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# Adjustment of cattle and sheep production in Croatia to the actual economic and market environment

<sup>1</sup> Ivanković A., <sup>2</sup> Štoković I., <sup>3</sup> Barać Z.

<sup>1</sup> *Dep. for animal production and technology; Faculty of Agriculture, Zagreb, Croatia*

<sup>2</sup> *Dep. for animal production; Faculty of Veterinary Medicine, Heinzelova bb, Zagreb, Croatia*

<sup>3</sup> *Croatian Agricultural Agency; Ilica 101, Zagreb, Croatia*



# Introduction

## General about the cattle and sheep production in Croatia

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- cattle and sheep production in Croatia has a long tradition
- to the nineties of the twentieth century animal production was largely covered with needs of food industry and domestic consumption
  - part of production was exported to foreign markets (*example* Baby beef to Italy)
- during the last two decades, we observe significant changes in primary animal production, processing and animal product markets
  - transition changes in Primary production resulted in specialization and intensification of production, improving of active technologies, enlargement of production units, ...
  - transition changes in Processing we can observed through new quality standard, liberalization of market, ...
  - transition changes in Market we can observed through creating recognizable trademarks, traceability, ...

# Introduction

## General about the cattle and sheep production in Croatia

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- liberalization of the food product market increased demand for competitiveness and distinctiveness of national animal production.
  - consumers' attitudes have changed significantly during the last two decades, and today, hygienic safety, traceability and origin of the product has become essential criteria when purchasing food products.
  - during the last decade, some animal producers tried to raise their competitiveness by creating recognizable trademarks, according to the designation of origin characteristics, traditionalism or geographical origin.
  - apart from strengthening competitiveness of primary production, this also enriched the supply of animal products, preserved the traditional heritage and genetic resources, and strengthened the capacity of rural areas.

# Introduction

## General about the cattle and sheep production in Croatia

### Cattle and sheep production in 2011

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#### Cattle population

- **444 000**; 206 000 under control; 110 000 in milk recording
- milk production **624 mil. kg**
  - 17.400 producers of milk
  - 36 050 kg / producers
  - 140 kg / capita
- beef production **53 800 t**
  - 12.12 kg / capita

#### Sheep population

- **630 000** heads
- milk production **2.79 mil. kg**
  - 6 100 kg / producers
  - 0.63 kg / capita
- sheep meat production (lamb and sheep meat) **\*10 070 t**
  - 2.27 kg / capita

\* estimated

# Introduction

## General about processing and consumption

Changes are noticeable in the primary processing of animal products

- Cow's milk is processed in 42 dairies
  - 7 of them takes 84% of supplied milk
  - part of their needs are met by importing milk
- Sheep milk is processed in 16 dairies
  - 5 of them takes 94.5% of supplied milk

# Introduction

## General about processing and consumption

### ○ Consumption

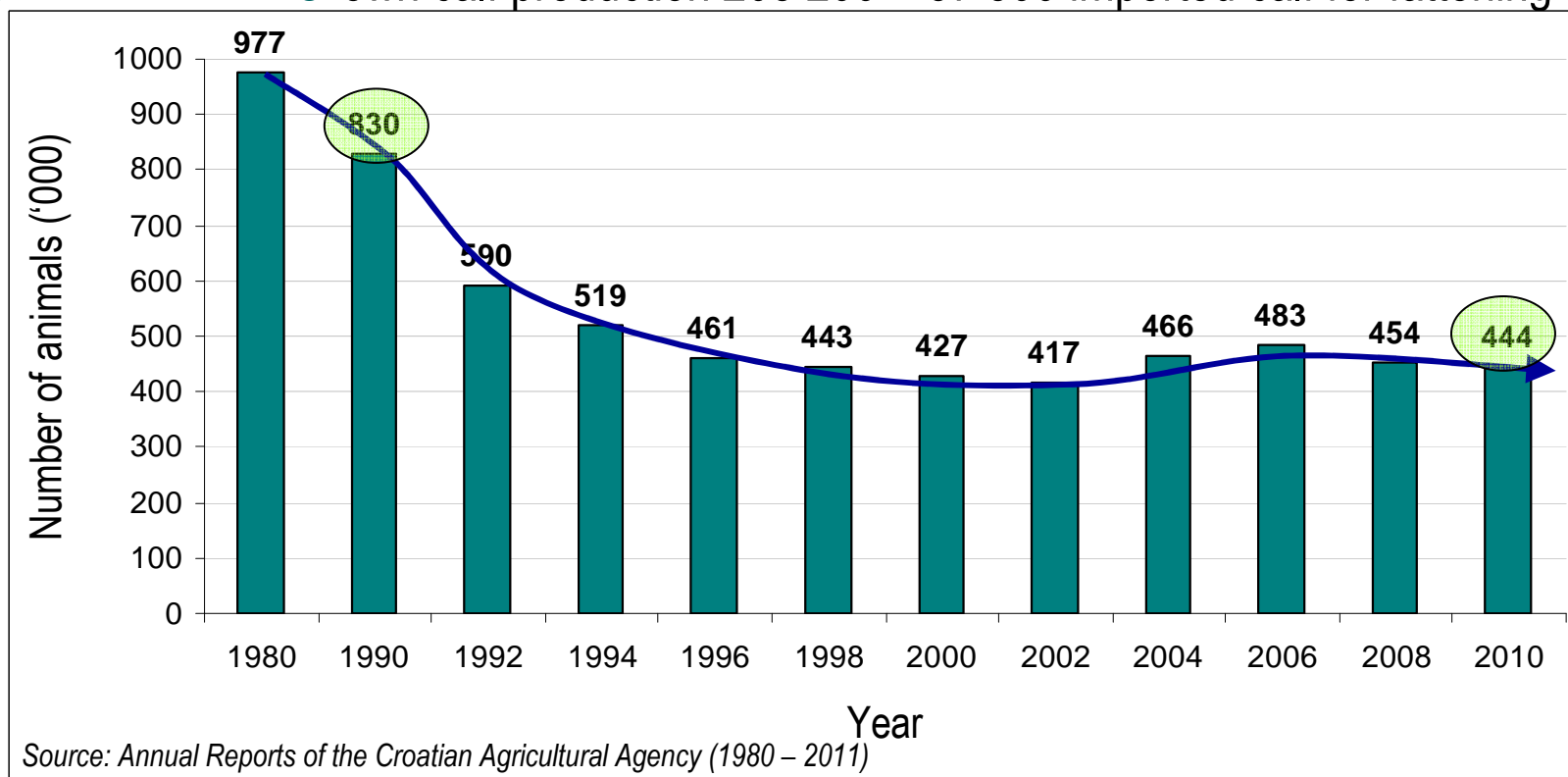
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- of cow's milk: 77.4 kg + 24.3 kg of milk products
- of beef meat: 8.7 kg per capita
  - pork meat, 19.8 kg per capita
  - poultry meat, 19.1 kg per capita
- of sheep milk - no real information
- of sheep meat - 1.0 kg per capita

# I part: cattle production

## Cattle population

- cattle population in 2011 - 444 000 heads
  - 206 000 under control, 110 000 under milk recording
    - 626 mil. kg of raw milk
  - 246 000 beef carcasses classified in 2011 year (54 000 t beef meat)
    - own calf production 208 200 + 37 800 imported calf for fattening

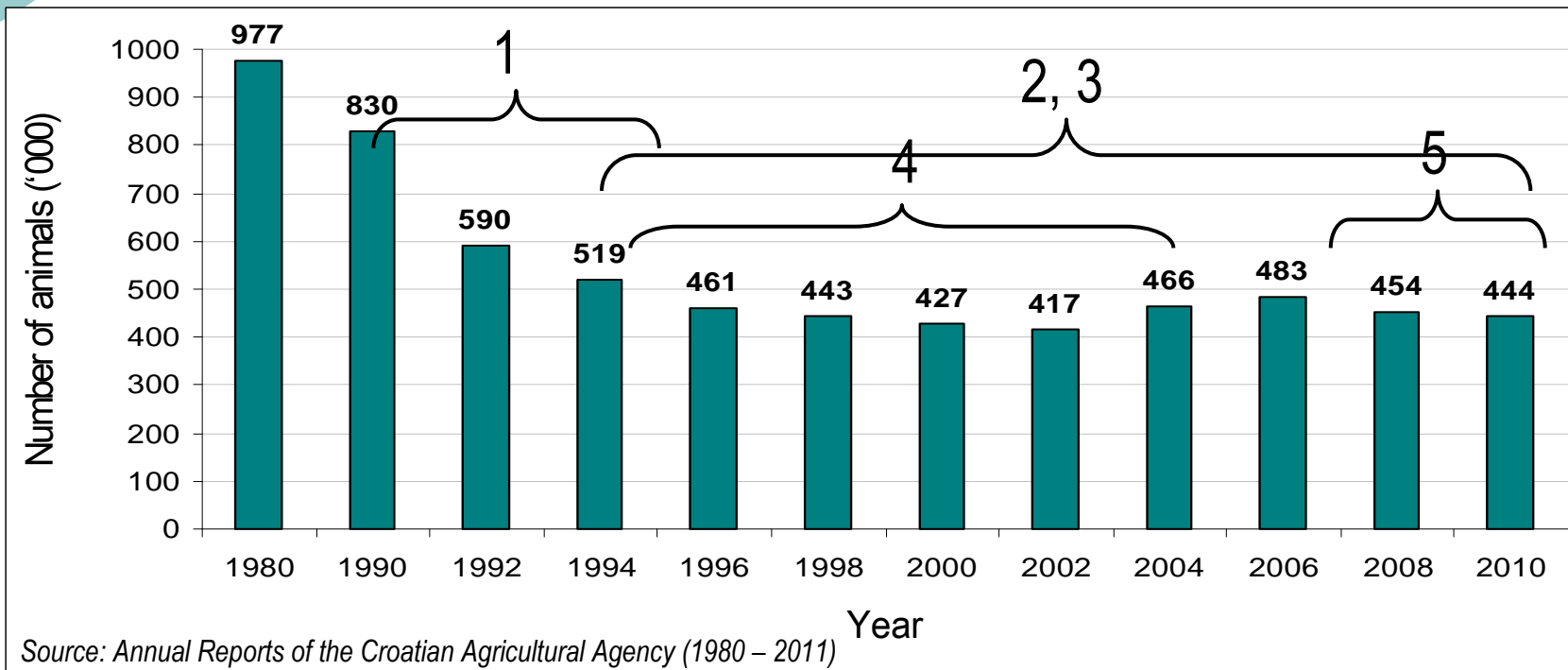


# I part: cattle production

## Cattle population

### Reason for change

1. war
2. liberalization of market, trade with genetic material
3. depopulation of rural area, losse of interest for animal production
4. change of organizational structure of the farm
5. relationship between prices input (fuel, feed) : output (milk)





# I part: cattle production

## Cattle population

### Adjustment to the actual economic and market environment

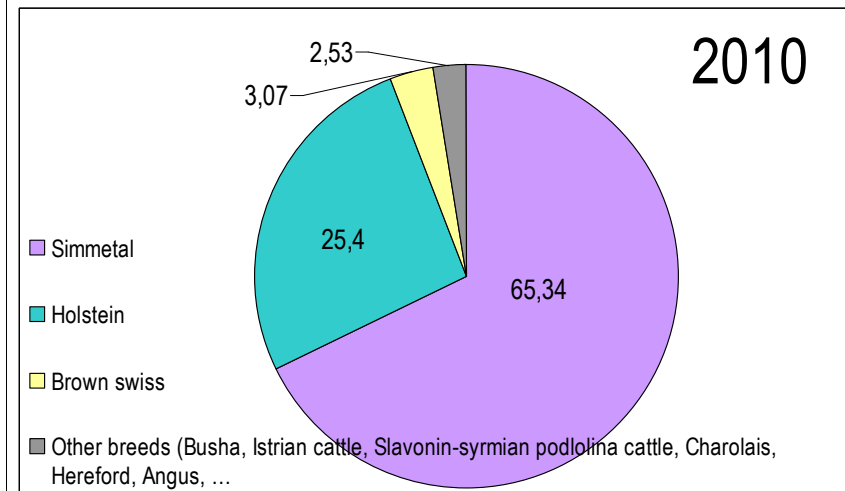
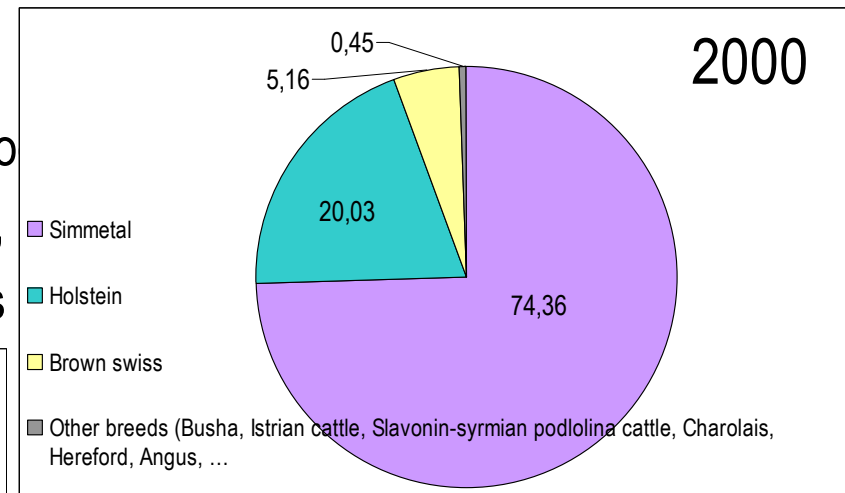
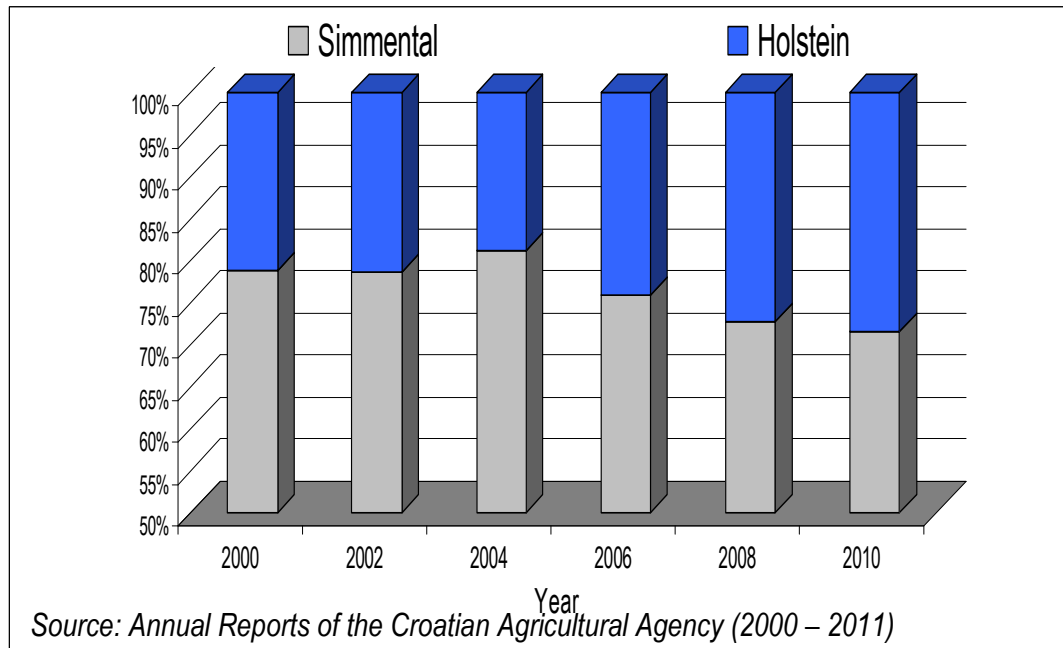
- development of farmers competitiveness
- increase the size of cattle population
- increase interest in livestock production
- help in market relations managing (production: processing: market)

# I part: cattle production

## Cattle breeds

### Breed structure:

- Simmental 65%
- Holstein 25%
- Brown Swiss 3,07%
- Busha, Istrian cattle, Slavonian-Syrmian Po
- Salers, Blonde d'Aquitane, Highland cattle, Limousin, Angus, Hereford, Aubrac, Charolais

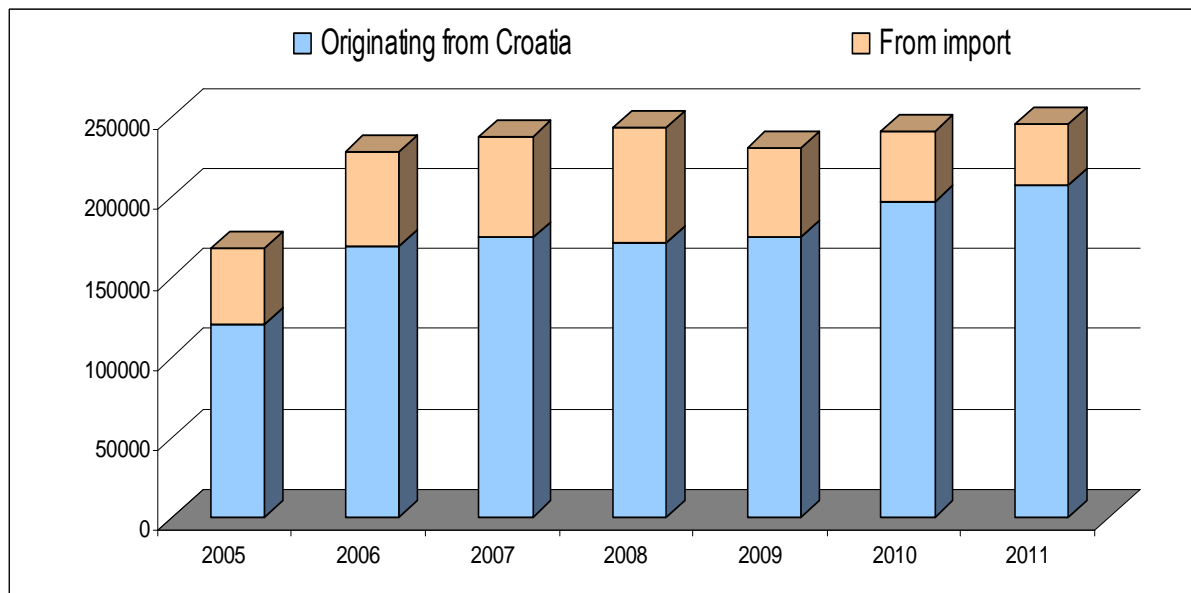


# I part: cattle production

## Cattle breeds

### Beef breeds

- dominant breed in beef production:
  - Simmental – very good in traditional model of beef production
- rising interest to new beef breeds
  - beef breeds imported during the last two decades
  - Charolais, Hereford, Limousin, Angus, Salers, Blonde d'Aquitane, Highland cattle, Aubrac, ...



Source: Annual Reports of the Croatian Agricultural Agency (2000 – 2011; <http://www.hpa.hr/>)

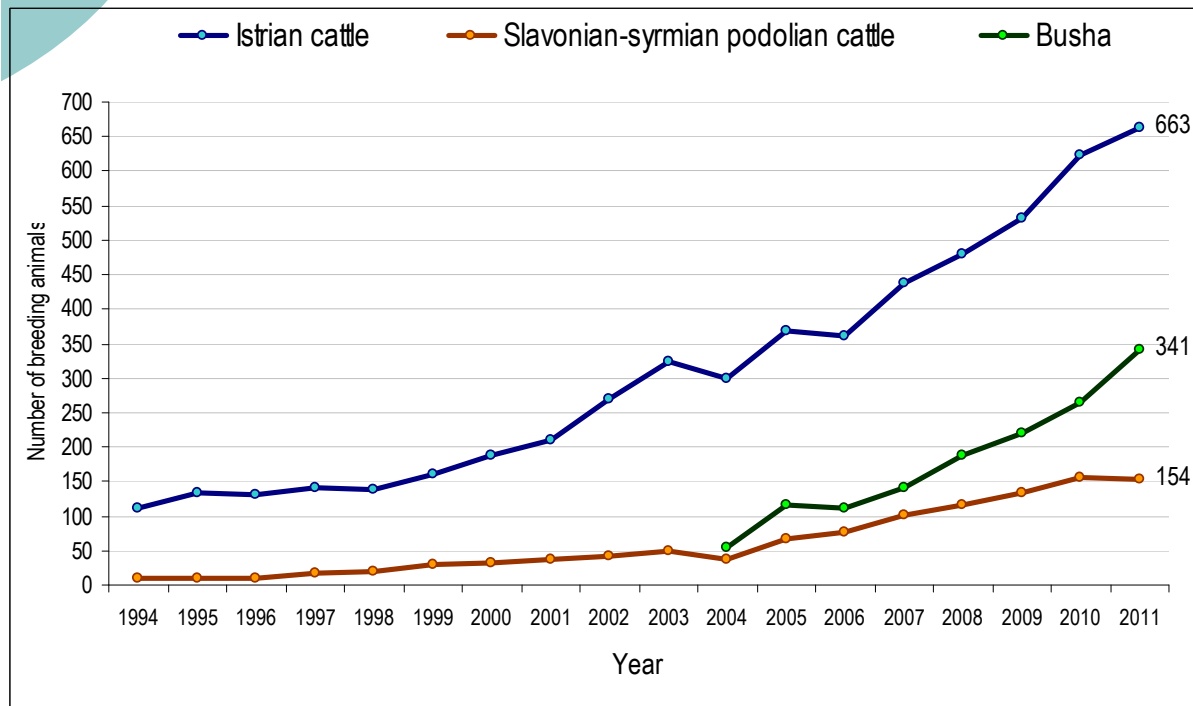
- deficiency of calves in beef production

# I part: cattle production

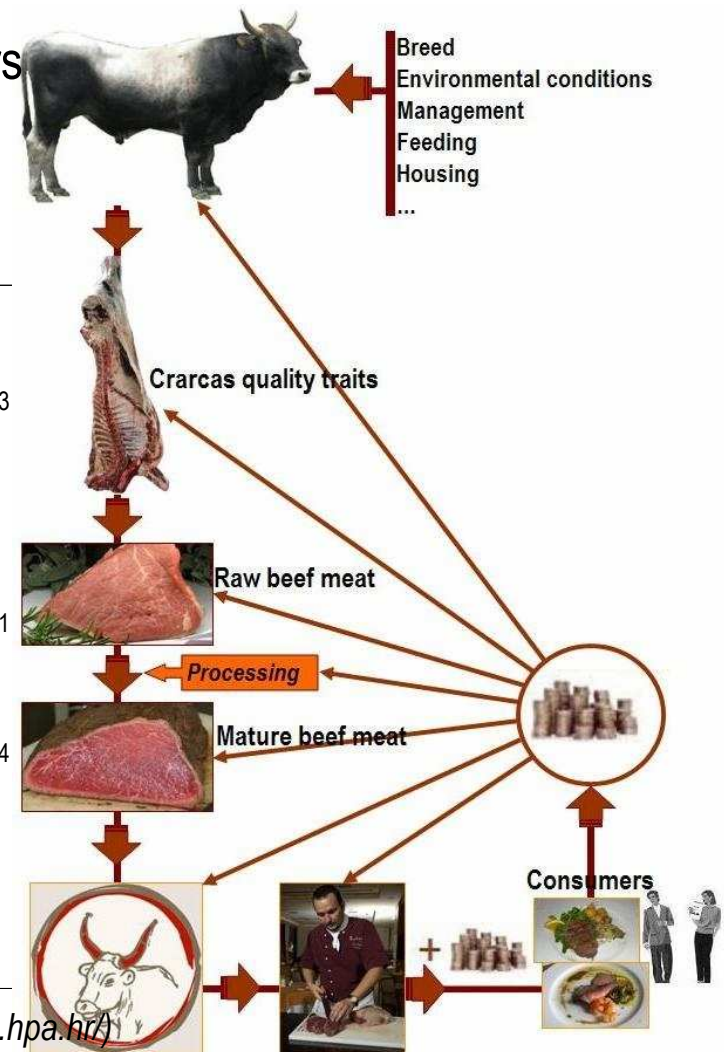
## Cattle breeds

### Autochthonous breeds

- Busha, 308 cows and 33 bulls; 66 breeders
- Istrian cattle, 627 cows and 36 bulls; 161 breeders
- Slavonian-Syrmian Podolian cattle 145 cows and 9 bulls; 20 breeders



Source: Annual Reports of the Croatian Agricultural Agency (1995 – 2011; <http://www.hpa.hr/>)



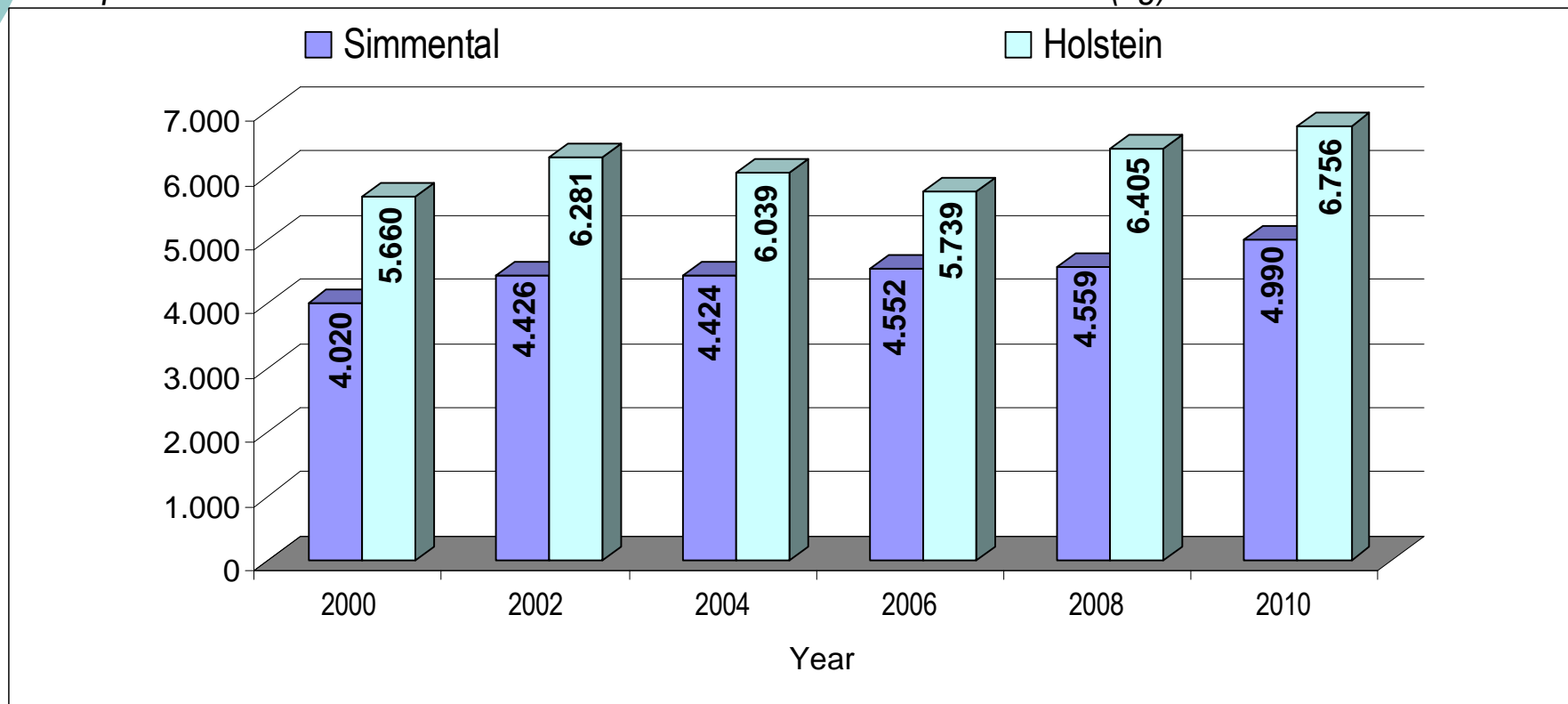
# I part: cattle production

## Production predispositions

in most of the population are higher than achieved results

- specialized genotypes achieve greater production income
- larger farms have better production results per production unit (milk cows)

*Milk production of Simmental and Holstein cows in standard lactation (kg)*



Source: Annual Reports of the Croatian Agricultural Agency (2000 – 2011; <http://www.hpa.hr/>)

# I part: cattle production

## Cattle breeds and production

### Adjustment to the actual economic and market environment

- optimize the level of production per animal
- increase production through the use of elite bulls in reproduction
- introduction of new breeds in production
- adjustment of production technology to genotype
- use of specific crossing models in the production
- monitoring new control method for calculating productivity and breeding values
- maintaining of native breeds through recognizable marketable brands



# I part: cattle production

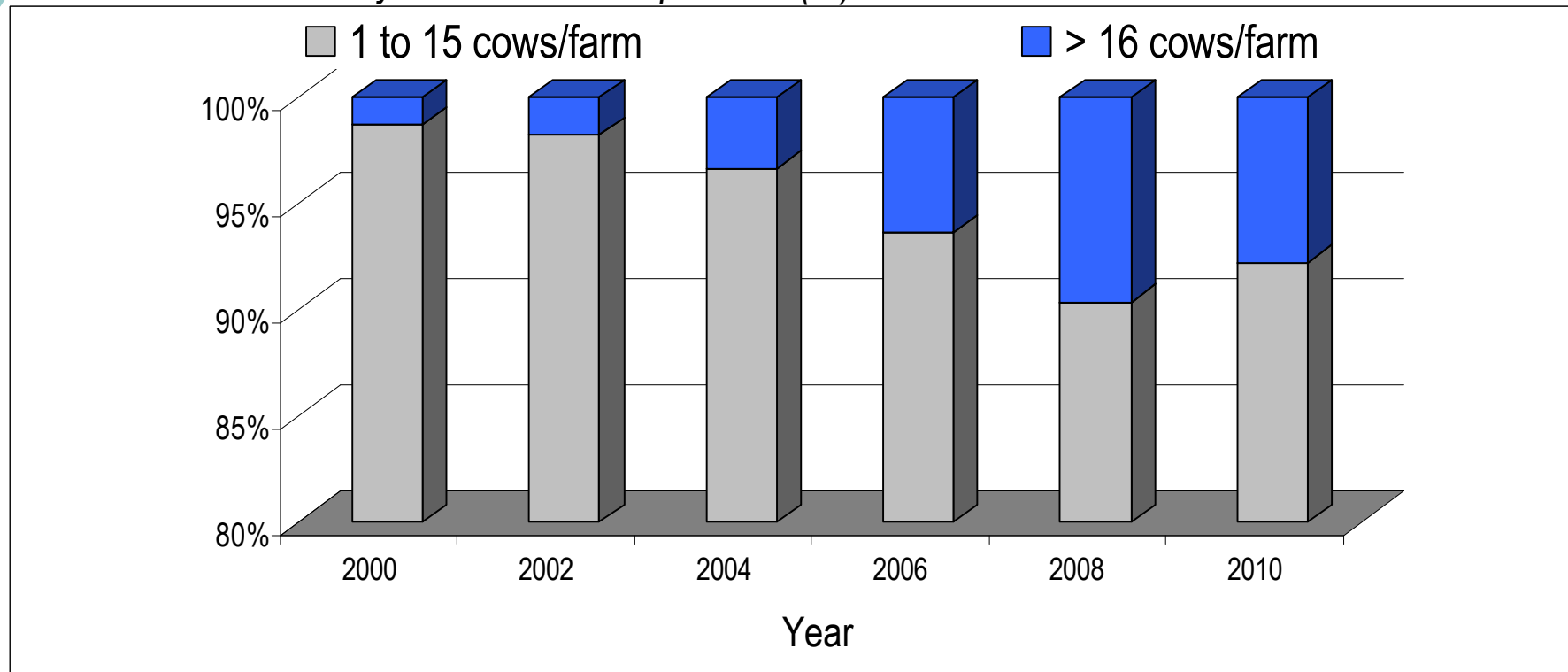
## Size of production unit

### Size of farm

- Average size of farm

○ 2000	98,71% small farm	1,29% >16 cows
○ 2010	92,24% small farm	7,76% >16 cows

Share of cattle farms by number of cows per farm (%)



Source: Annual Reports of the Croatian Agricultural Agency (2000 – 2011; <http://www.hpa.hr/>)

# I part: cattle production

## Production system

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### **Traditional system of milk production**

- traditional technology, low investment, low production <2 500 kg
- produce milk and meat mainly for their own purposes and are sometimes supplies market surplus.

### ○ **Modernized traditional system of milk production**

- improved technology, medium level of investment, production per lactation 2500-4000 kg
- modernized traditional system involves small dairy farms, up to 15 cows.

### ○ **System of small conventional dairy farms**

- harmonized technology, medium to high levels of investment, production per lactation 4000-7000 kg, with 15-60 dairy cows, a market-oriented commodity production.
- mainly use dairy genotypes.

### ○ **Specialized system of large dairy farms**

- larger herds, modern technology, high investment, production >7000 kg lactation)
- Holstein, Brown Swiss
- competitive milk production.
- milking, feeding and other working operations are automated.



# I part: cattle production

## Milk production - quantity indicators

**2011**

626 mil kg milk

17 366 milk suppliers

36 500 kg/ milk suppliers

Year	Number of milk suppliers	Delivered milk (mil. kg)	Delivered milk per milk suppliers ('000 kg)
2002	65.000	514	7,91
2004	50.814	549	10,80
2006	38.145	651	17,07
2008	27.452	658	23,97
2010	19.937	624	31,30
<b>2011</b>	<b>17.366</b>	<b>626</b>	<b>36,05</b>

Quantitative classes

**2007**

**2009**

**2011**

**> 20 000 kg milk/year**

Number of suppliers

7 763

7 197

5 889

Total delivered quantity mil. kg

503 .29

555.27

540.16

**< 20 000 kg milk/year**

Number of suppliers

24 223

16 469

11 477

Total delivered quantity mil. kg

170 .18

120.02

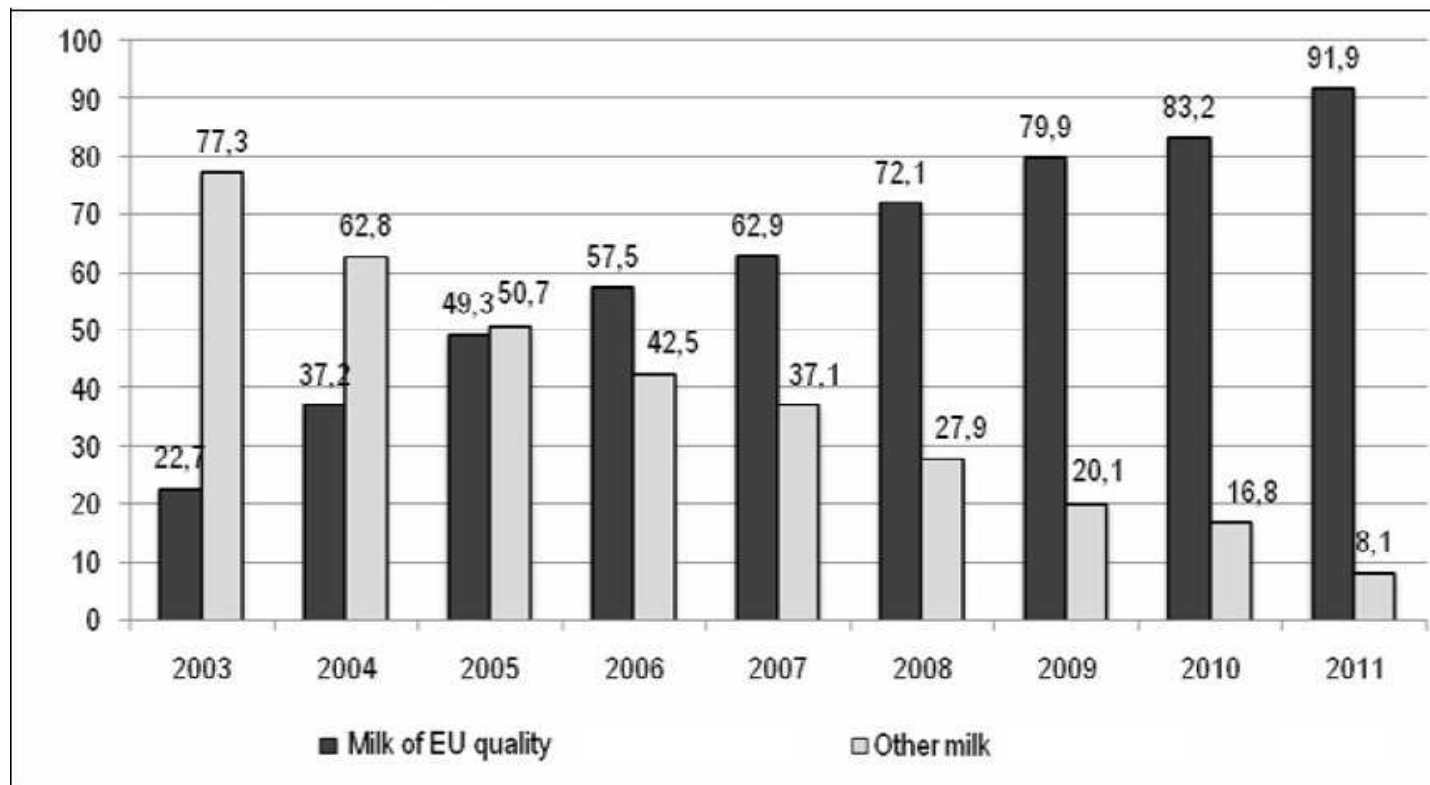
82.25

# I part: cattle production

## Milk production - quality indicators

- 2003 - Establishment of the Central laboratory for milk quality control
- Significantly increased milk quality
  - EU milk 2003 → 2011 22.7 to 91.9%

Share of the 1st class (EU quality) and „other“ milk per year



Source: Annual Reports of the Croatian Agricultural Agency (2011; <http://www.hpa.hr/>)

# I part: cattle production

## Beef production - quality indicators

### Control classification at abattoirs

- carcass classification does not affect its price

**2011**

- 29 400 bulls
- average weight of classified beef carcasses 298 kg



The share of each class and the fatness within the category young bulls aged up to 24 months

Class	Fatness					Total
	1	2	3	4	5	
E	0,14	4,79	7,70	0,81	0,02	<b>13,46</b>
U	0,18	17,36	19,41	1,07	0,01	<b>38,03</b>
R	0,72	22,07	14,61	0,42	0,01	<b>37,83</b>
O	1,49	6,90	1,20	0,01	0,00	<b>9,60</b>
P	0,70	0,30	0,04	0,00	0,00	<b>1,05</b>
Total	<b>3,24</b>	<b>51,42</b>	<b>42,95</b>	<b>2,32</b>	<b>0,03</b>	

Source: Annual Reports of the Croatian Agricultural Agency (2011; <http://www.hpa.hr/>)

# I part: cattle production

## Action plan for development of cattle production (2004 – 2009)

### The goals of the Action plan are:

- increase the overall production of cow's milk and beef production to a level that covers the needs of consumption.
  - increase the total milk production in order to achieve better positions in the negotiations with the EU (*higher milk quotas*).
- improve the existing production technology in order to increase competitiveness.
- increase the employment of the population in rural areas
- actual consumption of milk (181 L / capita) and meat (10.89 kg / capita) increased to 200 L / capita and 14 kg / capita
- increase the amount of supplied raw milk to 900 million kg
- balance the import and export of milk and meat, volume of milk production and farm structure

# I part: cattle production

## Action plan for development of cattle production (2004 – 2009)

### Milk production

*The planned volume of milk production and farm structure*

Category of farms	No. of farms	No. of cows	Milk production (L)	
Small farm (to 4 cows)	42 300	169 200	2 500	423 000 000
Adapted farm (15 cows)	6 000	90 000	4 500	405 000 000
Specialised farms (40 cows)	1 200	48 000	6 000	288 000 000
Specialised big farms (600 cows)	20	12 000	7 000	84 000 0000
Total	49 520	319 200	3 759	1 200 000 000

*Participation the new/adapted farm in total milk production*

	No. of farms	No. of cows	Milk production (L)	
			Average per cows	Total
Total	49 520	319 200	3 759	1 200 000 000
From Programm	7 220	150 000	5 180	777 000 000
%	14,60	47,00	-	64,81

# I part: cattle production

## Action plan for development of cattle production (2004 – 2009)

### Beef production

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- 208 600 calves for fattening
  - 49 200 t young beef meat
  - 18 900 t meat of culled cows produce.
  - 68 000 beef meat
- increased No. of Simmental and Holstein in dairy cattle farms (*crossing with meat breeds*)
- cow-calf farm
  - 14 100 cows

### *The planned volume of beef production and farm structure*

Type of farms	No. of cows	No. of calf	Baby beef ( t )	Number of culled cows	Beef meat (cows; t)	Beef meat – total ( t )
Milk farm	319 200	199 300	46 890	63 800	18 200	65 080
Cow-calf farm	14 100	9 300	2 370	2 400	700	3 070
<b>Total</b>	<b>333 300</b>	<b>208 600</b>	<b>49 260</b>	<b>66 200</b>	<b>18 900</b>	<b>68 150</b>

# I part: cattle production

## Action plan for development of cattle production (2004 – 2009)

### Way of supporting of Action plan

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- in the period from 2004 to 2009 should be:
  - 1200 new dairy farms with an average capacity of 40 cows (20 to 100 cows)
  - 6000 adapted farms with an average capacity of 15 cows
  - 228 new cow-calf farms with an average capacity of 60 cows
- significantly, major investments in small production units are not provided because they were not justified (age producers, size of property, mixed economy).
  - some of these farms went to the cow-calf system,
  - part of these farm remain in the milk production.
- Action plan do not include large farm complexes because it was anticipated with the question of available capital and business plan.
  - this farm will give contribution to the development of cattle production

# I part: cattle production

## Action plan for development of cattle production (2004 – 2009)

### Way supporting of Action plan

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- for the implementation of this program was planned about 330 million euro.
  - construction of facilities and equipment was planned about 200 million euro
  - for cattle (heifers) about 130 million euro.
- funds for the implementation:
  - bank loan funds (primarily the Croatian Bank for Reconstruction and Development; CBRD);
  - pre-accession funds
  - budget funds were not provided
  - credit funds on 10 years; delayed of loan repayment 2 years, the interest rate of 4%
- maximum loan to investment was 460 000 euro / farm
  - the investor has the right to return of investment up to 25%, but not more than 66 000 euro



# I part: cattle production

## Action plan for development of cattle production (2004 – 2009)

### Criteria for participation in the Action plan

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- available agricultural lands
- available mechanization
- practical experience in animal production
- readiness to additional training
- in selection of the projects were included:
  - Croatian Agricultural Agency
  - Veterinary Service
  - County office for urban planning
  - Croatian Agricultural Advisory Service
- establishment of production - Croatian Agricultural Advisory Service supervised farm production in the first three years

# I part: cattle production

## Action plans for development of cattle production (2004 – 2009)

### Results:

- by 2008 from the available CBRD funds was spent only 42.5 million euro
- in this period, 743 farms have been built or renovated and only **183 farm** from Action plan (CBRD) funds

<b>REALIZED</b>	<b>PLANED</b>
● 170 new farm	1 200
● 10 farms was adapted	6 000
● 3 farm cow-calf system	228

# I part: cattle production

## Action plans for development of cattle production (2004 – 2009)

### Reasons – main problems:

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- problem of non-sufficient agricultural areas
- problem of documents collecting
- strict urban plans - significantly increases the price of new farms
- absence of specialized building companies to build the farm???

# I part: cattle production

## Action plans for development of cattle production (2004 – 2009)

2008 - Action plans was modified

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- for implementation of this updated Action plans was planned about 162 million euros
- maximum loan to investment up to 1.46 million euro / farm
  - earlier investment to 460 000 euro/ farm
- credit funds on 15 years loan repayment delayed for 2 years, the interest rate to 4%
  - earlier: credit funds on 10 years
- guarantee repayment of loans: 50% of farmers (investor) and 50% CASB (Croatian Agency for Small Business).
- the investor has the right to return the investment up to 50%, but not more than 465 000 euro
  - earlier: not more than 66 000 euro

# I part: cattle production

## Action plans for development of cattle production (2004 – 2009)

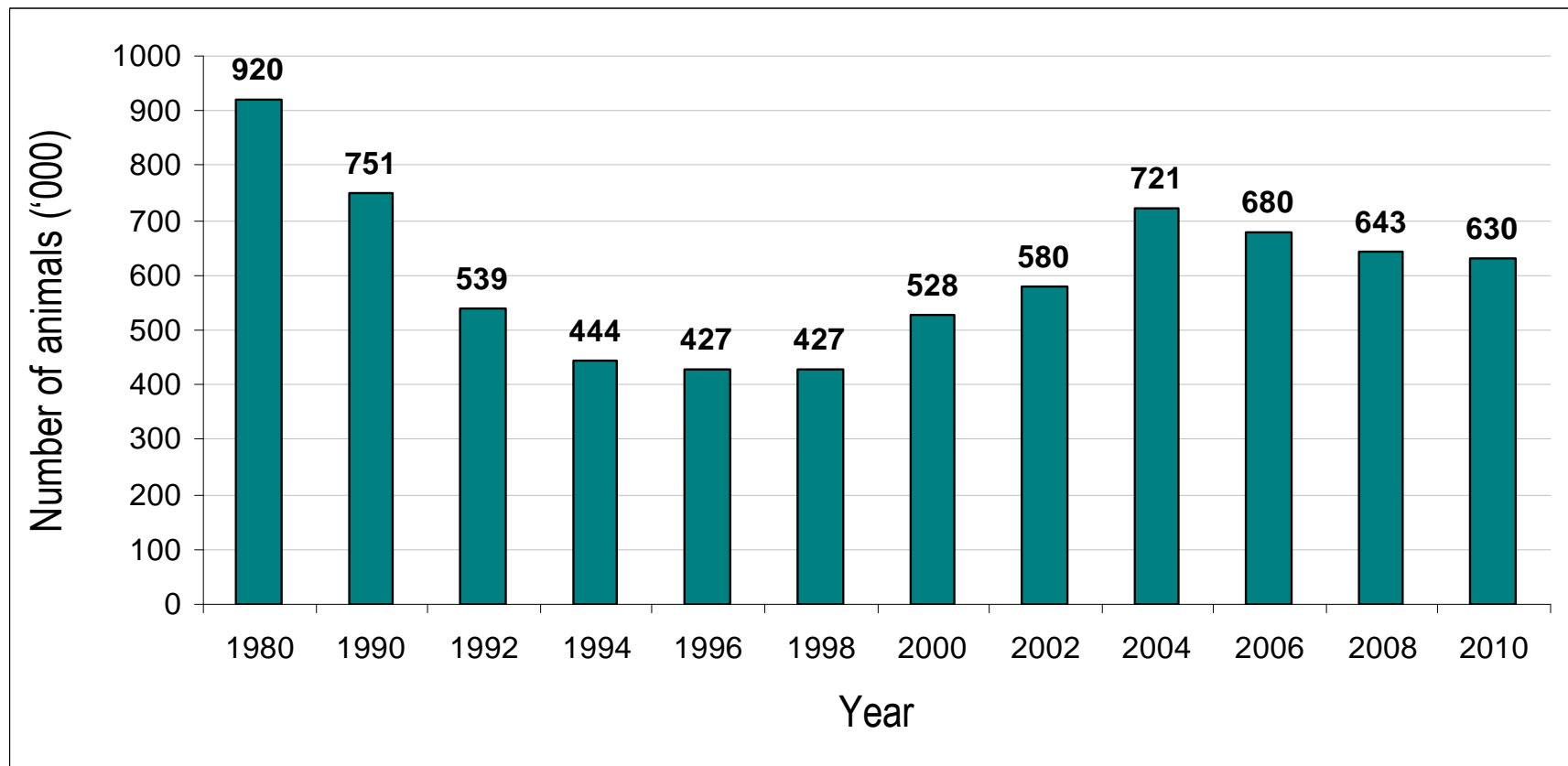
### 2008 - modifications of Action plans

Category of farms	Size of farm	Year		Total
		2008	2009	
New farm	100 (20 – 200)	50	100	<b>150</b>
Adapted farm	20 (10 – 30)	50	150	<b>200</b>
Cow-calf farm	75 (20 – 150)	15	25	<b>40</b>
Fattening farm	150 (50 – 250)	20	30	<b>50</b>
Adapted fattening farm	150 (50 – 250)	20	30	<b>50</b>
Other buildings		3	3	<b>6</b>
<b>Total</b>		<b>158</b>	<b>338</b>	<b>496</b>

# II part: sheep production

## Population

- sheep population - **630 000 animals**
  - 93% sheep for meat production
  - 7% sheep for milk production



# II part: sheep production

## Breed structure

### Autochthonous breeds (70% )

- Dalmatian pramenka
- Lika pramenka
- Istrian sheep
- Krk island sheep
- Cres Island sheep
- Pag island sheep
- Dubrovačka ruda sheep
- Rapska sheep
- Tsigai

### Allochthonous breeds (30%)

- Merinolandschaf
- Suffolk
- Romanovska sheep
- East Friesian sheep
- Solčavsko-jezerska sheep
- Ille de France
- Travnicka pramenka sheep

# II part: sheep production

## Breed structure



### Milk production in 2011 kg

- Pag Island sheep 126
- Istrian sheep 194
- East Friesian sheep 283





# II part: sheep production

## Breed structure



# II part: sheep production

## Meat production

### Estimation

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- 630 000 sheep
- 682 000 lambs
  - average weight of carcass - 12 kg
  - 8 180 t of lamb meat
  - 1.81 kg per capita
- 94 500 older animals
  - average weight of carcass - 20 kg
  - 1 890 t of sheep meat
- Total **10 070 t**
  - 2.31 kg per capita

# II part: sheep production

## Milk production

The number of milk suppliers and delivered quantities of sheep's milk

Year	Delivered milk (mil kg)	Number of milk suppliers
2007	2.65	462
2008	2.75	458
2009	2.75	457
2010	2.78	436
<b>2011</b>	<b>2.79</b>	<b>457</b>

Average annual quality of sheep milk

Year	% fat	% prot.	Somatic cells	Microorganisms (CFU/ml)
2003	6,87	5,57	650.256	212.265
2004	6,83	5,61	473.519	44.336
2005	7,32	5,74	533.058	153.356
2006	7,33	5,65	582.710	146.589
2007	7,34	5,74	635.321	110.725
2008	7,39	5,76	669.479	141.941
2009	7,22	5,74	683.991	145.866
2010	7,34	5,83	742.090	150.277
2011	7,05	5,72	688.359	104.905

# II part: sheep production

## Technologies

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- traditional technologies
  - in Mediterranean and mountain part of Croatia
  - dominant technologies
  - mainly use autochthonous breeds
  - less investment in the production process
- intensive production technologies
  - in the continental part of Croatia
  - mainly use allochthonous breeds
  - higher investments in the production process

# II part: sheep production

## Action plan for development of sheep production in Croatia 2009 – 2013

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- The goals of the Action plan are:
  - to increase the number of animals per farm
  - higher production per animal
  - specialization of farms (milk or meat)
  
- Aims: in the period 2009 - 2013
  - to increase sheep population - 142 000
  - to increase dairy sheep population - 20 000
  - to increase total milk production up to 5,500,000 kg
  - to increase total sheep meat production up to 12,400 t
  - consumption of sheep meat up to 3.1 kg / capita

# II part: sheep production

## Action plan for development of sheep production in Croatia 2009 – 2013

- The plan is:
  - adapting 890 existing farm - from 50 to 100 sheep / farm
  - building 600 new farm - from 100 to 300 sheep / farm

### *Required capacity for the planned increasing of sheep population (2009 – 2013)*

	Size of farm	Farm for meat production		Farm for milk production	
Adapted farm	50	180	9 000	140	7 000
	100	400	40 000		
New farm	100	150	15 000	70	7 000
	200	140	28 000	30	6 000
	300	100	30 000		
<b>Total</b>		<b>970</b>	<b>122 000</b>	<b>240</b>	<b>20 000</b>

## II part: sheep production

### Adjustment to the actual economic and market environment

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- to increase the size of total population
- to improve traditional technologies (*keep their recognizability*)
- to increase the population for milk production
- to increase the production of sheep milk and meat
- to improve current genetic status of sheep breeds
- maintain of native breeds as recognizable marketable brands

# CONCLUSION

- cattle production is adjusting through production unit's enlargement, by introducing of modern technologies and genotypes, efficiency rising and benefit maximising
- decrease of dairy cattle number had no significant effect on produced milk quantity, while had negative effect on quality and the number of calf for fattening





# CONCLUSION

- sheep production suffers inconsiderable structural changes, local breeds are enhanced in breeding sense and traditional production technologies are being standardized
- sheep milk is processed in quality cheeses, and as valued-added products are placed on the market.



# CONCLUSION

- standard models of sheep and beef meat production are recognisable on national level, but they need to undergo quality standardization due to appropriate market approach





**Thank you for your attention!**