**INNOVATION IN LIVESTOCK PRODUCTION: FROM IDEAS TO PRACTICE**

# Beef production, supply and quality from farm to fork in Europe

Kees de Roest and Claudio Montanari – EAAP, 1 September 2015

Research Center for Animal Production (CRPA, Reggio Emilia, Italy)

Centro Ricerche Produzioni Animali – C.R.P.A. S.p.A.

# Content

- Main features of beef farming systems in the main EU producers: France, UK, Italy, Ireland and Poland
- Differences in breeds, feeding and housing systems, and cattle composition
- Characteristics of the beef: EUROP carcass classification
- Tendency in classification of cattle carcasses and final output price
- Technical and economic performance of typical farms
- Carbon footprint: climate change and beef production

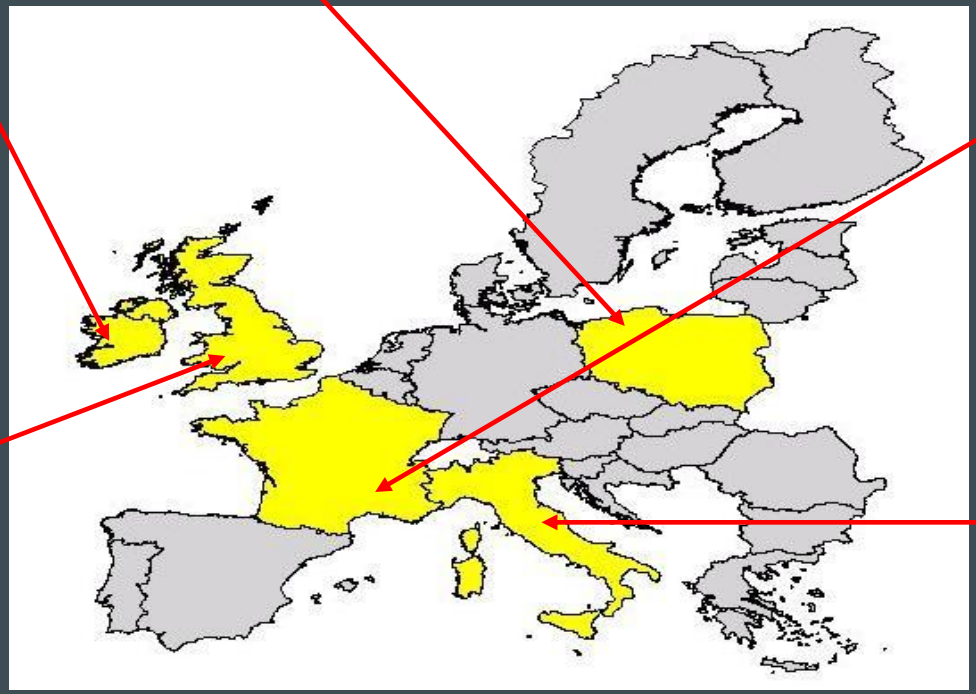
# Beef production systems

**Ireland**
- Suckler cows 45% of the cow herd
- Grass-based beef production
- Grazed/ensiled grass accounts for over 80% of feed consumed
- Cattle mainly finished as steers and heifers
- 50% beef crosses

**Poland**
- Suckler cows only 5% of the cow herd
- Small farms with calves almost exclusively from dairy
- Feeding system based mainly on grass silage
- Young bulls are the main category

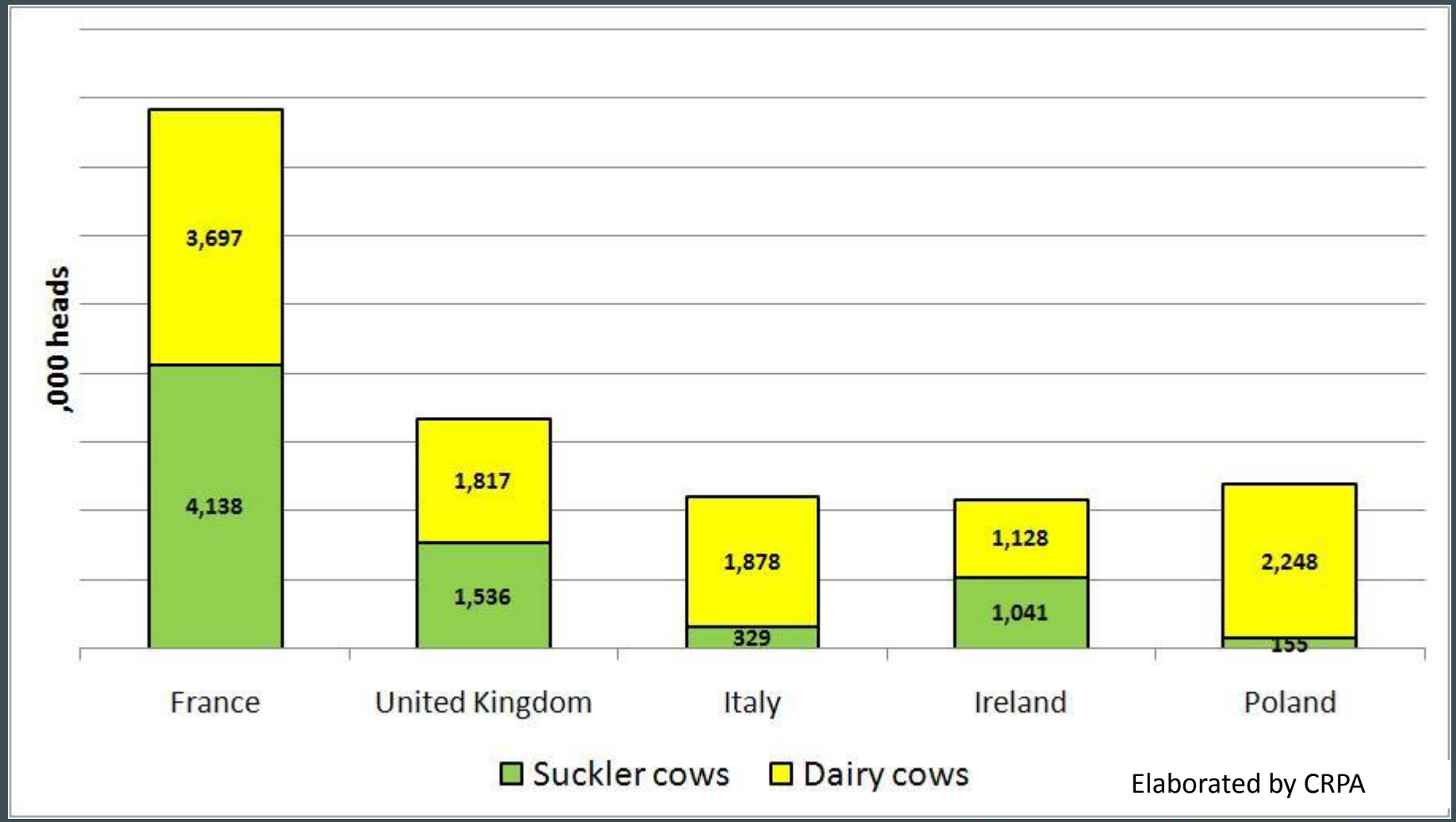
**France**
- Suckler cows 50% of the cow herd
- Mainly located in the North and the Centre of the country
- Main feed is maize silage plus grains and concentrates
- Silage is the only production system for bulls Great variety of beef breeds, among them Charolais and Limousin

**United Kingdom**
- Suckler cows 45% of the cow herd
- Maize and grass silage typically used in combination with grazing
- Dairy and beef breeds
- Cattle mainly finished as steers and heifers
- Beef breeds are Limousin, Angus, Hereford, Simmental and continental crosses



**Italy**
- Suckler cows 15% of cow herd
- Specialized beef finishing farms in the North of Italy Relatively large-sized, high stocking rate operations
- Mostly home grown maize silages plus concentrates and grains
- Young bulls and heifers main category
- Charolais, Limousine and French crosses (imported from France)
- Local beef breed (Piemontese, Chianina, Piemontese) destined to niche market

# Beef vs dairy cow population




Elaborated by CRPA

# FRANCE: beef supply balance sheet

| (,000 t) | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| Production | 1,558 | 1,597 | 1,513 | 1,441 | 1,454 |
| Import | 408 | 375 | 383 | 378 | 360 |
| Export | 286 | 315 | 267 | 240 | 227 |
| Consumption | 1,680 | 1,657 | 1,629 | 1,579 | 1,586 |
| Self sufficiency | 93% | 96% | 93% | 91% | 92% |

Elaborated by CRPA

# ITALY: beef supply balance sheet

| (,000 t) | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| Production | 1,049 | 1,000 | 958 | 855 | 835 |
| Import | 449 | 426 | 403 | 397 | 413 |
| Export | 106 | 134 | 134 | 124 | 117 |
| Consumption | 1,392 | 1,293 | 1,227 | 1,129 | 1,131 |
| Self sufficiency | 60% | 58% | 59% | 58% | 58% |

Elaborated by CRPA

# UNITED KINGDOM: beef supply balance sheet

| (,000 t) | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| Production | 909 | 936 | 885 | 847 | 877 |
| Import | 397 | 383 | 406 | 389 | 405 |
| Export | 138 | 176 | 148 | 132 | 139 |
| Consumption | 1,169 | 1,142 | 1,144 | 1,104 | 1,143 |
| Self sufficiency | 78% | 82% | 77% | 77% | 77% |

Elaborated by CRPA

# IRELAND: beef supply balance sheet

| (,000 t) | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| Production | 559 | 547 | 495 | 518 | 582 |
| Import | 33 | 55 | 45 | 35 | 30 |
| Export | 505 | 510 | 453 | 466 | 525 |
| Consumption | 87 | 92 | 87 | 87 | 87 |
| Self sufficiency | 643% | 595% | 569% | 595% | 669% |

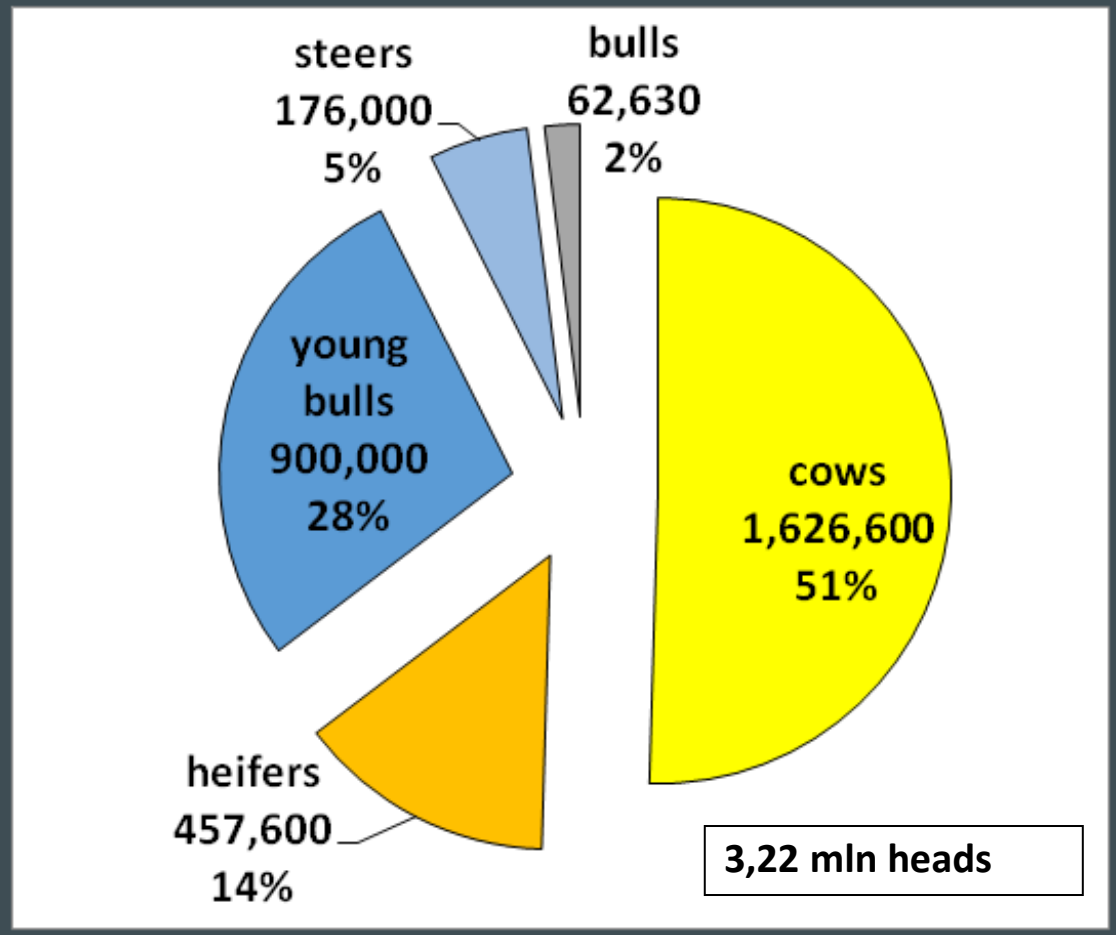
Elaborated by CRPA

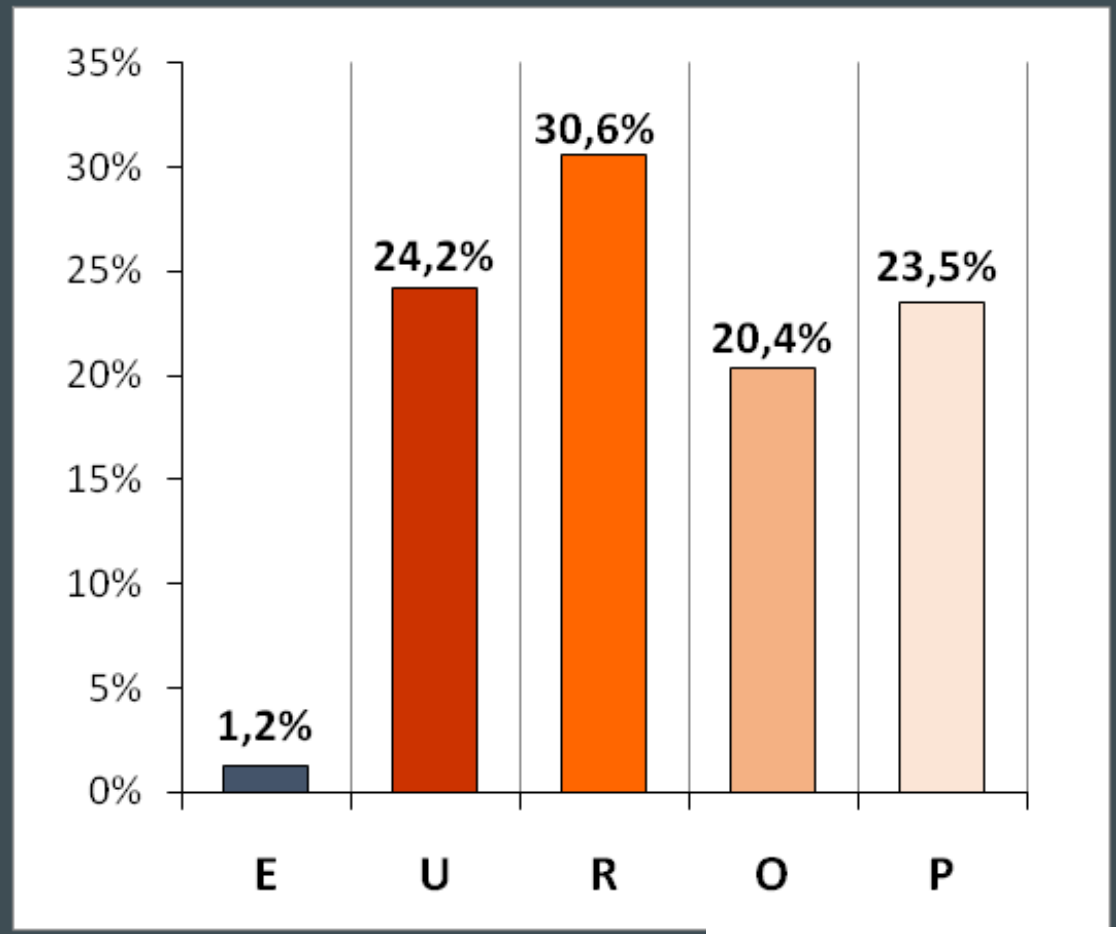
# POLAND: beef supply balance sheet

| (,000 t) | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| Production | 381 | 385 | 371 | 373 | 425 |
| Import | 19 | 18 | 17 | 16 | 16 |
| Export | 321 | 309 | 319 | 340 | 353 |
| Consumption | 79 | 94 | 69 | 49 | 88 |
| Self sufficiency | 482% | 409% | 538% | 761% | 483% |

Elaborated by CRPA

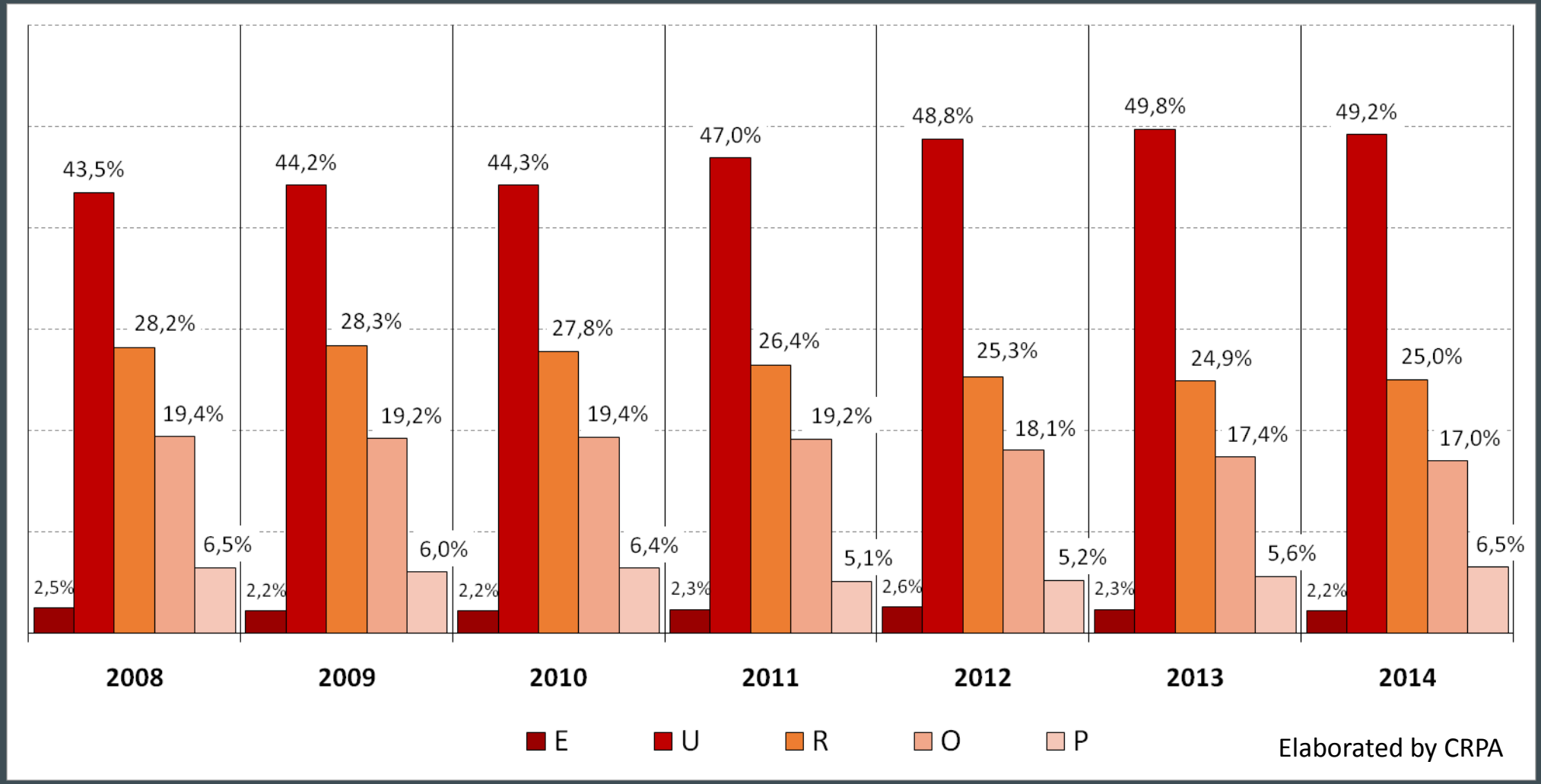
# FRANCE: Slaughterings per category and carcasses conformation (2014)



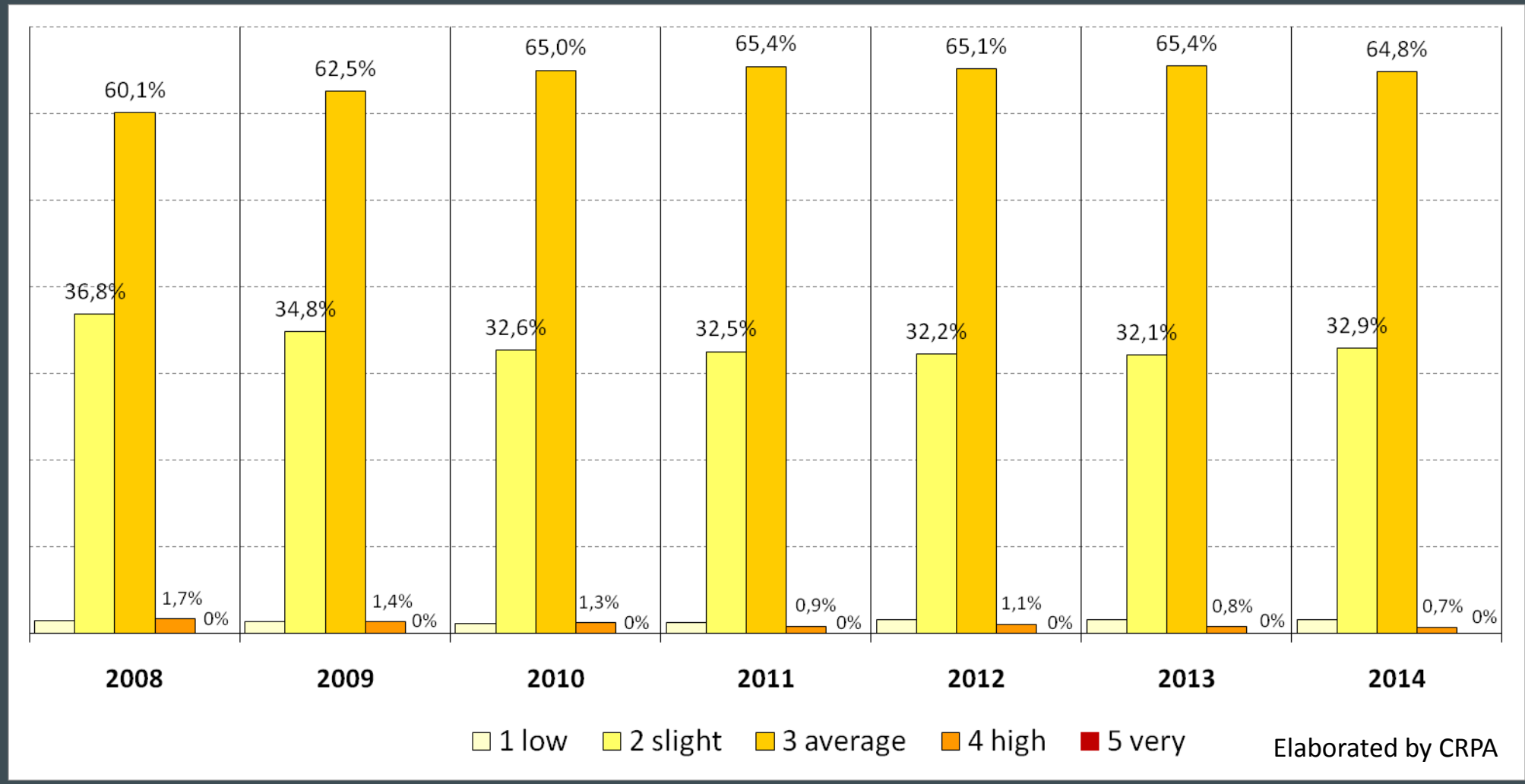

Elaborated by CRPA

# FRANCE: Young bulls carcasses conformation

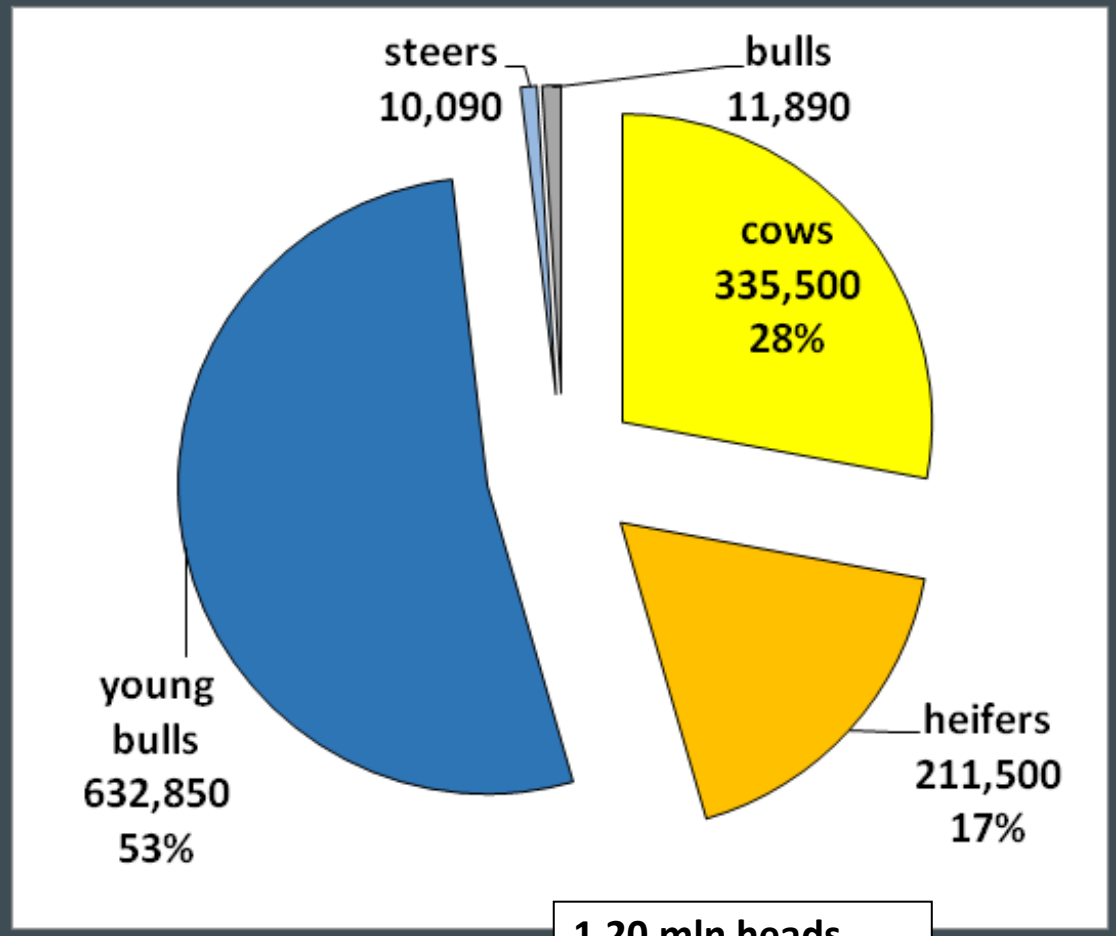



Elaborated by CRPA

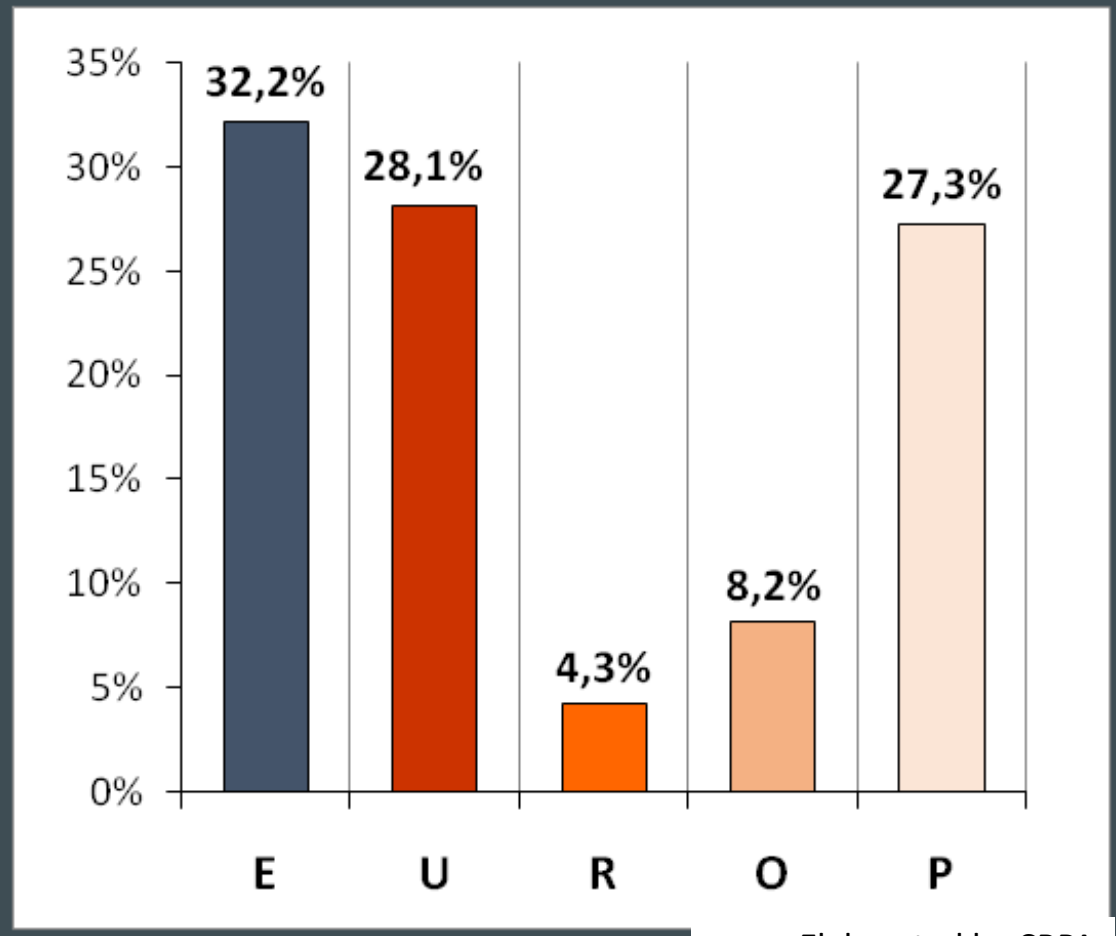
# FRANCE: Young bulls fat cover



# ITALY: Slaughterings per category and carcasses conformation (2014)

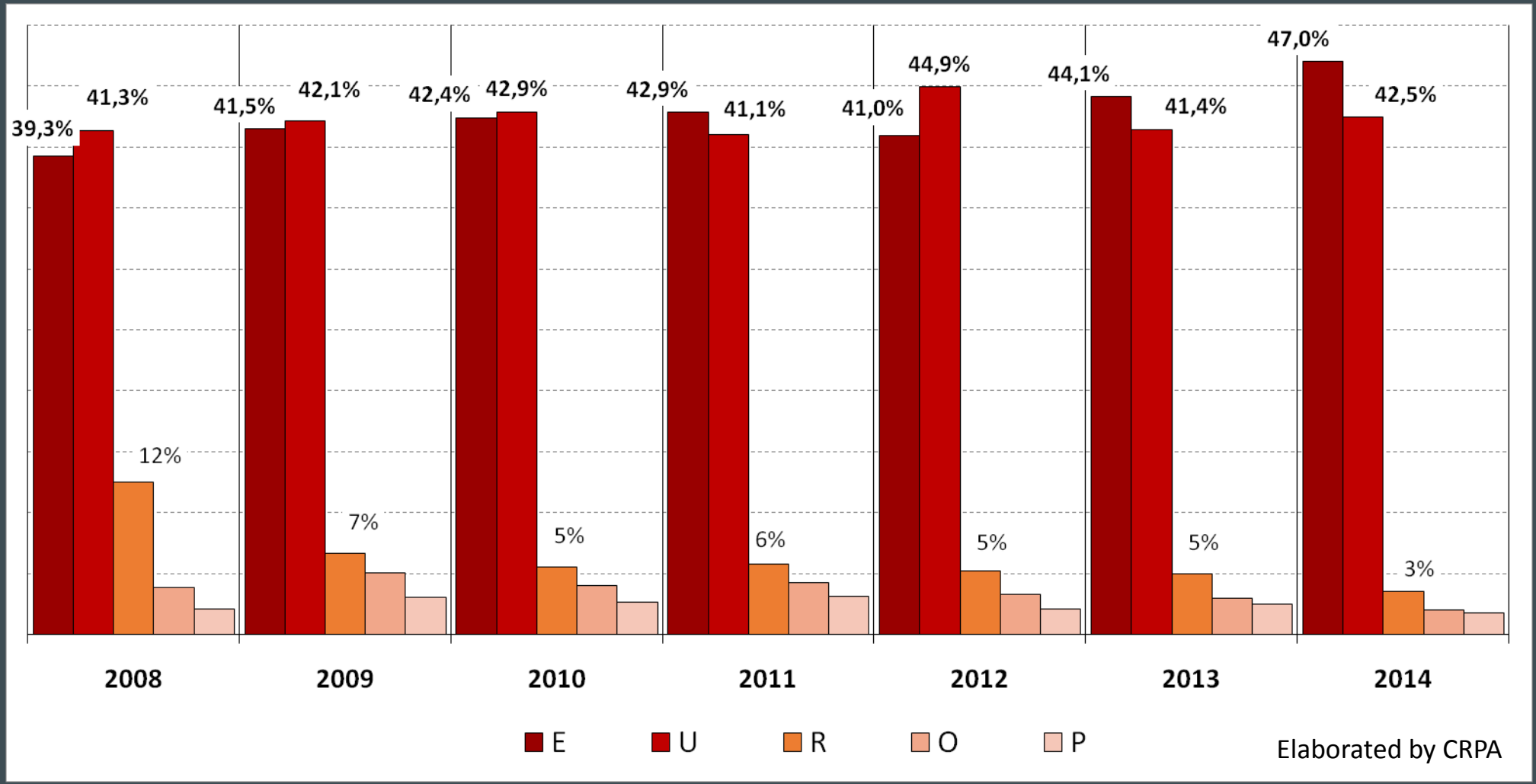



**1,20 mln heads**

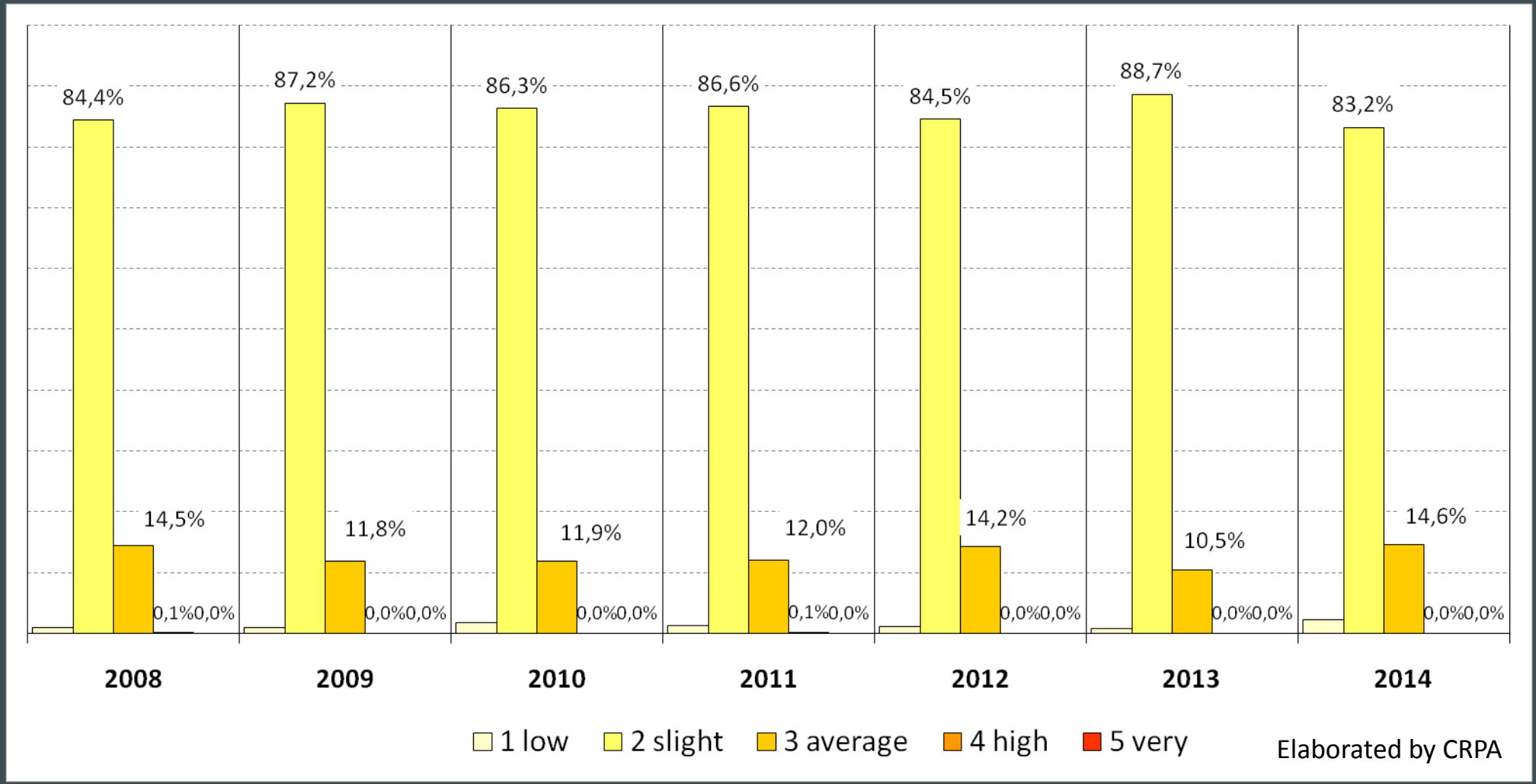



Elaborated by CRPA

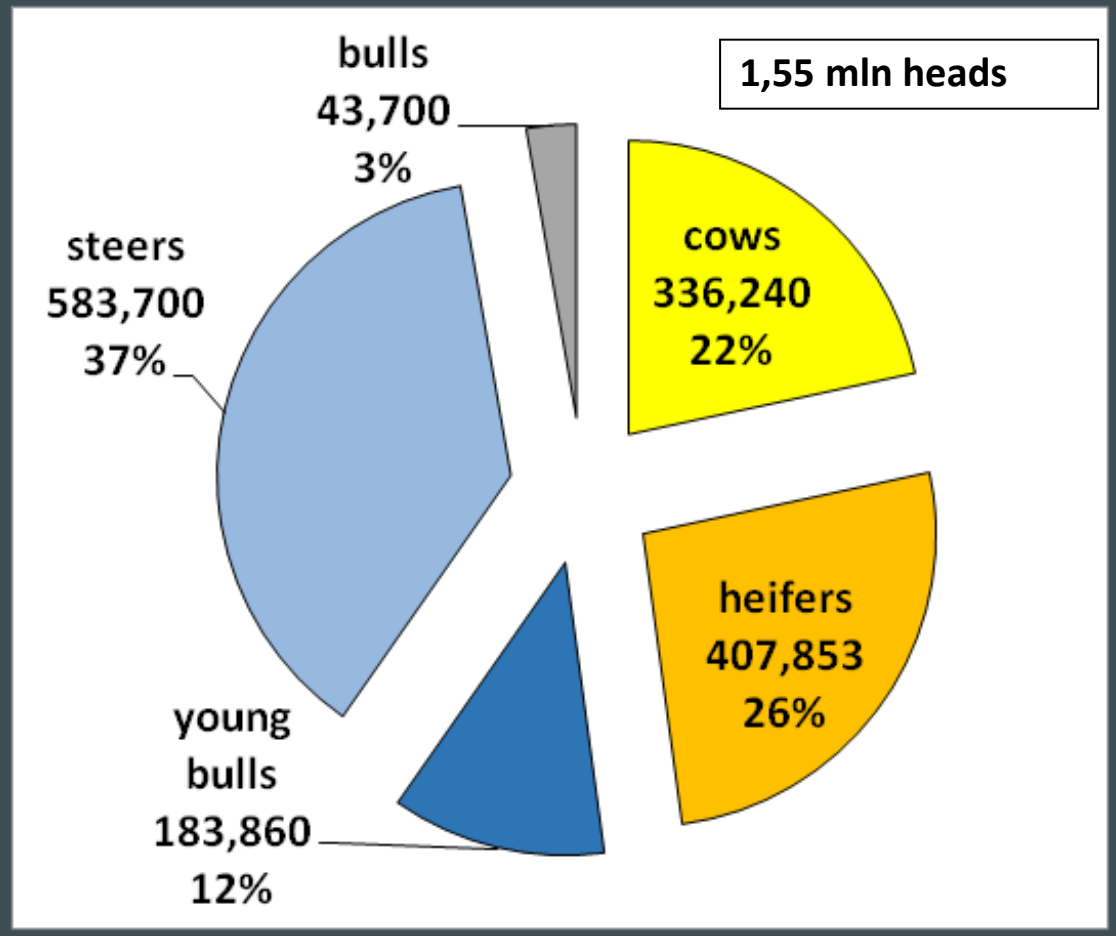
# ITALY: young bulls carcasses conformation

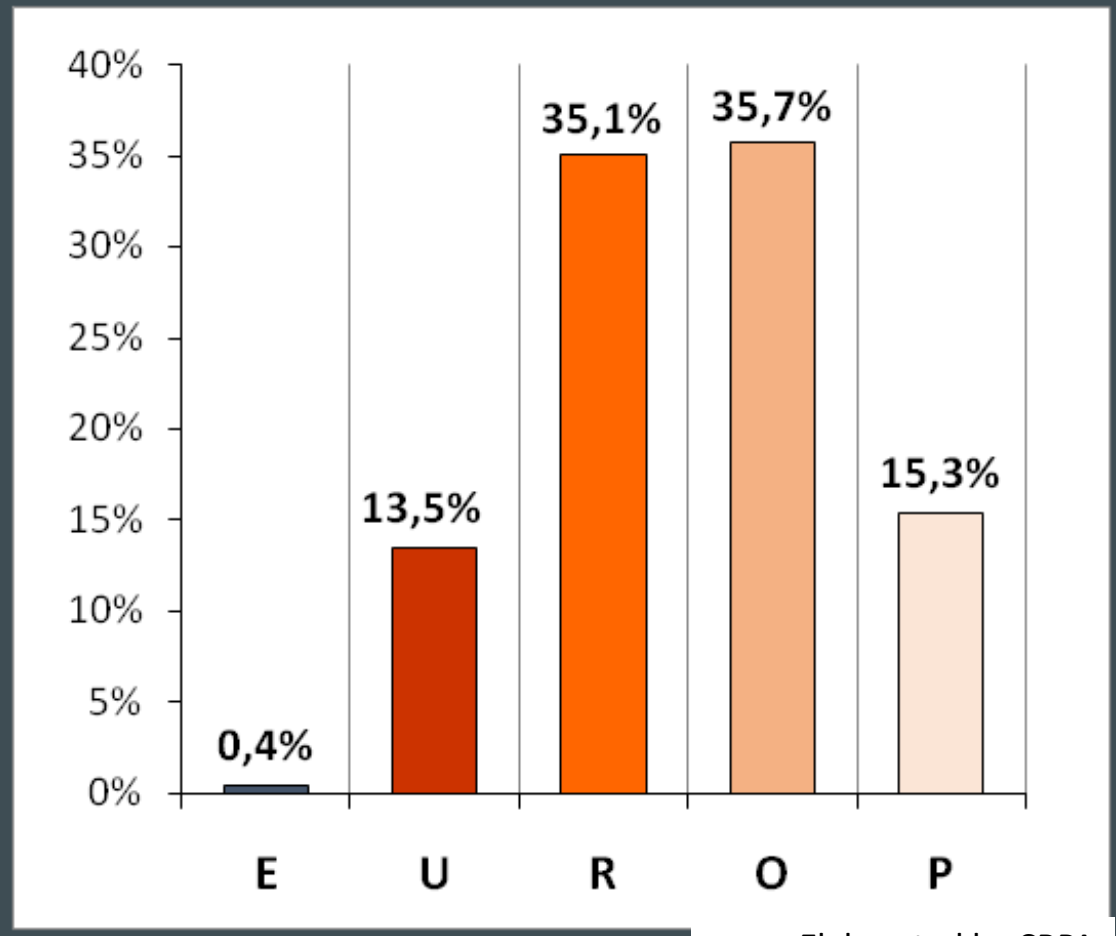


# ITALY: Young bulls fat cover



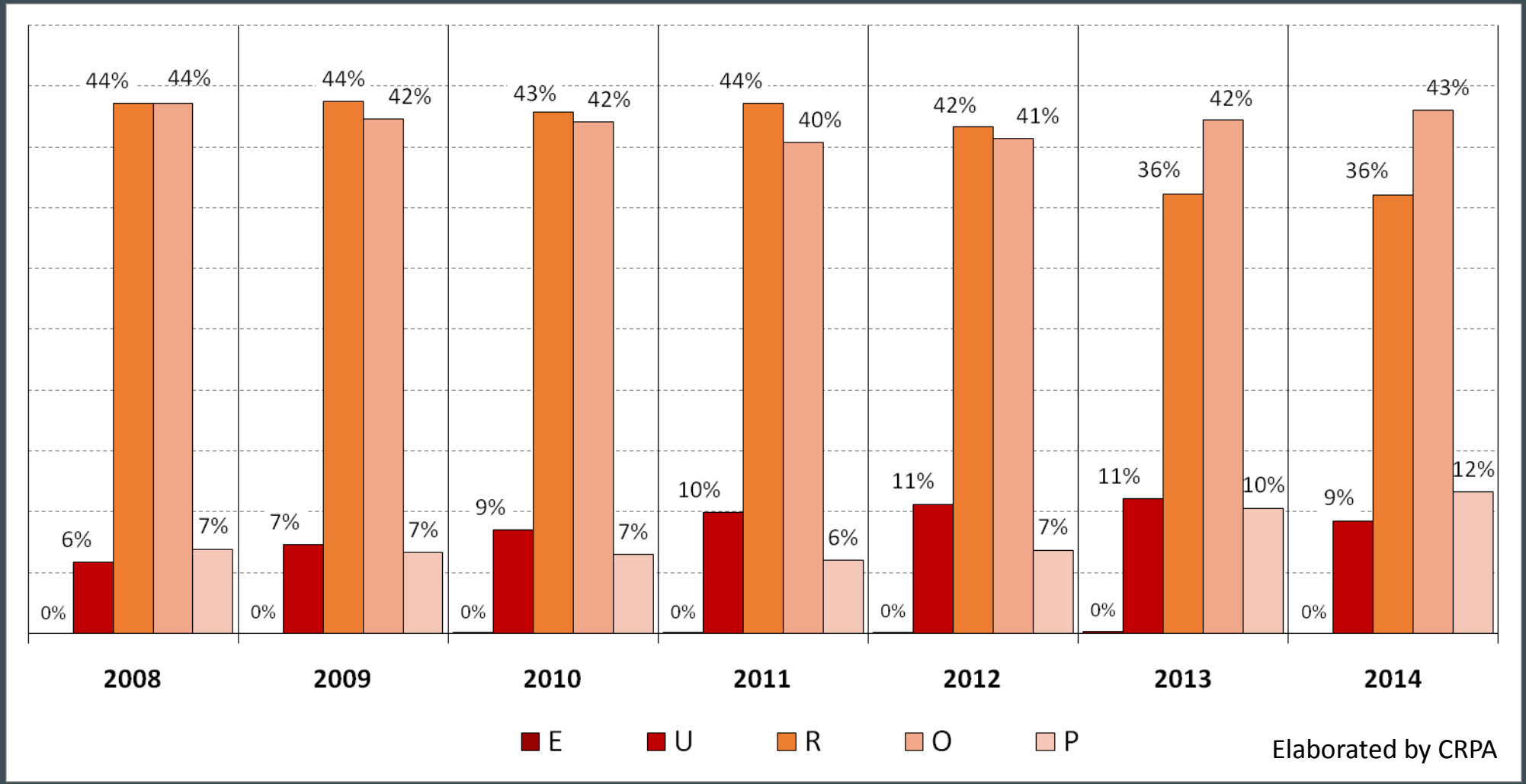
# IRELAND: Slaughterings per category and carcasses conformation (2014)



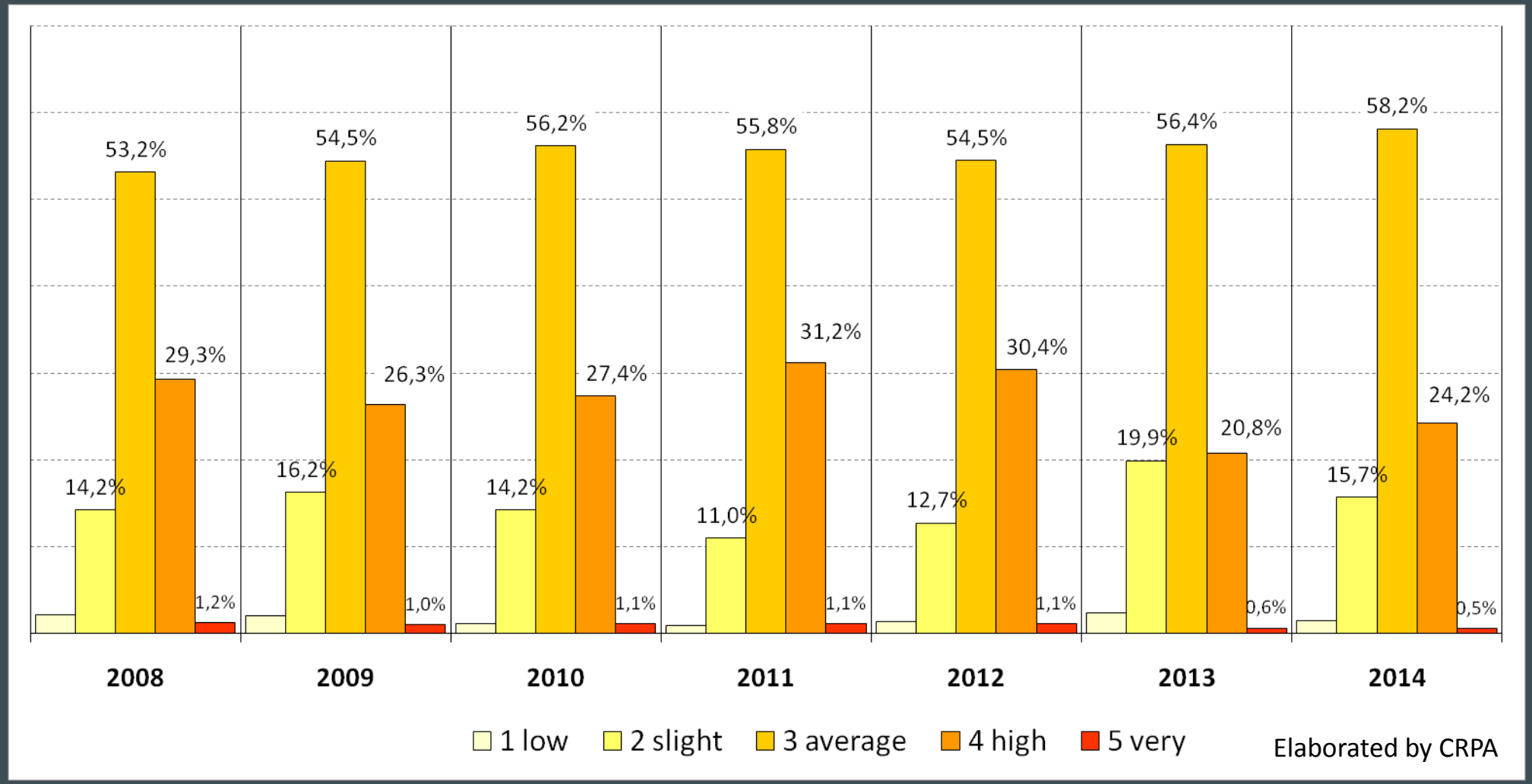




Elaborated by CRPA

# IRELAND: Steers carcasses conformation

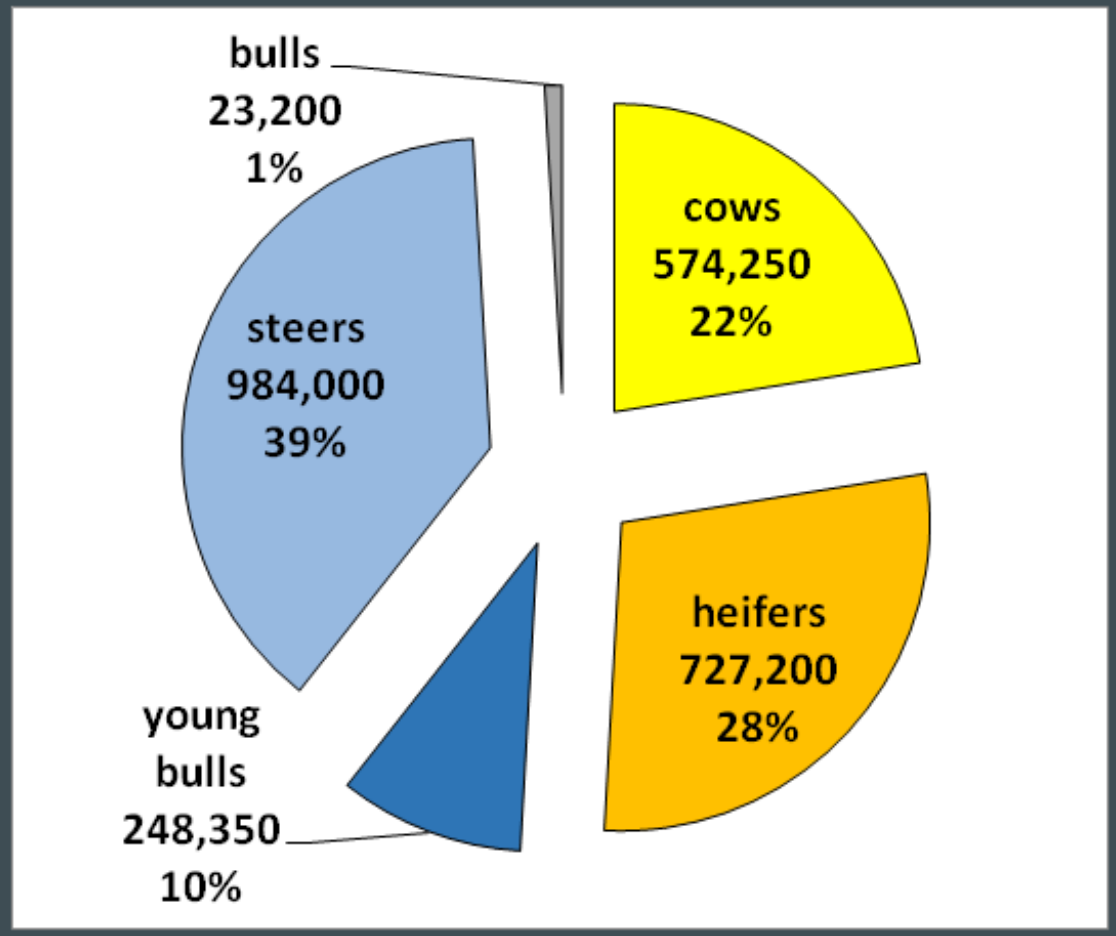


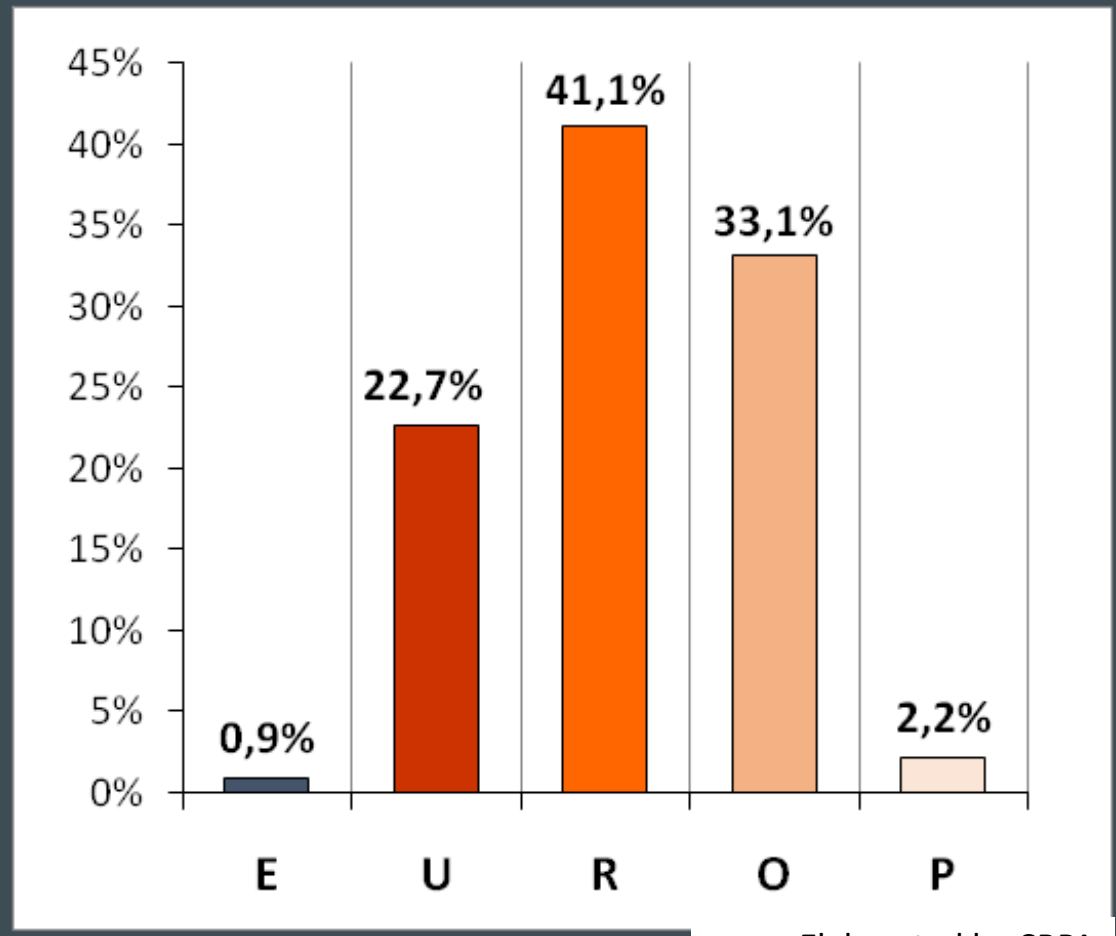
# IRELAND: Steers fat cover




Elaborated by CRPA

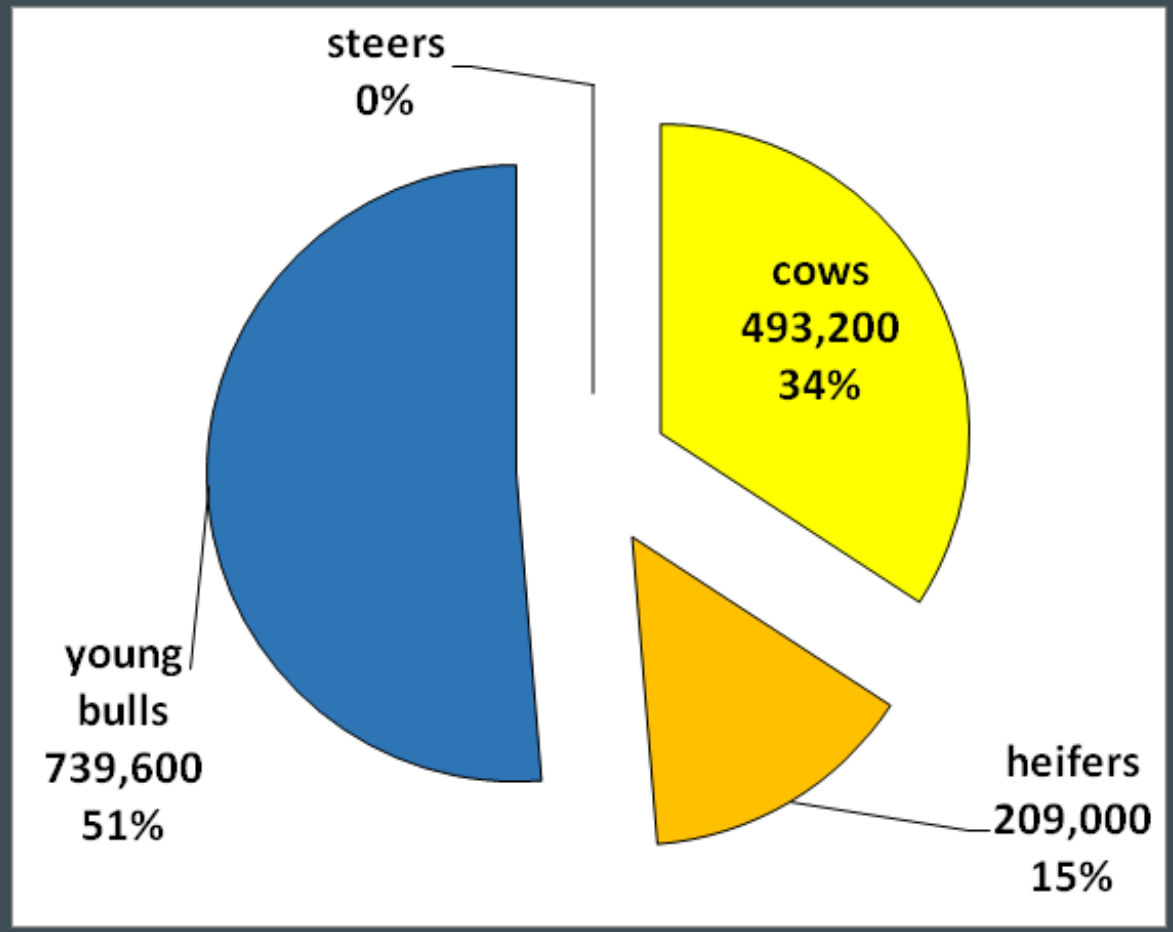
# UK: Slaughterings per category and carcasses conformation (2014)

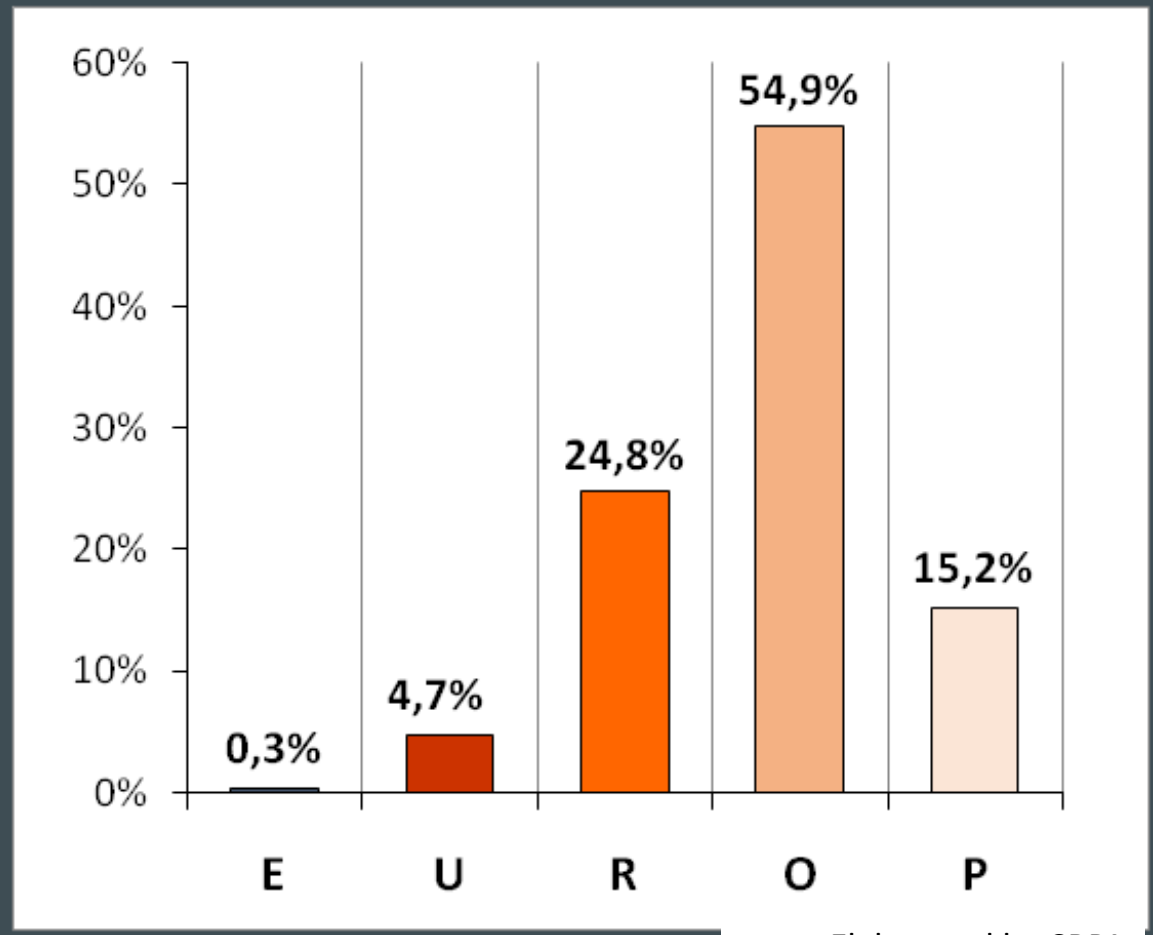



Elaborated by CRPA

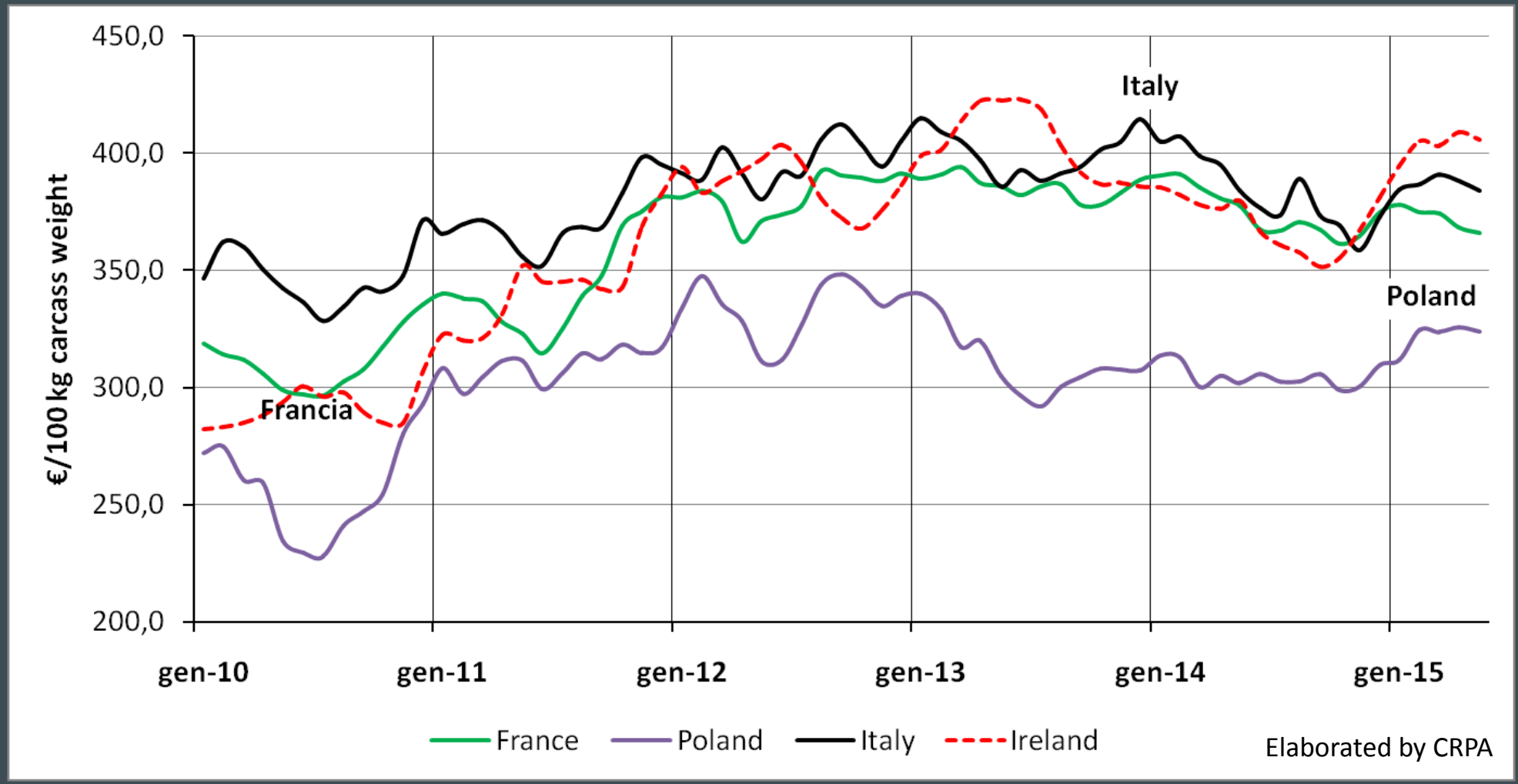
# POLAND: Slaughterings per category and carcasses conformation (2014)




Elaborated by CRPA

# Young bulls prices (R3)

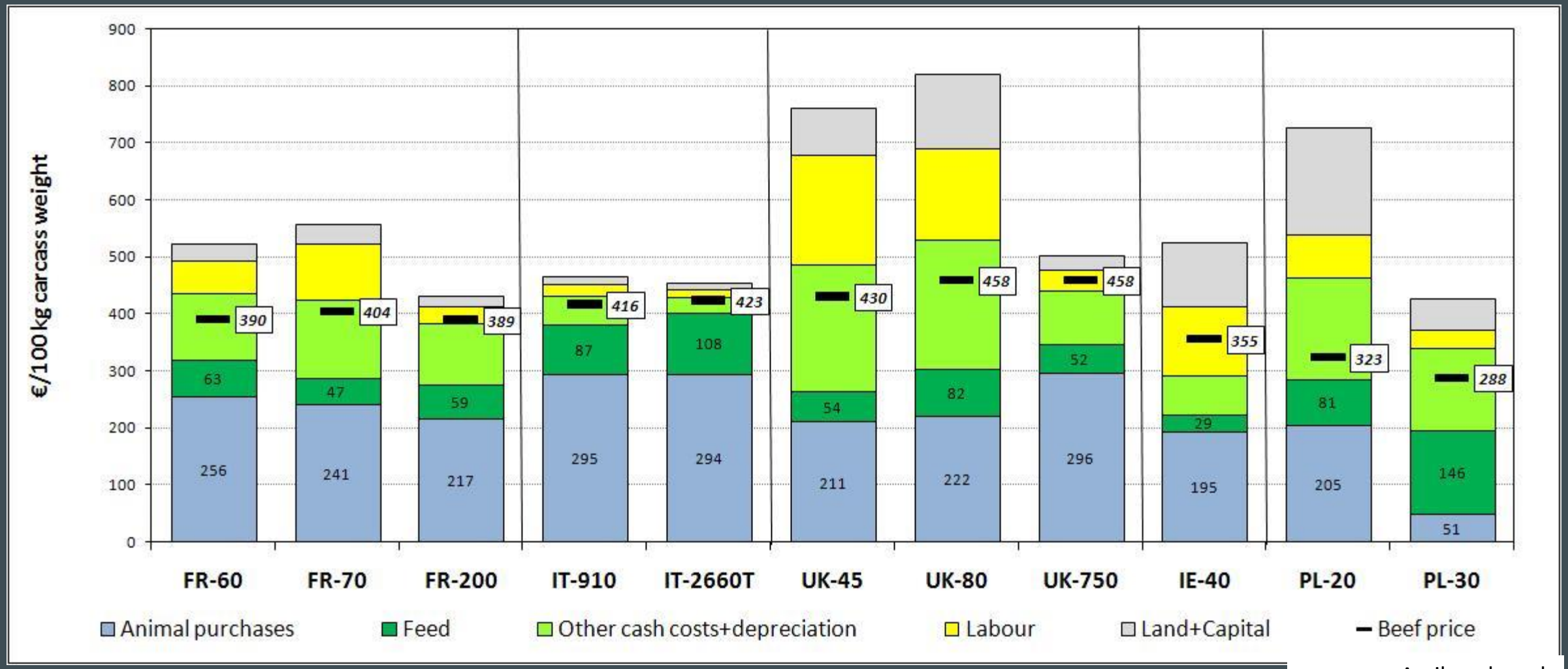


# Typical beef farms

| | France | Italy | United Kingdom | Ireland | Poland |
|---|---|---|---|---|---|
| Farms name | FR-60; FR-70; FR-200 | IT-910; IT-2600 | UK-45; UK-80; UK-750 | IE-40 | PL-20; PL-30 |
| Size | Medium/Large | Medium/Large | Medium/Large | Medium | Medium |
| Category | bulls/heifers | bulls | steers/heifer | steers | bulls |
| Breed | Charolais/Limousine | Charolais | Crosses | Crosses | Black and White |
| Feed source | silage+grains | silage+concentrates | pasture+silage+concentrates | pasture+silage | silage+grains |
| Weight at start | 300-345 kg | 410-450 kg | 300-400 kg | 450 kg | 60-90 kg |
| Final weight | 600-730 kg | 700-720 kg | 630-670 kg | 670 kg | 490-530 kg |
| Dwg | 1.40-1.50 kg/day | 1.45-1.50 kg/day | 0.65-0.95 kg/day | 0.60 kg/day | 0.50-0.55 kg/day |
| Killing yield | 59-62% | 60-61% | 53-55% | 58% | 49-54% |

Agribenchmark

# Production costs and beef prices




Agribenchmark

# Carbon footprint of livestock products

| Carbon footprint (kg CO2-eq/kg) | CRPA | scientific literature |
|---|---|---|
| Beef | 18-19 | 14-32 |
| Pigmeat | 3.6-3.7 | 2.3-10 |
| Poultry | 2.0 | 1.8-6.9 |
| Milk | 1.0-1.2 | 0.4-1.8 |
| Eggs | 2.4-2.5 | 1.3-6.2 |

Elaborated by CRPA

# Climate change and beef production

| | Herd size ('000) | – 19% in 2030 | | - 28% in 2030 | |
|---|---|---|---|---|---|
| | | Herd size | Supply | Herd size | Supply |
| Dairy cows | 21.722 | -6,0 | -5,3 | -10,3 | -9,1 |
| **Beef meat** | **18.213** | **-31,1** | **-17,8** | **-49,7** | **-29,1** |
| Pig fattening | 252.970 | -5,3 | -5,5 | -8,2 | -8,7 |
| Sheep and goats | 48.548 | -13,1 | -12,1 | -23,7 | -21,8 |
| Laying hens | 459 | -1,8 | -1,6 | -3,3 | -2,8 |
| Poultry fattening | 6.703 | -3,0 | -2,8 | -5,3 | -5,1 |

Source: European Union 2015, report EcAMPA, JRC-ITPS

# Conclusion

• Variety of EU beef production based on a wide range of breeds, feeding and housing systems due to the differences in countries specialization and diverse climatic/geographical conditions, EUROP classification reflects these differences

•Time series show an improvement in carcasses conformation and the increase of leaner carcasses

• The EUROP grid is unable to assess the eating quality of beef as well as being inaccurate in assessing the actual % of saleable meat

• More appropriate classification systems should be introduced in order to meet quality standards required by consumers (e.g. MSA)

•Climate change policies may affect beef production severely in the future