breed) -10,11%



# Crosses – more than 40%

# Description of our national AnGR network:

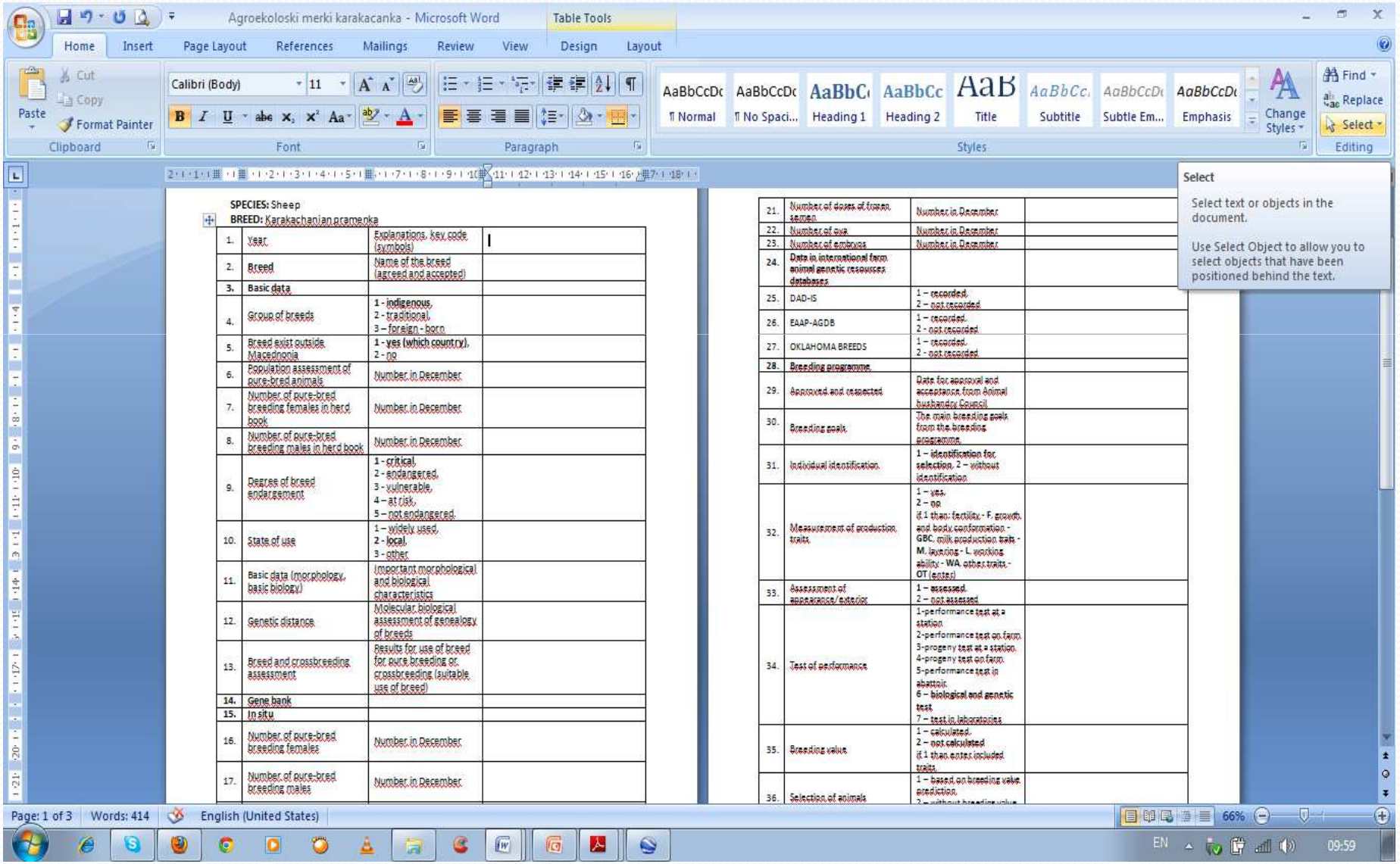
- Livestock biodiversity program
  - 2011-2017
  - Indigenous breeds
  - AE measures

# ***Breeding program for*** *transboundary breeds*

- Developing breeding programme
  - Busha
  - Sharplaninan sheep
  - Karakachanian sheep

-Pig: sishka; Goat: balkan pied; Sheep: pramenka with 3 strains; Poultry: Domestic breed of chicken, Bee: Apis Meliphera Macedonica,
*-Macedonian hill-mountain horse, Domestic buffalo; Dog: sarplaninec; Domestic donkey,*

# Livestock biodiversity program 2011-2017




**SPECIES:** Sheep

**BREED:** Karakachanian pramenka

| | | |
|---|---|---|
| 1. | Year | Explanations, key code (symbols) |
| 2. | Breed | Name of the breed (agreed and accepted) |
| 3. | Basic data | |
| 4. | Group of breeds | 1 - indigenous,<br>2 - traditional,<br>3 – foreign - born |
| 5. | Breed exist outside Macedonia | 1 - yes (which country),<br>2 - no |
| 6. | Population assessment of pure-bred animals | Number in December |
| 7. | Number of pure-bred breeding females in herd book | Number in December |
| 8. | Number of pure-bred breeding males in herd book | Number in December |
| 9. | Degree of breed endangerment | 1 - critical,<br>2 - endangered,<br>3 - vulnerable,<br>4 – at risk,<br>5 – not endangered. |
| 10. | State of use | 1 – widely used,<br>2 - local,<br>3 - other |
| 11. | Basic data (morphology, basic biology) | Important morphological and biological characteristics |
| 12. | Genetic distance | Molecular biological assessment of genealogy of breeds |
| 13. | Breed and crossbreeding assessment | Results for use of breed for pure breeding or crossbreeding (suitable use of breed) |
| 14. | Gene bank | |
| 15. | In situ | |
| 16. | Number of pure-bred breeding females | Number in December |
| 17. | Number of pure-bred breeding males | Number in December |
| 21. | Number of doses of frozen semen | Number in December |
| 22. | Number of ova | Number in December |
| 23. | Number of embryos | Number in December |
| 24. | Data in international farm animal genetic resources databases | |
| 25. | DAD-IS | 1 – recorded,<br>2 – not recorded |
| 26. | EAAP-AGDB | 1 – recorded,<br>2 - not recorded |
| 27. | OKLAHOMA BREEDS | 1 – recorded,<br>2 - not recorded |
| 28. | Breeding programme | |
| 29. | Approved and respected | Date for approval and acceptance from Animal husbandry Council |
| 30. | Breeding goals | The main breeding goals from the breeding programme. |
| 31. | Individual identification | 1 – identification for selection, 2 – without identification |
| 32. | Measurement of production traits | 1 – yes,<br>2 – no<br>if 1 than: fertility, - F, growth, and body conformation - GBC, milk production traits - M, ivyeing - L, working ability - WA, other traits - OT (enter) |
| 33. | Assessment of appearance/exterior | 1 – assessed,<br>2 – not assessed |
| 34. | Test of performance | 1-performance test at a station<br>2-performance test on farm<br>3-progeny test at a station<br>4-progeny test on farm<br>5-performance test in abattoir<br>6 – biological and genetic test<br>7 – test in laboratories |
| 35. | Breeding value | 1 – calculated,<br>2 – not calculated<br>if 1 than: enter included traits |
| 36. | Selection of animals | 1 – based on breeding value prediction, |

# Scientific background for Busha

- Adametz L. (1892, 1895, 1896, 1898, 1925, 1926);
- Ogrizek A. (1930, 1945, 1946);
- Fragnesh O. (1903); Rako, Finci, Smalcelj, Hlebarov, etc.

- *In the R. of Macedonia:*
- Taskovski Milivoj (1959);
- Smilevski Smile (1964, 1974, 1980);
- Bunevski Gjoko (1994, 2006, 2011-12).

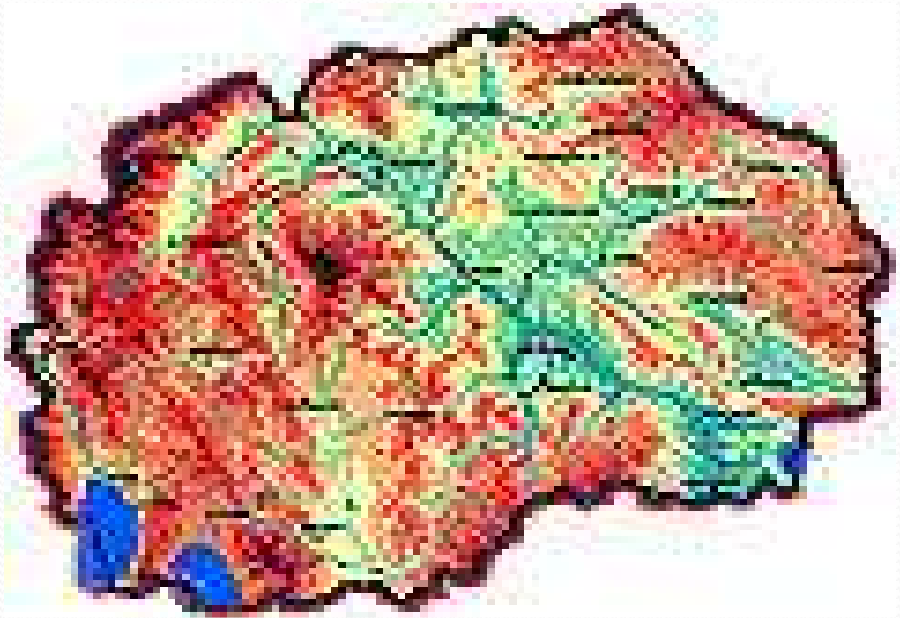
# Livestock breeding legislation

- 2008: Low of livestock breeding,
- 2010: Livestock Common Breeding Programme (2010 – 2020),
  - Separate Breeding Programmes (5 years);
- 2011: Programme for Livestock Biodiversity (2011-2017)
  - Inventarization,
  - characterization, monitoring of the trends and risks
  - Phenotype,
  - Production traits,
  - Reproduction traits,
  - DNA characterization, etc.

| Species | Breed | Situation in the population |
|---|---|---|
| Cattle | Busha | Stable/uninvestigated |
| Sheep | Karakacanska | Critical |
| | Ovcepolska | Stable |
| | Sharplanianska | Stable/uninvestigated |
| Goats | Balkan goat (local) | Stable |
| Pigs | Local primitive pig | Uninvestigated |
| Bee | Apis mellifera macedonica | Stable |
| *Potential species of autochthonous, traditional livestock species which ought to be under protection in the future* | | |
| Buffalo* | Local water buffalo | Uninvestigated |
| Dog* | Sharplaninian dog | Uninvestigated |
| Horse* | Local horse | Uninvestigated |
| Donkey* | Local donkey | Uninvestigated |
| Other species | | |

# Current research activities

- 4 herds of busha in Macedonia:
- **Herd 1 – Prilep region:** 450 cattle
- **Herd 2 – Ograzden region**: 120 cattle
- **Herd 3 – Ohrid region**: 44 cattle
- **Herd 4 – Rozden region**: 172 cattle
- **Herd 5 – Lake region**: 50 cattle



- **Herd 1 – Mariovo region**

# Herd 1

- Herd 2 – Ograzden region

# Herd 2 – natural conditions

# Herd 3 – Rozden area

# Herd 4 - Ohrid region

# Lake region – herd 5

# Different strains of Busha

Busha strains in the R. of Macedonia:

1. **Classification of strains according to locality:**
- Povardarie strain,
- Polog strain,
- Orgazden strain,
- Prespa (Ohrid) strain,
- Mariovo strain, etc.

**2. Classification of strains according to colour:**
- Black strain,
- Brown strain,
- Red strain,
- Gray strain,
- Tiger strain, etc.

# Milk compoments from busha cows

| | Fats % | Dry Unfatted matters % | Protein % | Spec. weight | Kg milk/day |
|---|---|---|---|---|---|
| Grey strain | 3,89 (3,65-4,45) | 9,49 | 3,57 | 1,0327 | 3,8 (2,8-5,3) |
| Brown strain | 4,04 (3,79-4,61) | 9,62 | 3,62 | 1,0328 | 4,1 (3,1-6,2) |

Morphological traits of Busha

| Trait | Grew strain | Brown strain | Black strain | Total x |
|---|---|---|---|---|
| No. of cows | 11 | 15 | 4 | 30 |
| Wither height | 107 (104-111) | 105 (99-113) | 105 (103-108) | 106 |
| Back height | 107 (103-111) | 105(101-114) | 105 (103-109) | 107 |
| Rump height | 109 (103-114) | 108 (102-117) | 107 (104-115) | 108 |
| Length of head | 38 (33-42) | 37 (31-40) | 37 (35-41) | 37 |
| Length of horns | 16 (14-21) | 16 (12-19) | 15 (14-18) | 16 |
| Born weight | 15 (12-18) | 14 (11-17) | 15 (12-17) | 15 |

# Reproductive traits

| Trait | Male | Female |
|---|---|---|
| Age at first calving | / | 28 months (19-39) |
| Weight at first mating | 125 kg (95-155) | 150 kg (125-200) |
| Age at first mating | After 12 months | After 24 months |
| Fertility (%) | / | 55% |
| Birth weight (kg) | 17 | 13,5 |
| Body weight (kg) | 275 (245-390) | 230 (180-360) |
| Age at 12 months of age | 125 kg (95-155) | 115 kg (90-132) |

| 1. Sex: | 2. Estimated age of dentition class... | 3. Body hair coat colour pattern: | 4. Body hair coat colour type | 5. Body skin colour: | 6. Muzzle colour: | 7. Eyelid colour: | 8. Hoof colour: | 9. Horn presence: | 10. Horn colour: | 11. Horn presence | 12. Horn attachment | 13. Horn shape: | 14. Horn orientation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 = female; 2 = male; 3 = castrate | | 1 =plain 2 = patchy (pied); 3 = spotted | 1 = white; 2 = black; 3 =dark red; 4 = light red; 5 = fawn; 6 =grey; 7, 8, 9 = (specify | 1 = no pigment; 2 = pigmented (black); 3 = other (specify) | 1 = no pigment; 2 = pigmented (black); 3 = other (specify) | 1 = no pigment; 2 = pigmented (black); 3 = other (specify) | 1 = no pigment; 2 = pigmented (black); 3 = other (specify) | 1 = absent; 2 = present | 1 = black; 2 = brown; 3 = white (no pigment); 4 = other (specify) | | ....% loose; ....%fixed | 1 = straight 2 = curved; 3 = lyre-shape; 4 = loose; 5 = stumps 6 = polled | 1 = tips pointing lateral; 2 = upward; 3 = downward; 4 = forward or backward (indicate also if animal is polled, horns are loose or just stumps |

| 15. Hair type: | 16. Hair length: | 17. Ear shape: | 18. Ear orientation: | 19. Hump size: | 20. Hump shape: | 21. Hump position: | 22. Facial (head) profile: | 23. Dewlap size: | 24. Backline profile: | 25. Rump profile: | 26. Navel flap (for cows): | 27. Preputial sheath (for bulls): | 28. Tail length: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| • sheen: 1 = glossy; 2 = dull • curl: 1 = curly; 2 = straight | 1 = medium (1-2mm); 2 = long (>2mm) | 1 = rounded; 3 = straight-edged | 1 = erect, 2 = lateral, 3 = drooping | 1 = absent; 2 = small; 3 = medium; 4 = large | 1 = absent; 2 = erect; 3 = drooping (backwards, sideways) | 1 = thoracic; 2 = cervico-thoracic | 1 = straight; 2 = concave; 3 = convex; 4 = ultra convex | 1 = absent; 2 = small; 3 = medium; 4 = large | 1 = Straight; 2 = slopes up towards the rump; 3 = slopes down from withers; 4 = dipped (curved) | 1 = flat; 2 = sloping; 3 = roofy | 1 = absent; 2 = small; 3 = medium; 4 = large | 1 = absent; 2 = small; 3 = medium; 4 = large | 1 = short (above the hocks); 2 = medium (about the hocks); 3 = long (below the hocks) |
| 1 2 / 1 2 | 1 2 | | 1 2 3 | 1 2 3 4 | 1 2 3 | 1 2 | 1 2 3 4 | 1 2 3 4 | 1 2 3 4 | 1 2 3 | 1 2 3 4 | 1 2 3 4 | 1 2 3 |

- 1. Current body weight;
- 2. Body size;

- - chest gihth;
- - body length
- - height at withers;
- - muzzle circumference;
- - hock circumference;
- Type of traction performance:
- 1-ploughing in dry land!

# Herd level data

- 1. Basic temperament: 2. *moderately tractable;*
- 2. Any known adaptability traits:
- A) tolerance or resistance to diseases and parasites;
- B) drought tolerance;
- C) heat tolerance
- 3. Type of farm: 1. peasant farm!

- Mating practice: 2. – uncontrolled, seasonal, natural mating (multiply sire);
- Herd size …
- Herd composition…

# NGO “Busha” Skopje

- From 2012, Adress: Bul. Edvard Kardelj, bb,
- 1000 Skopje, R. of Macedonia
- (at the Faculty of Agricultural Sciences and Food),
- University Ss. Cyril and Methodius, Skopje, RM)

# Subsidies for Busha

- Still no subsidies,
- Probably from 2014, from the National Program for rural development of the R. of Macedonia
- **CALCULATION OF SUPPORTING RATES FOR AUTOCHTHONOUS BUSHA CATTLE BREED AS A METHOD IN IMPLEMENTING AGRI-ENVIRONMENTAL MEASURES**

| **Case farm** | **HF** | **UP** | **BMM** | **BM** |
|---|---|---|---|---|
| Cattle breed | Holstein-Friesian | Mixed breeds | Busha | Busha |
| Type of farm | Family | Family | Family | Ag. company |
| No. of cows | 20 | 6,5 | 20 | 300 |
| System of breeding | Milk | Milk | Cow-calf/ milk-cheese | Cow-calf |
| Feeding | In-door | In-door with grazing | Indoor/ grazing | Predominantly grazing |

| Case farm | HF | UP | BMM | BM |
|---|---|---|---|---|
| Partial difference without financial support/subsidies (1269 MKD=0) | 23245 | 14668 | 3526 | 0 |
| | | | | |
| Partial difference without financial support/subsidies (4760 MKD=0) | 19719 | 11142 | 0 | -3526 |
| | | | | |

**Tab. 9 Partial differences corrected with the coefficients of endangerment and geographical distribution**

* coefficient of endangerment (CE) = 1,01, coefficient of geographical distribution = 1,00

There should be compensation for the farmers breeding autochthonous Busha cattle breed in context of the current agri-environment policy measures.

The amount should range from 11,142 MKD to 14,668 MKD when Busha farms – as calculated when these farms were compared to the usual practice farms in the country.

- 2 small UNDP projects (by GEF – Global Environment Foundation), for saving Busha cattle, by Kicevo NGO and K. Palanka NGO, from 01.03.2013 till 01.06.2014.
- Main purpose: to maintain and spread the domestic cattle breed Busha in different regions in the R. of Macedonia.

# Types of farmers in the R. of Macedonia

- **1. Traditional small farmers**, with 1-2 cows/farm, mixed agricultural production, low production (2000-2500 kg milk/cow), low input in production.
- **2. Family farms,** with 10-15 cows/farm, 4000-5000 kg milk/cow, with medium input in production, but also with mixed agricultural production.
- **3. Specialized bigger farms**, with more than 50 cows/farm, mainly for dairy production, with more than 7000 kg milk/cow, nucleus farms.

# Thanks for your attention!