

REPUBBLICA ITALIANA



REGIONE SICILIANA  
ASSESSORATO SANITA'  
Ispettorato Regionale Veterinario  
Servizio di Sanità Animale



Istituto Zooprofilattico Sperimentale della Sicilia "A. Mirri"  
Area Sorveglianza Epidemiologica

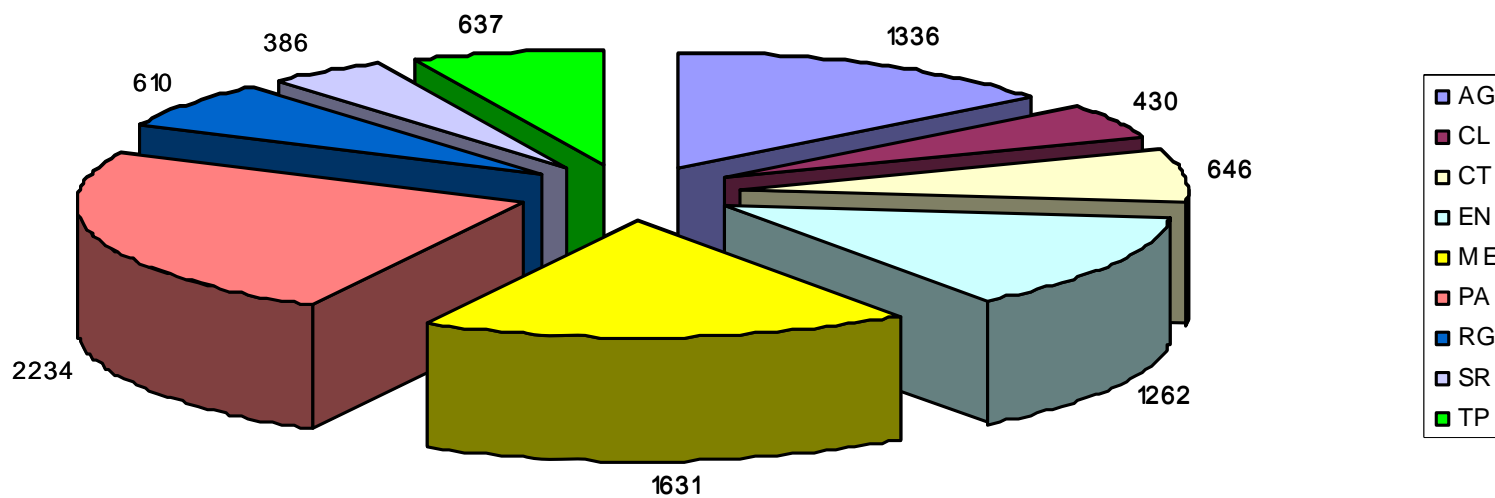
# SHEEP AND GOAT BRUCELLOSIS IN SICILY (2001-2006)

Assessorato Regionale Sanità: *M. Bagnato, A. Vario, V. Bonomo*  
IZSSi: *C. Di Bella*



## SHEEP AND GOAT BRUCELLOSIS - FLOCKS TO TEST N.9172

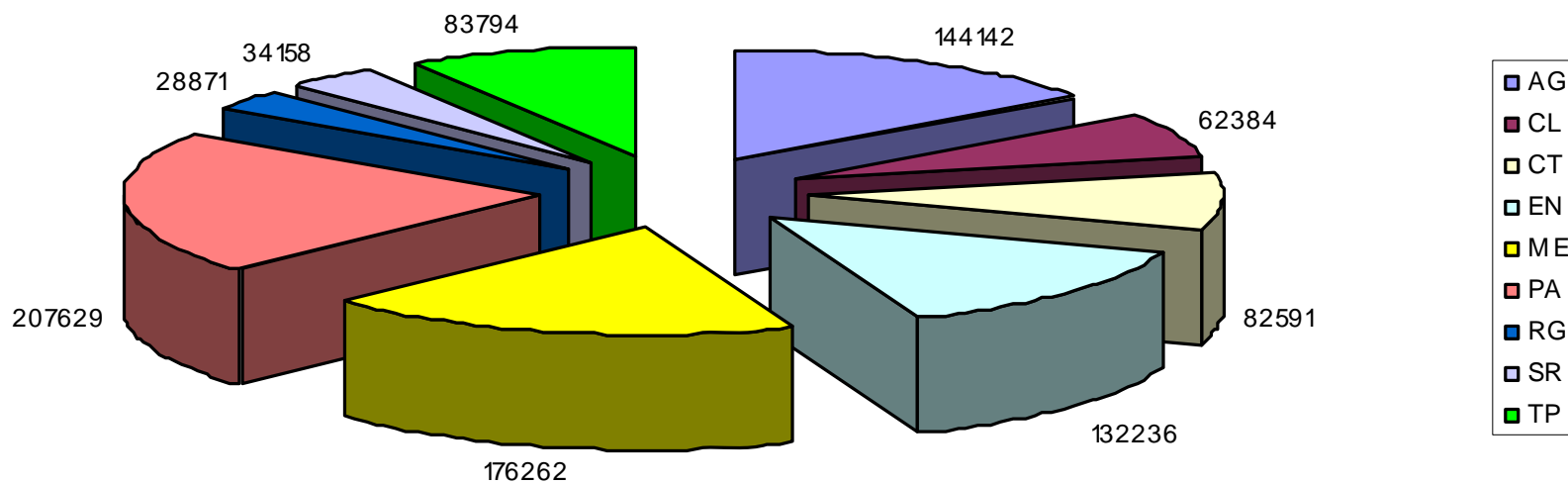
Year 2006





## Animals to test N. 952067

Year 2006



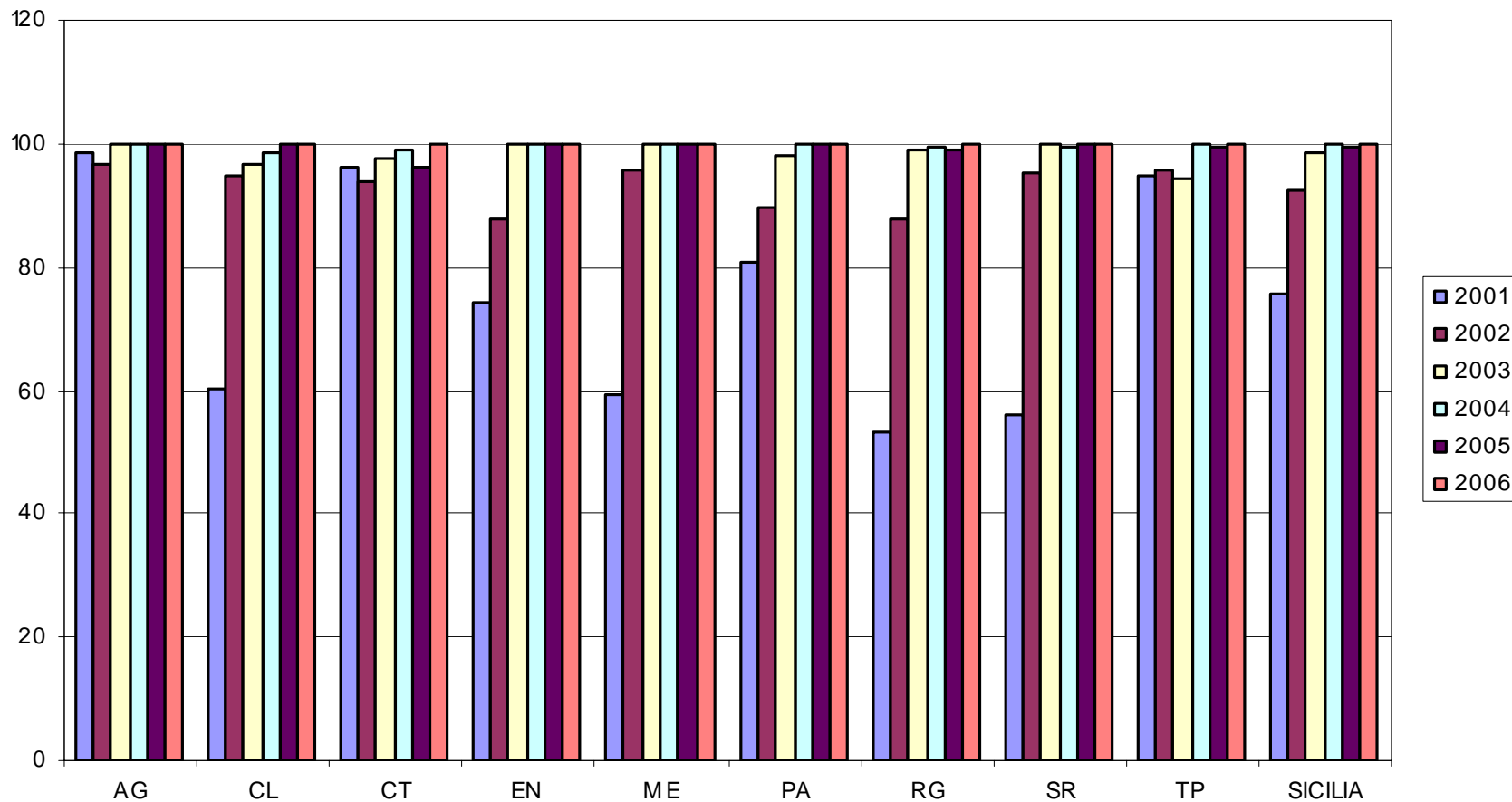


## European Union, National and Regional Goals

- Test at least 95% of sheep and goats within the first 12 months of the programme, and 100% of animals within 2003 and the following years.
- Carry out checks on those flocks certified as Brucellosis free at least once a year.
- Carry out any measures necessary to cure those herds infected by Brucellosis, within the time limits set out by the regulations in force, in order to ensure regular controls by the end of the Programme.
- Vaccination of young animals.

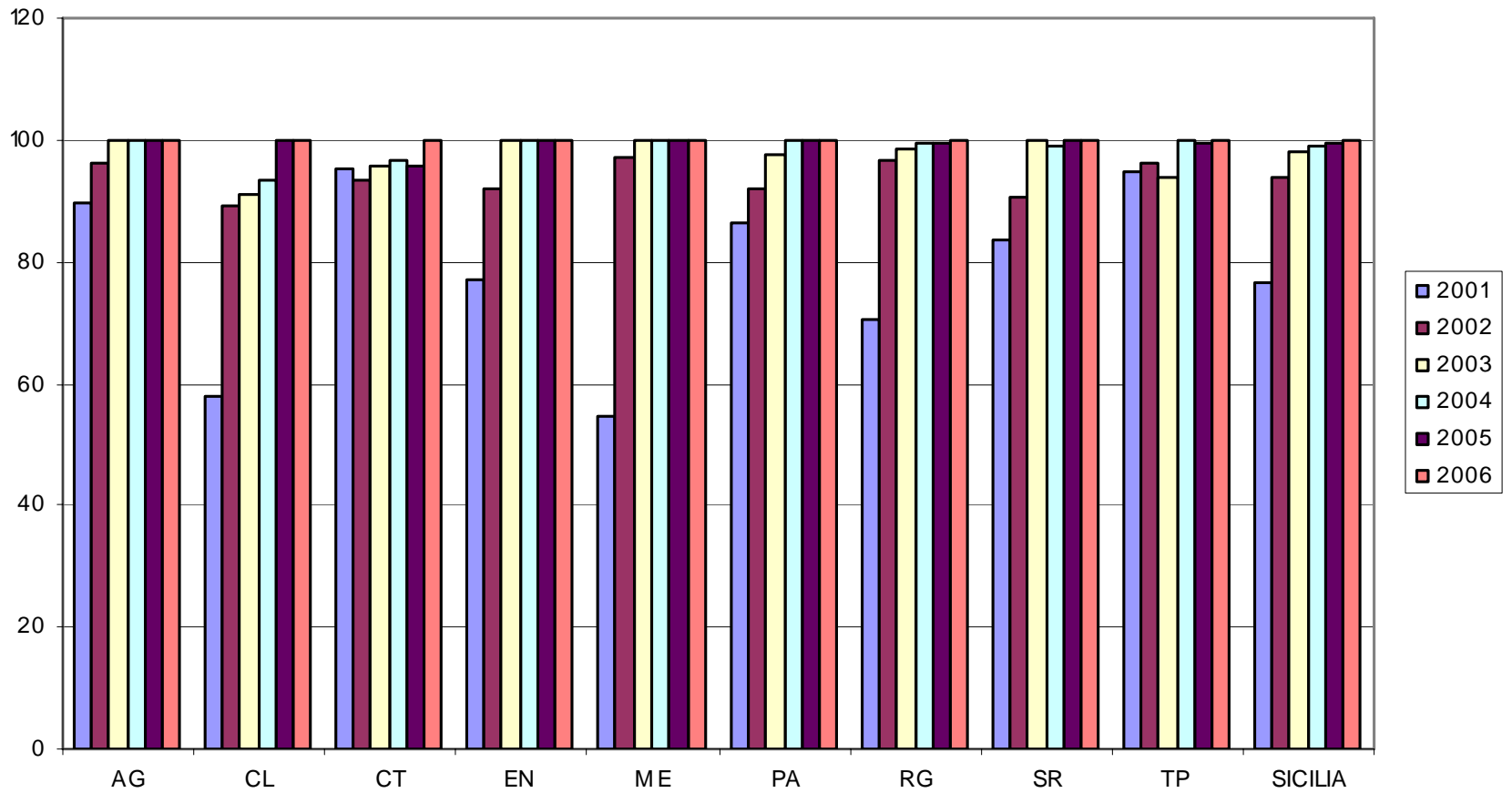


## % TESTED FLOCKS



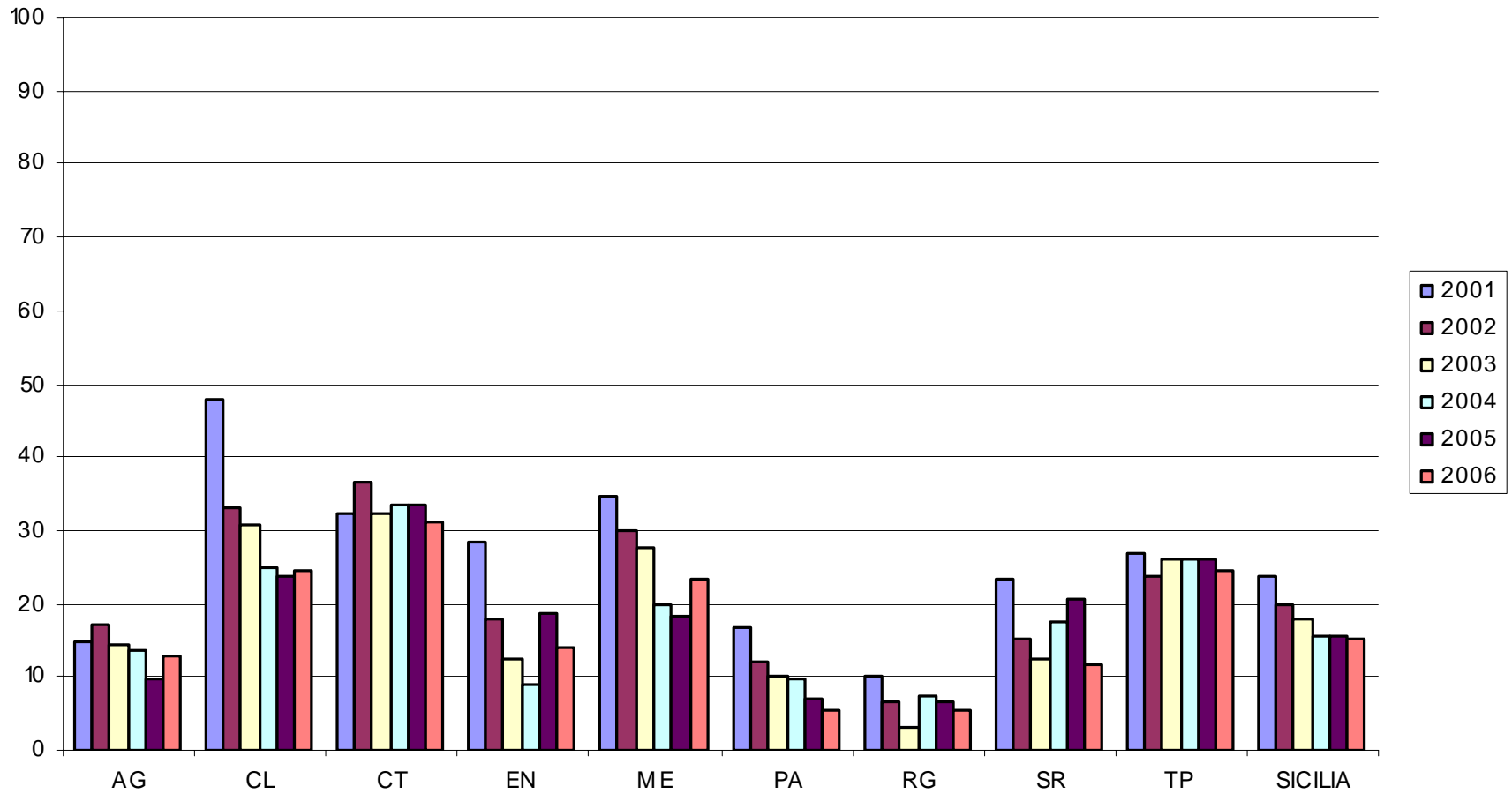


## % TESTED ANIMALS



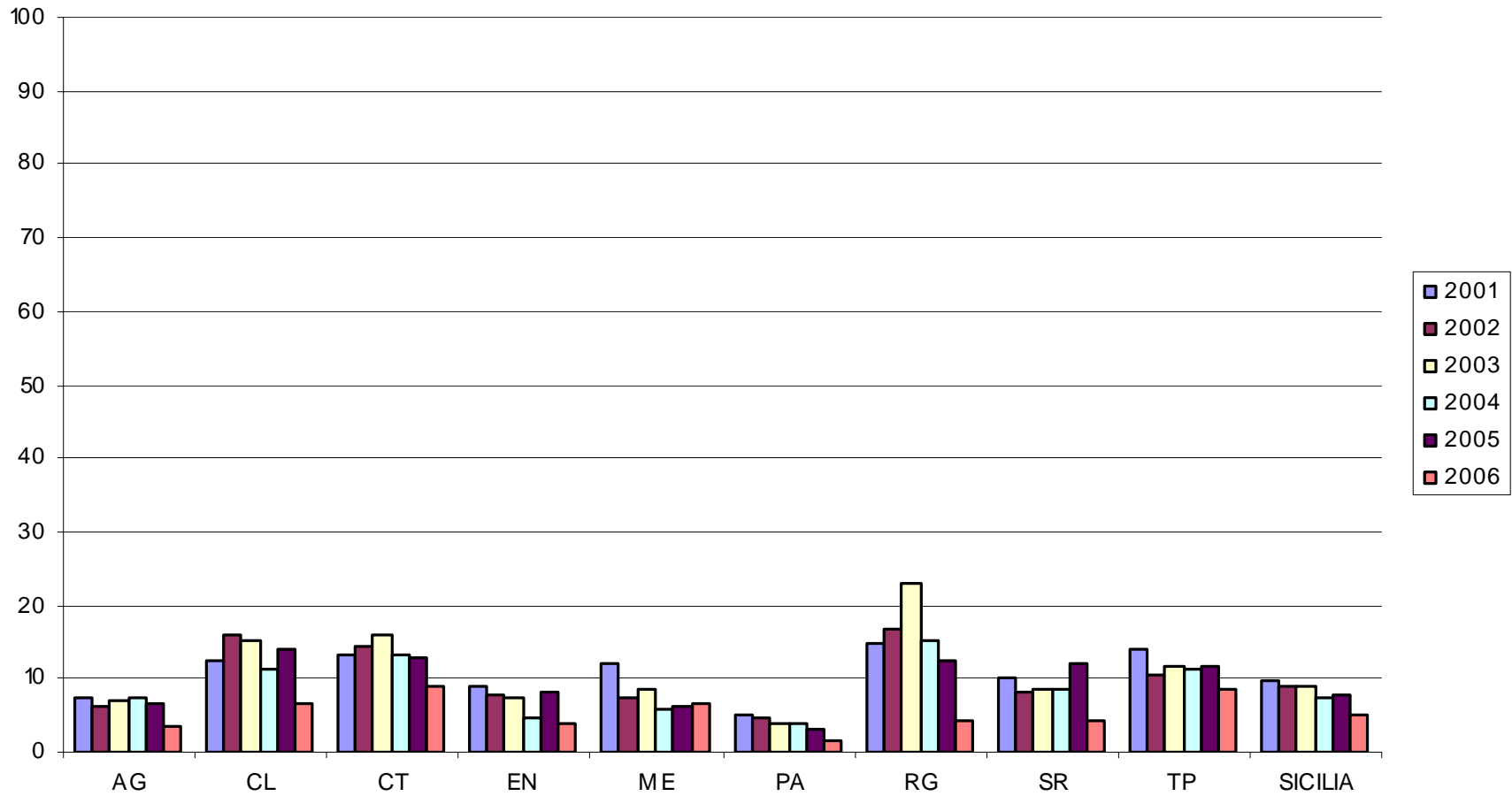


## % OF INFECTED FLOCKS



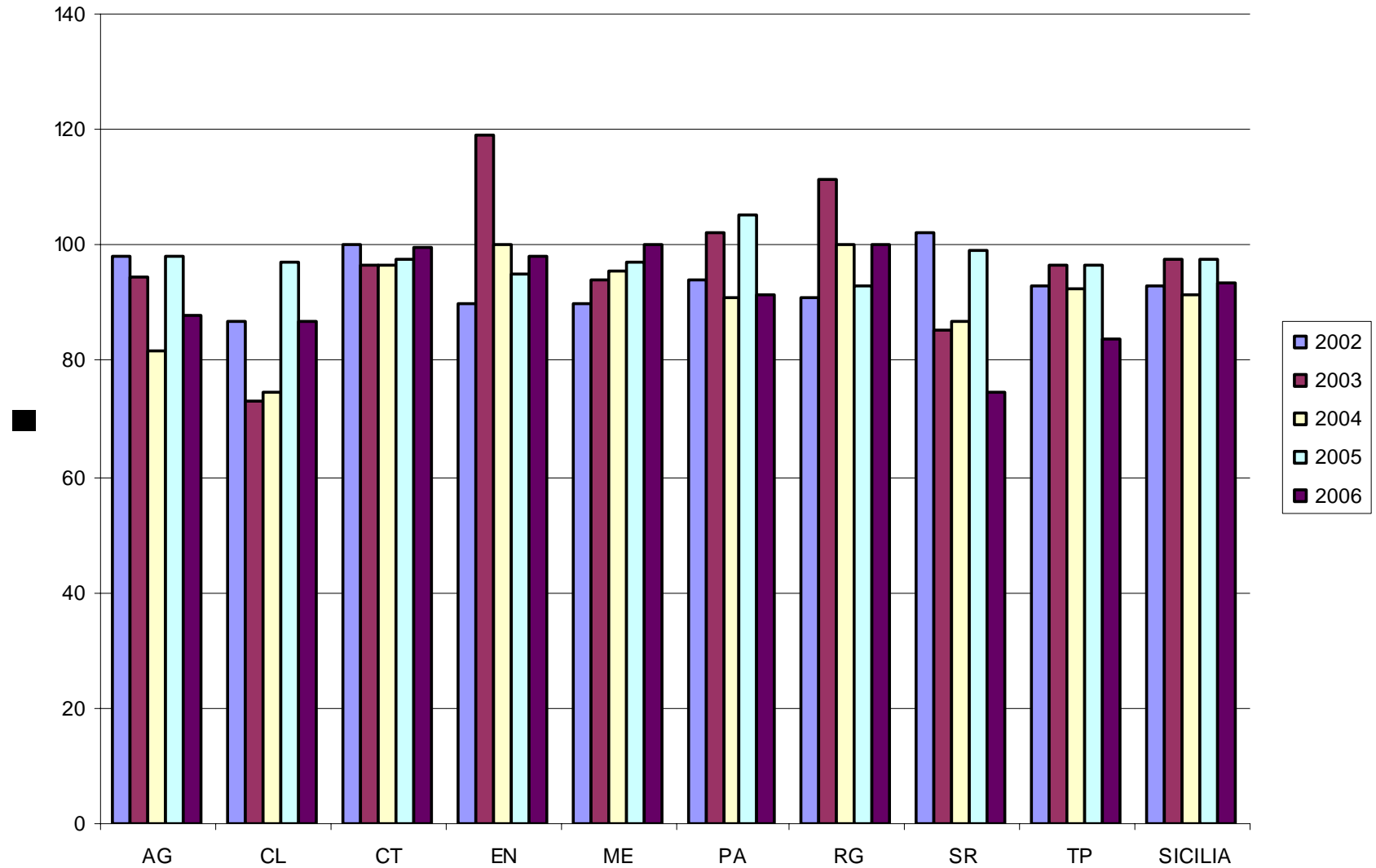


## % INFECTED ANIMALS



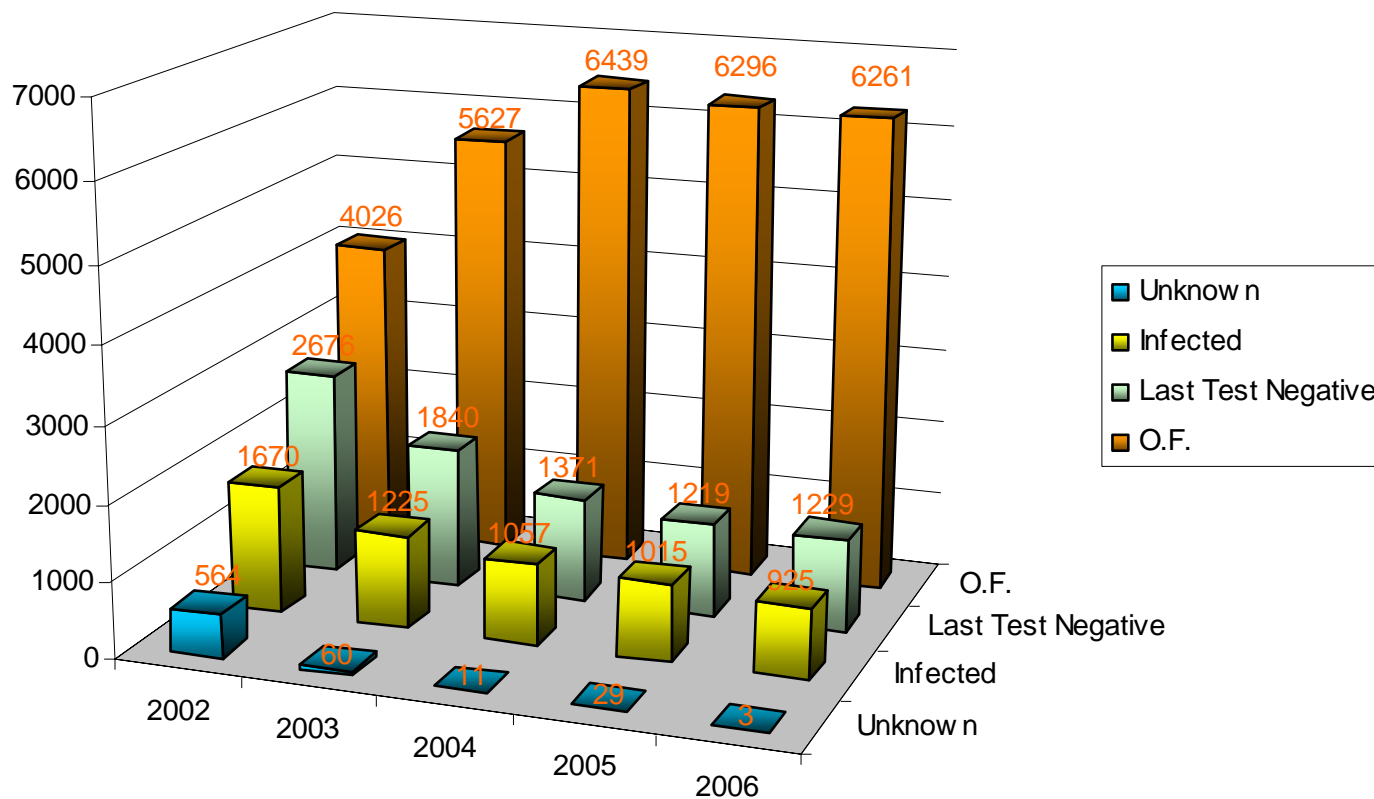


## % SLAUGHTERED ANIMALS





### Enclosure V Dec. 02/677/CE Sheep and Goat Brucellosis



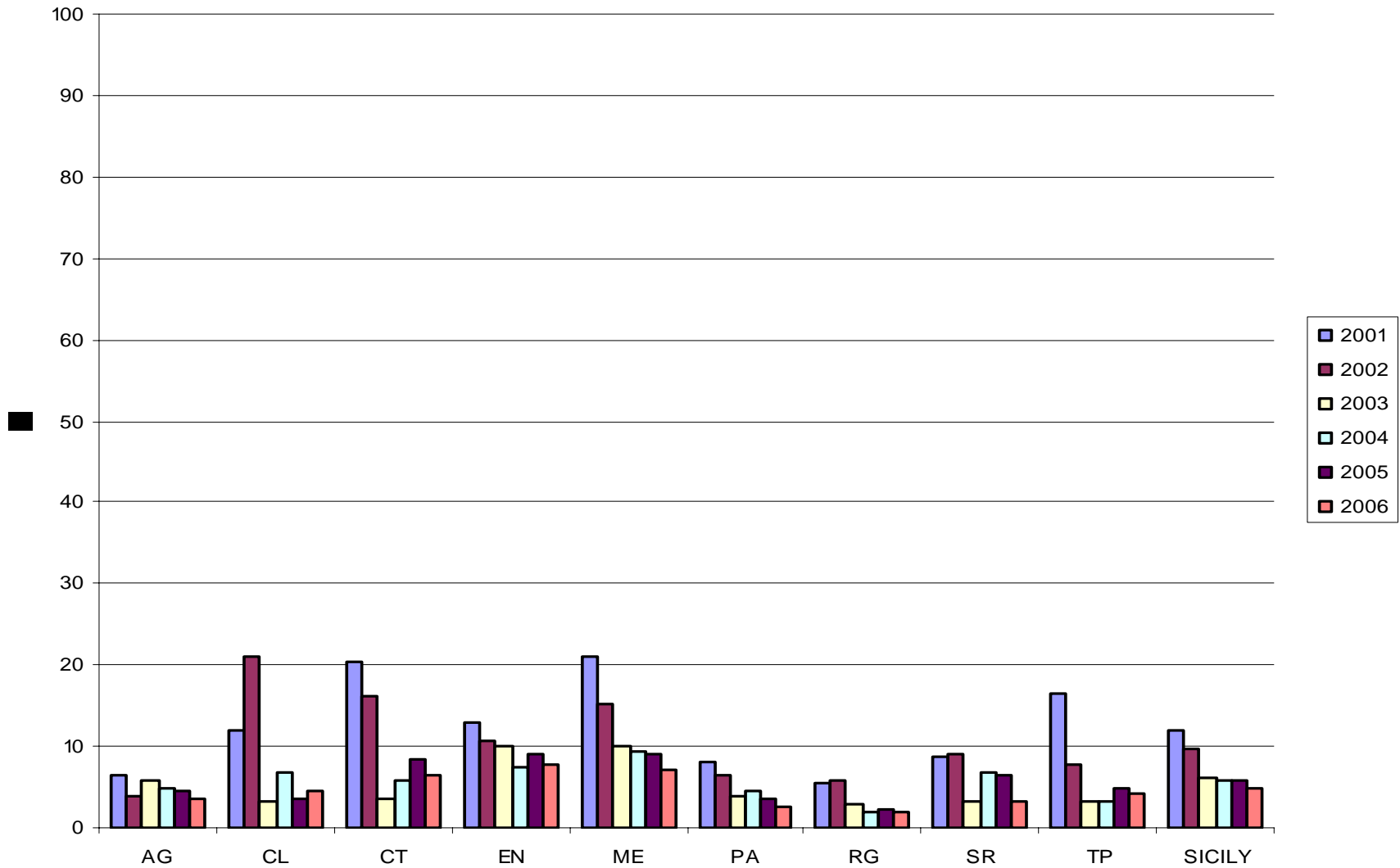


## Enclosure V Dec.02/677/CE

	<b>Unknown</b>	<b>Infected</b>	<b>Last Test Negative</b>	<b>O.F.</b>
<b>2002</b>	564	1670	2676	4026
<b>2003</b>	60	1225	1840	5627
<b>2004</b>	11	1057	1371	6439
<b>2005</b>	29	1015	1219	6296
<b>2006</b>	3	925	1229	6261
<b>% Diff. 06 /02</b>	<b>-99,5</b>	<b>-44,6</b>	<b>-54,1</b>	<b>+55,5</b>



# Incidence





## FOLLOW-UP OF INFECTED FLOCKS (TIME IN DAYS) (DB IZSSi)

PR	2001	2002	2003	2004	2005	2006
<b>AG</b>	120	144	127	103	113	108
<b>CL</b>	118	127	131	125	117	135
<b>CT</b>	118	132	122	103	137	117
<b>EN</b>	150	164	166	157	117	137
<b>ME</b>	108	124	114	114	105	125
<b>PA</b>	106	132	131	126	117	115
<b>RG</b>	115	156	158	130	118	126
<b>SR</b>	109	143	124	105	119	138
<b>TP</b>	122	134	134	143	125	129
<b>SICILIA</b>	125	136	133	124	115	124

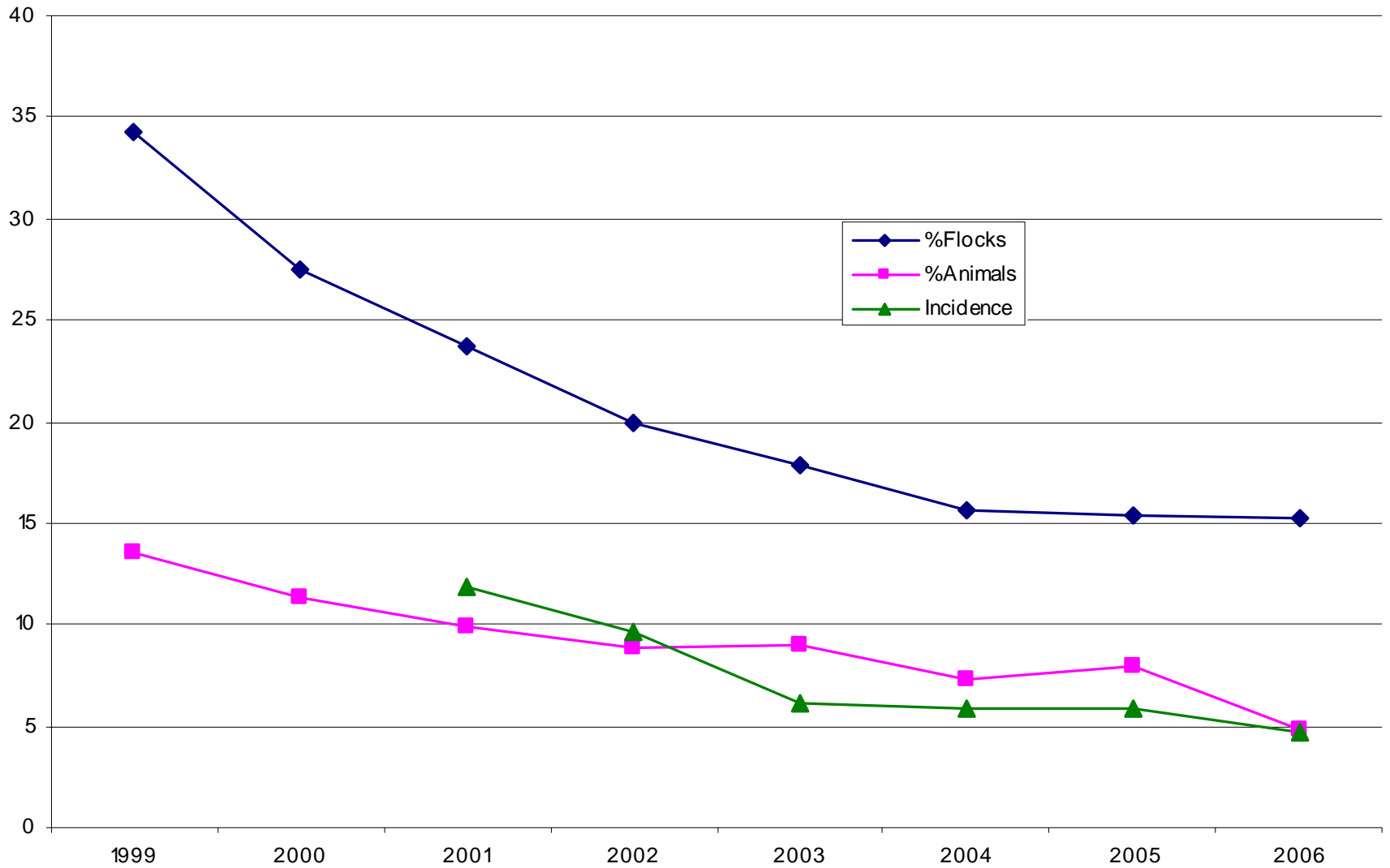


## (DB IZSSi) TIME IN DAY FROM SERA RECEPTION DATE - TO PRINTED RESULT DATE

PR	2001	2002	2003	2004	2005	2006
AG	11	12	17	11	8	7
CL	9	10	9	7	6	4
CT	9	11	12	9	5	4
EN	9	10	11	8	8	6
ME	7	8	4	4	1	2
PA	12	13	13	13	8	7
RG	3	4	4	4	3	2
SR	6	8	10	6	3	3
TP	12	13	14	13	10	8
SICILIA	9	10	10	9	6	5



# Prevalence and Incidence 1999 - 2006





# Epidemiological Indices (Regional)

Positive Flocks 06 / positive Flocks 02

- 22.3%

Positive Animals 06 / Positive Animals 02

- 39.5%



## INCIDENCE INDEX BETWEEN 2001 AND 2006

	2001	2002	2003	2004	2005	2006	% 01/06
AG	6,33	4,01	5,78	4,71	4,48	3,59	-43,3
CL	11,95	21,07	3,09	6,79	3,45	4,65	-61,1
CT	20,27	16,25	3,66	5,9	8,36	6,35	-68,7
EN	12,86	10,79	10,09	7,47	9,13	7,77	-39,6
ME	20,99	15,19	10,13	9,5	9,04	7,19	-65,7
PA	8,14	6,51	3,78	4,46	3,72	2,6	-68,1
RG	5,54	5,75	2,98	1,78	2,34	1,8	-67,5
SR	8,71	9,09	3,35	6,65	6,45	3,37	-61,3
TP	16,39	7,92	3,21	3,33	4,79	4,24	-74,1
SICILY	11,88	9,7	6,09	5,89	5,92	4,72	-60,3



## Isolated *Brucella* ovine strains 2002-06

<i>B. melitensis</i> 3					<i>B. abortus</i> 1					<i>B. abortus</i> 3					<i>Brucella</i> spp				
02	03	04	05	06	02	03	04	05	06	02	03	04	05	06	02	03	04	05	06
1		3	3																
			3																
		3	25	13															
2		2																	
	2	1	2																
4	3	2	16	8															
1			1																
6		11																	
14	5	22	50	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



# Isolated *Brucella caprine* strains 2002-06

<i>B. melitensis</i> 3					<i>B. abortus</i> 1					<i>B. abortus</i> 3					<i>Brucella</i> spp				
02	03	04	05	06	02	03	04	05	06	02	03	04	05	06	02	03	04	05	06
1																			
1	1																		
2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



## VACCINATION PLAN

	<b>N° INFECTED FLOCKS</b>	<b>N° OF VACCINATED FLOCKS</b>	<b>%</b>	<b>N° OF VACCNATED ANIMALS</b>
<b>YEAR 2005</b>	<b>1368</b>	<b>1177</b>	<b>86,04%</b>	<b>46277</b>
<b>YEAR 2006</b>	<b>1392</b>	<b>1424</b>	<b>102,30%</b>	<b>60702</b>



## CONSIDERATIONS

- Almost all objectives have been achieved
- Overall level of infection appears to be reduced
- Infection prevalence rate decreased significantly with the exception of some provinces due to the preponderance of small consistency herds easier to manage (as testified by not increasing prevalence in animals)
- Follow-up monitoring time in positive herds is still high
- Vaccination of all infected flocks has been performed because local veterinary service decided to exclude the most part of O.F. Flocks according to the approved plane.



## ACHIEVED TARGETS WITH REGARDS TO CONTROL ACTIVITIES

- Proposed creation of a centralised slaughter of infected animals and intended electronic identification of the whole livestock population
- Periodic report communicated to local units
- Planning of regional audits in local veterinary units (AUSL) with regards to procedures enforced in the management of eradication programmes and of critical points

# SPATIAL DISTRIBUTION OF SHEEP AND GOATS BRUCELLOSIS IN SICILY FROM 2001 TO 2006 (Prevalence)

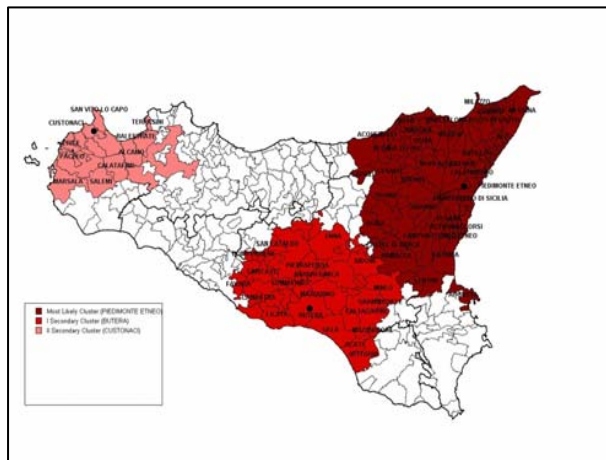


Figure 1: clusters in 2001 (prevalence)

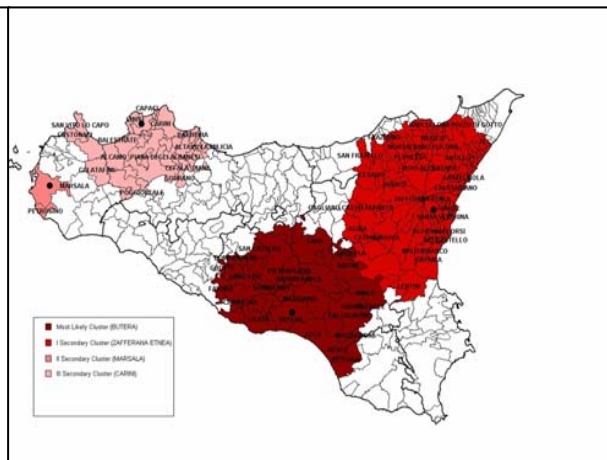


Figure 2: clusters in 2002 (prevalence)

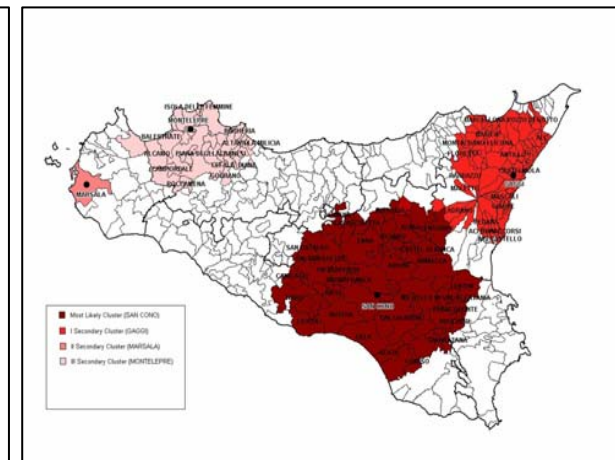


Figure 3: clusters in 2003 (prevalence)

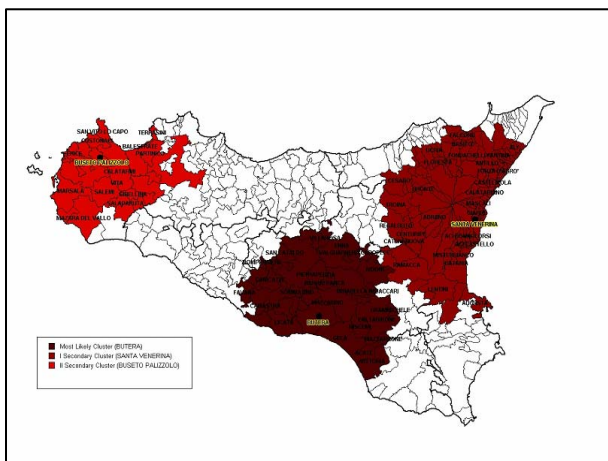


Figure 4: clusters in 2004 (prevalence)

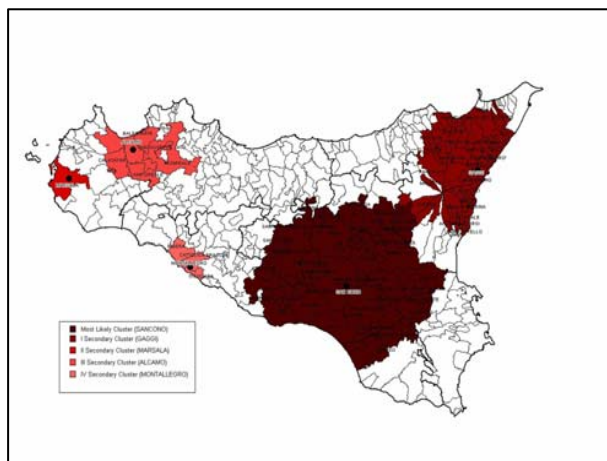


Figure 5: clusters in 2005 (prevalence)

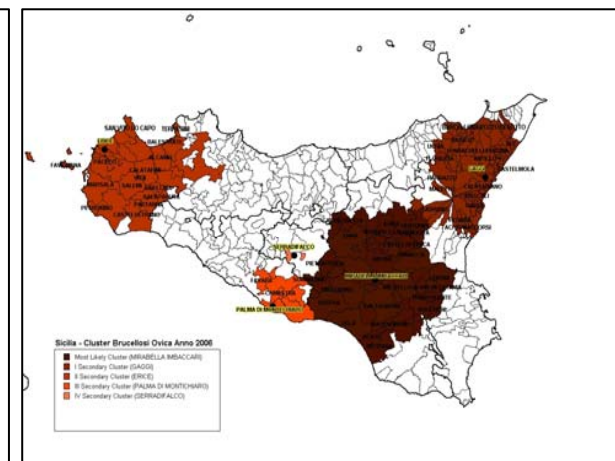


Figure 6: clusters in 2006 (prevalence)



- Some areas of the region were identified as cluster in all six years
- Prevalence in the entire region fell slightly over the six year period
- The first cluster measured in 2001 became the second from 2002 to 2006 and decreased in size (in terms of kilometres) and covered fewer municipalities
- The second cluster measured in 2001 became the first from 2002 onwards and remained almost constant in size
- The third cluster measured in 2001 contained gradually fewer municipalities over the years with the exception of the year 2004 in which the situation was similar to that of 2001
- In 2005 we observed an additional cluster not present in previous years



# SPATIAL DISTRIBUTION OF SHEEP AND GOATS BRUCELLOSIS IN SICILY FROM 2001 TO 2006 (Incidence)

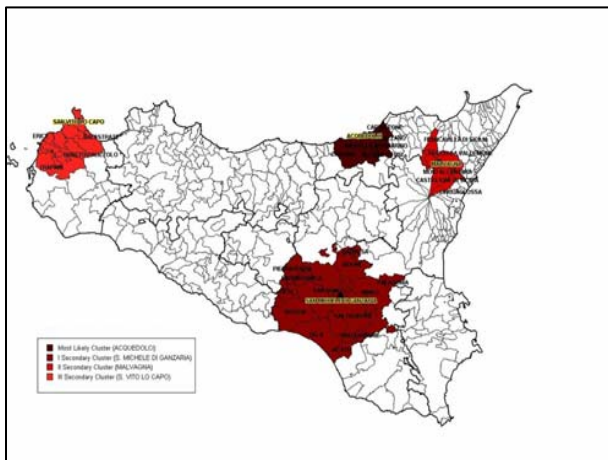


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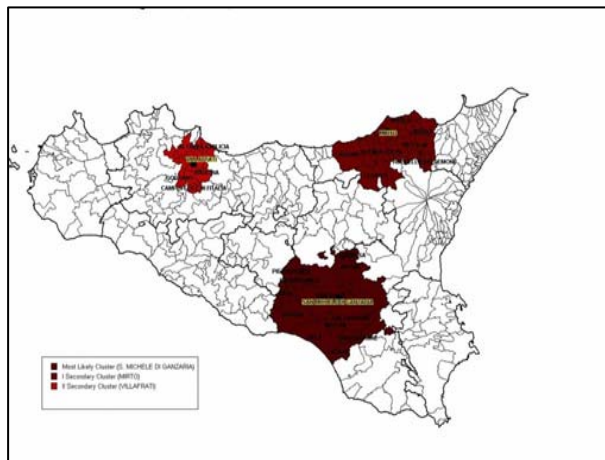


Figure 2: clusters in 2002 (incidence)

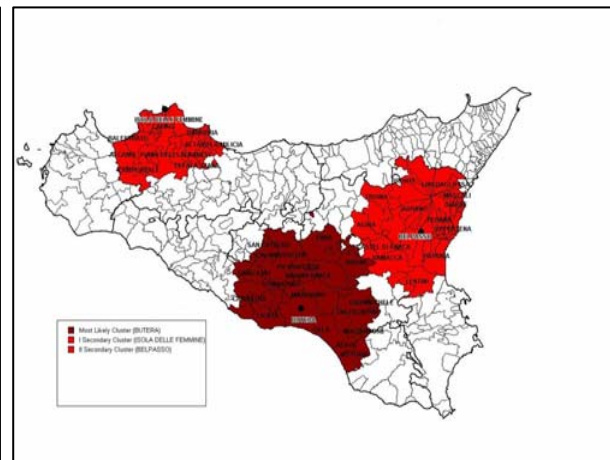


Figure 3: clusters in 2003 (incidence)

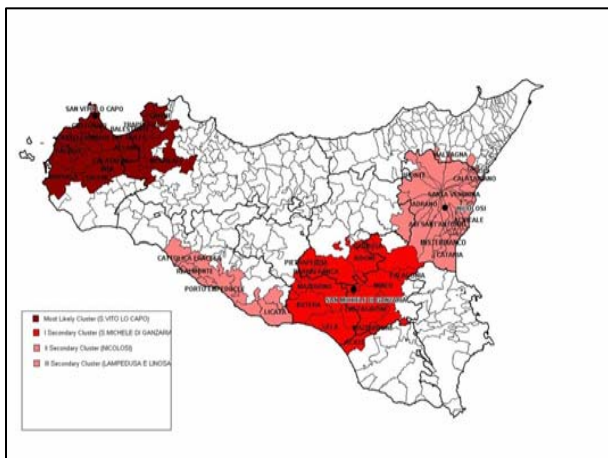


Figure 4: clusters in 2004 (incidence)

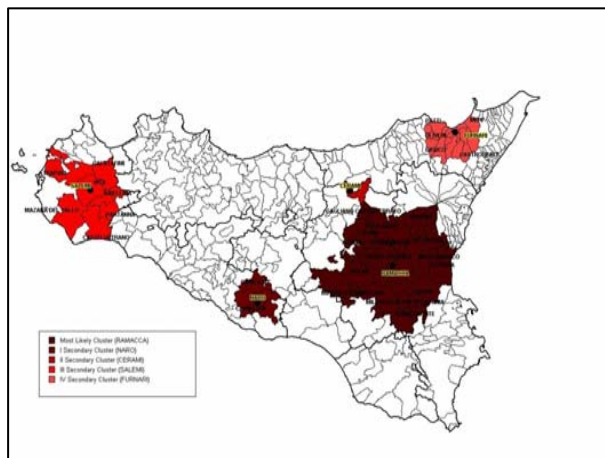


Figure 5: clusters in 2005 (incidence)

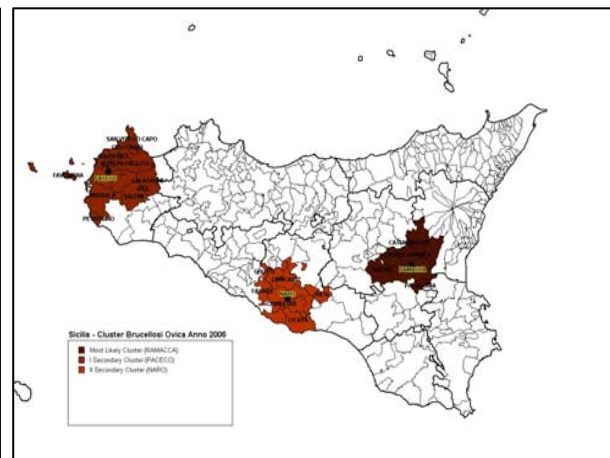


Figure 6: clusters in 2006 (incidence)



- The value of incidence in Sicily in the first two years was around 11%, but from 2003 onwards it fell to 5%
- From 2002 to 2005 with reference to clusters we observed a shift from the province of Palermo to the province of Trapani
- In 2005 the cluster present during the four previous years with centroid in the municipality of San Michele di Ganzaria (CT) did not occur. Instead, we observed three new clusters that were not present in previous years
- The first cluster measured in 2005 decreased in size (in terms of kilometres) and covered fewer municipalities
- In 2006 the clusters decrease





## **SHEEP AND GOAT BRUCELLOSIS IN SICILY (January -February 2007)**



## SHEEP AND GOAT BRUCELLOSIS

	N° of flocks 2006	N° of tested flocks (January-February 2007)	% of tested Flocks	N° of infected flocks (January-February 2007)	Prevalence (January-February 2007)	N° of new infected flocks (January-February 2007)	Incidence (January-February 2007)
AG	1336	176	13,17%	38	21,59%	10	5,68%
CL	430	109	25,35%	33	30,28%	3	2,75%
CT	646	145	22,45%	40	27,59%	11	7,59%
EN	1262	177	14,03%	22	12,43%	9	5,08%
ME	1631	253	15,51%	63	24,90%	12	4,74%
PA	2234	410	18,35%	32	7,80%	6	1,46%
RG	610	85	13,93%	6	7,06%	0	0,00%
SR	386	42	10,88%	5	11,90%	1	2,38%
TP	637	92	14,44%	24	26,09%	4	4,35%
SICILIA	9172	1489	16,23%	263	17,66%	56	3,76%



## SHEEP AND GOAT BRUCELLOSIS

	N° of animals 2006	N° of animals (January-February 2007)	% of tested Animals	N° of infected Animals (January-February 2007)	Prevalence (January-February 2007)
AG	144142	16610	11,52%	746	4,49%
CL	62384	14744	23,63%	649	4,40%
CT	82591	15575	18,86%	757	4,86%
EN	132236	14965	11,32%	161	1,08%
ME	176262	28591	16,22%	1309	4,58%
PA	207629	27007	13,01%	604	2,24%
RG	28871	5539	19,19%	87	1,57%
SR	34158	4164	12,19%	68	1,63%
TP	83794	12975	15,48%	492	3,79%
SICILIA	952067	140170	14,72%	4873	3,48%