

FOCUS ON ANTIMICROBIAL
RESISTANCE
and
ANTIMICROBIAL
SUSCEPTIBILITY TESTS:
in memory of prof. Marco Toni



Epidemiologia delle resistenze nei batteri G+



Dott. Stefano Grandesso

**SSD Microbiologia
Dip. di Patologia Clinica
Ospedale dell'Angelo – Mestre
Azienda ULSS 12 Veneziana**



Mogliano Veneto – Move Hotel – 28 marzo 2014

La prima scelta...

- Quali microrganismi??

- EARS-Net

- *S. aureus*
- *E. faecalis*
- *E. faecium*
- *S. pneumoniae*
- [CNS]

- Quali materiali??

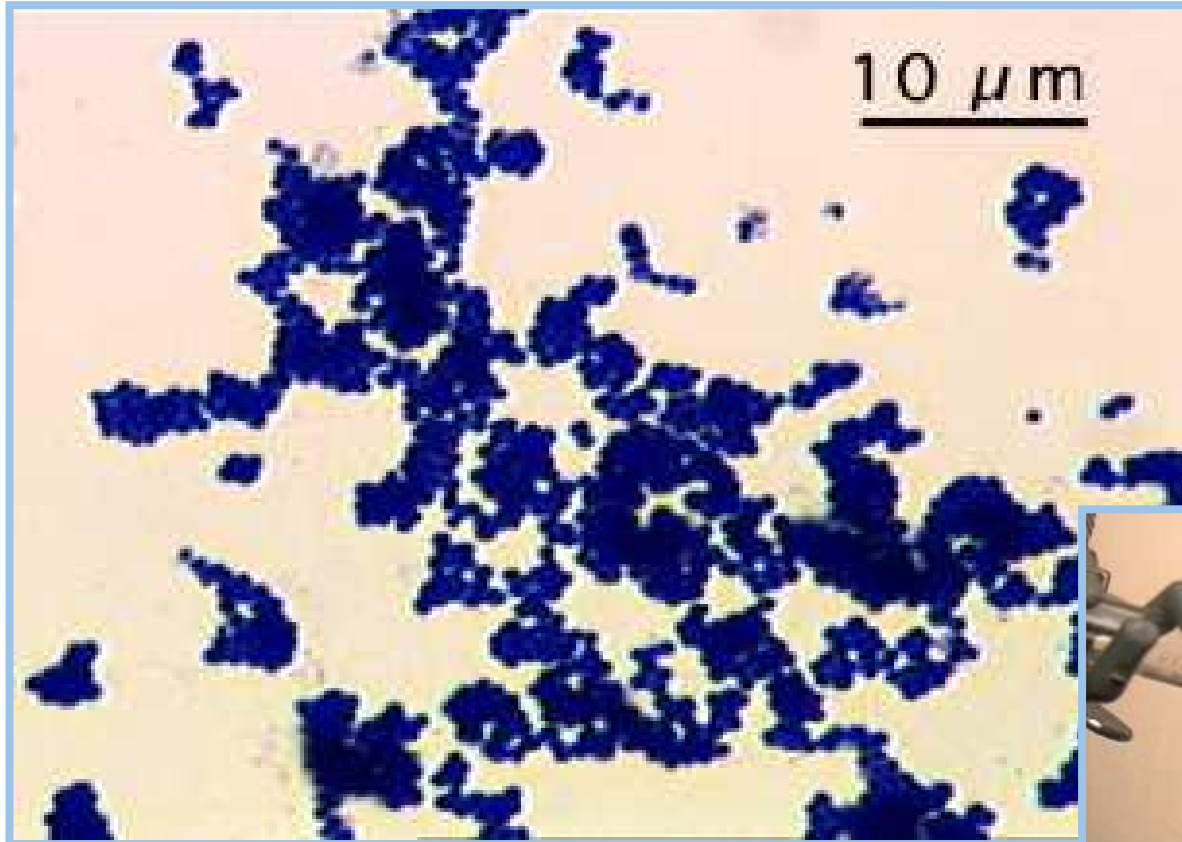
- Nobili?

- Tutti, tranne le urine!!

- Quali anni??

- 2009-2013

Staphylococcus aureus



MRSA

Staphylococcus aureus
meticillino-resistente

Table 1. Comparison of community-associated and health care-associated methicillin-resistant *Staphylococcus aureus* (MRSA).

Characteristic	Community-associated MRSA	Health care-associated MRSA
Susceptibility, ^a drug		
Chloramphenicol	Usually susceptible	Frequently resistant
Clindamycin ^b	Usually susceptible	Frequently resistant
Erythromycin	Usually resistant	Usually resistant
Fluoroquinolone	Geographic variability	Usually resistant
TMP-SMZ	Usually susceptible	Usually susceptible
SCC <i>mec</i> type	IV	II
Lineage	USA 300, USA 400	USA 100, USA 200
Toxin-producing	More	Fewer
Panton-Valentine leukocidin-producing	Common	Rare
Health care exposure	Less frequent	More frequent

NOTE. SCC, staphylococcal chromosome cassette; TMP-SMZ, trimethoprim-sulfamethoxazole.

^a Susceptibility is based on in vitro testing and Clinical and Laboratory Standards Institute break points [2]. A finding of susceptibility does not necessarily make the drug an appropriate treatment choice.

^b See comment on inducible resistance in the main text.

Staphylococcus aureus e **Oxacillino-Resistenza**

Impatto clinico rilevante

– **SEMPRE R a tutti i beta lattamici**

- Penicilline
- Cefalosporine (ceftarolina ...)
- Carbapenemi

– **FREQUENTE (??) R associata anche ad altre classi di antibiotici**

- Lincosamidi
- Macrolidi
- Fluorochinoloni

– **TALORA R associata anche ad altre classi di antibiotici**

- Rifampicina
- Cotrimossazolo
- Cloramfenicolo
- Tetracicline

– **POSSIBILI opzioni terapeutiche**

- Vancomicina (resistente : 2002 - USA)
- Teicoplanina (resistente : 1990 – USA)
- Synercid (resistente : 2000 – Taiwan)
- Linezolid (resistente : 2002 – USA)
- Tigeciclina (resistente : 2014 – Brasile)
- Daptomicina (resistente : 2005 – USA)

TREVISO : % MSSA

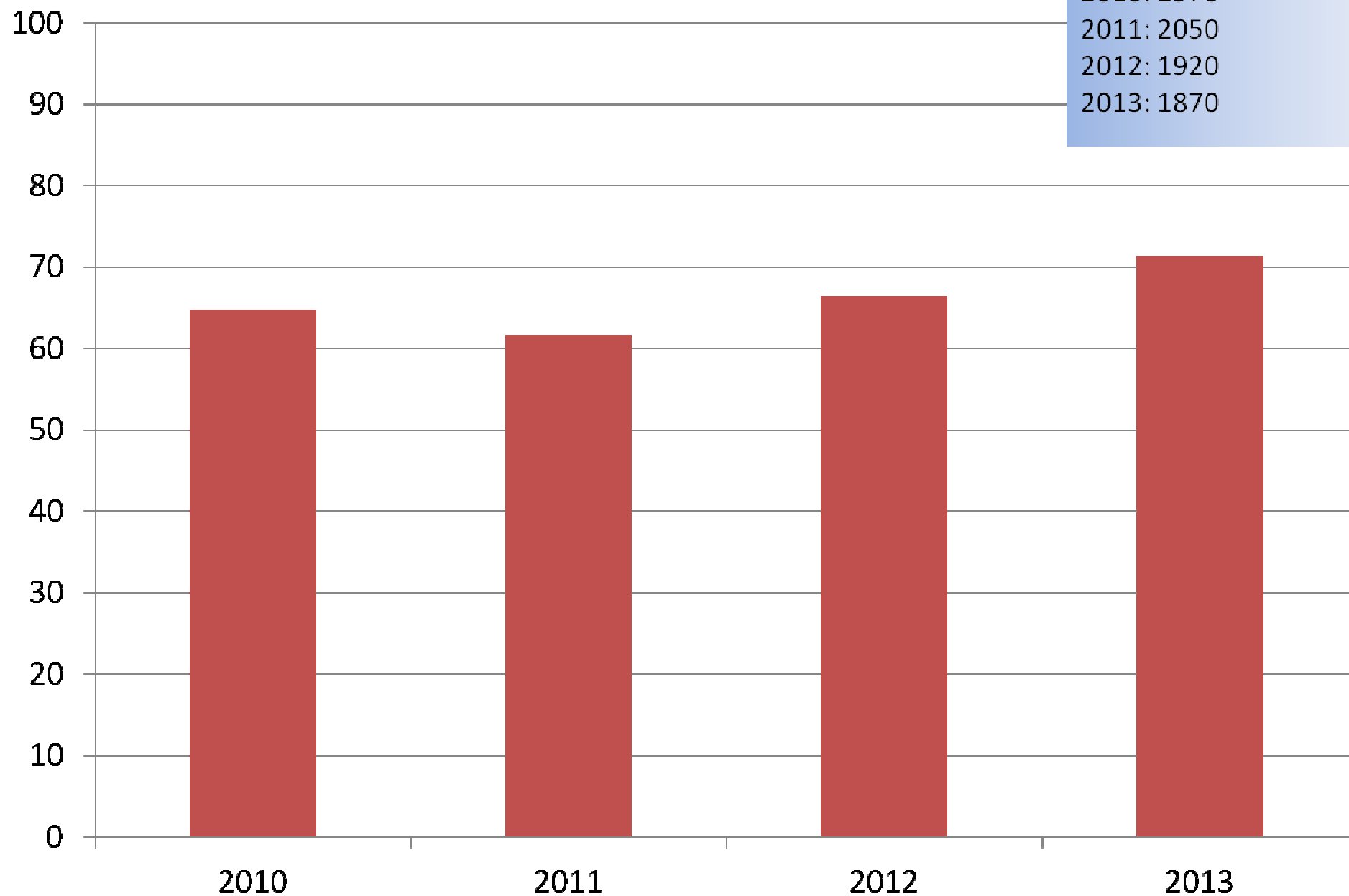
Numero di ceppi testati:

2010: 1970

2011: 2050

2012: 1920

2013: 1870



MESTRE : % MSSA

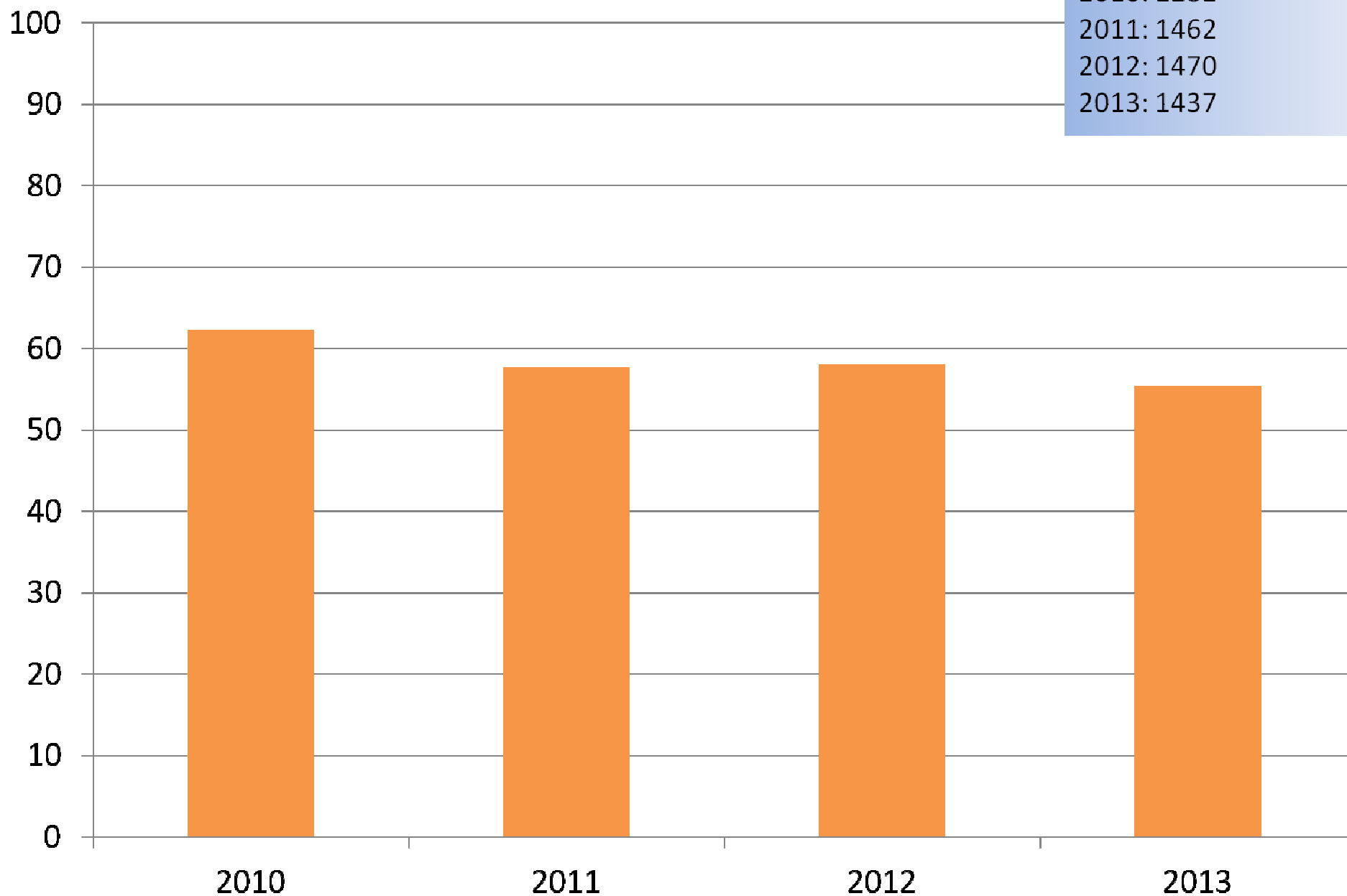
Numero di ceppi testati:

2010: 1282

2011: 1462

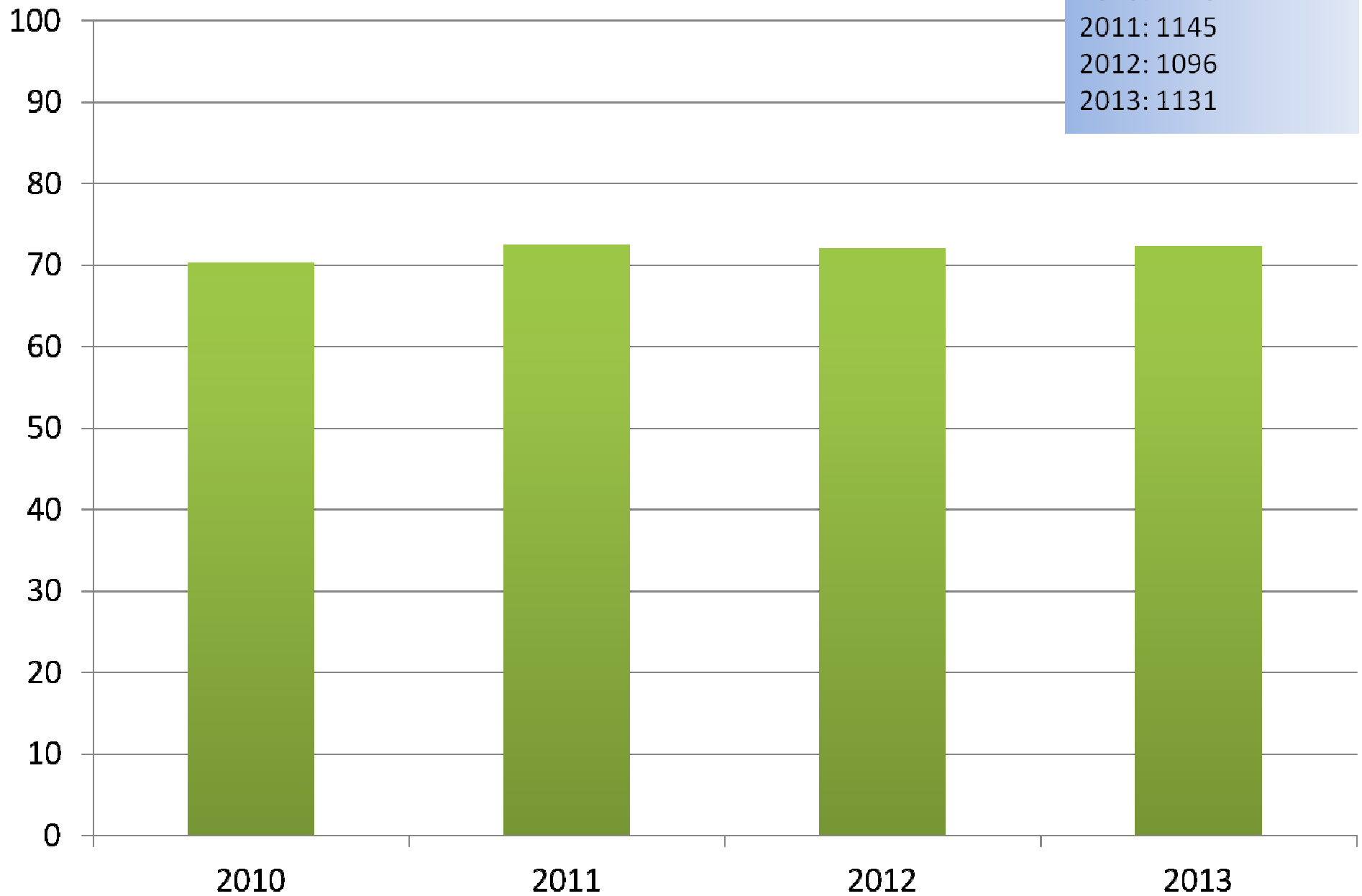
2012: 1470

2013: 1437



UDINE : % MSSA

Numero di ceppi testati:
2010: 1170
2011: 1145
2012: 1096
2013: 1131



VICENZA : % MSSA

Numero di ceppi

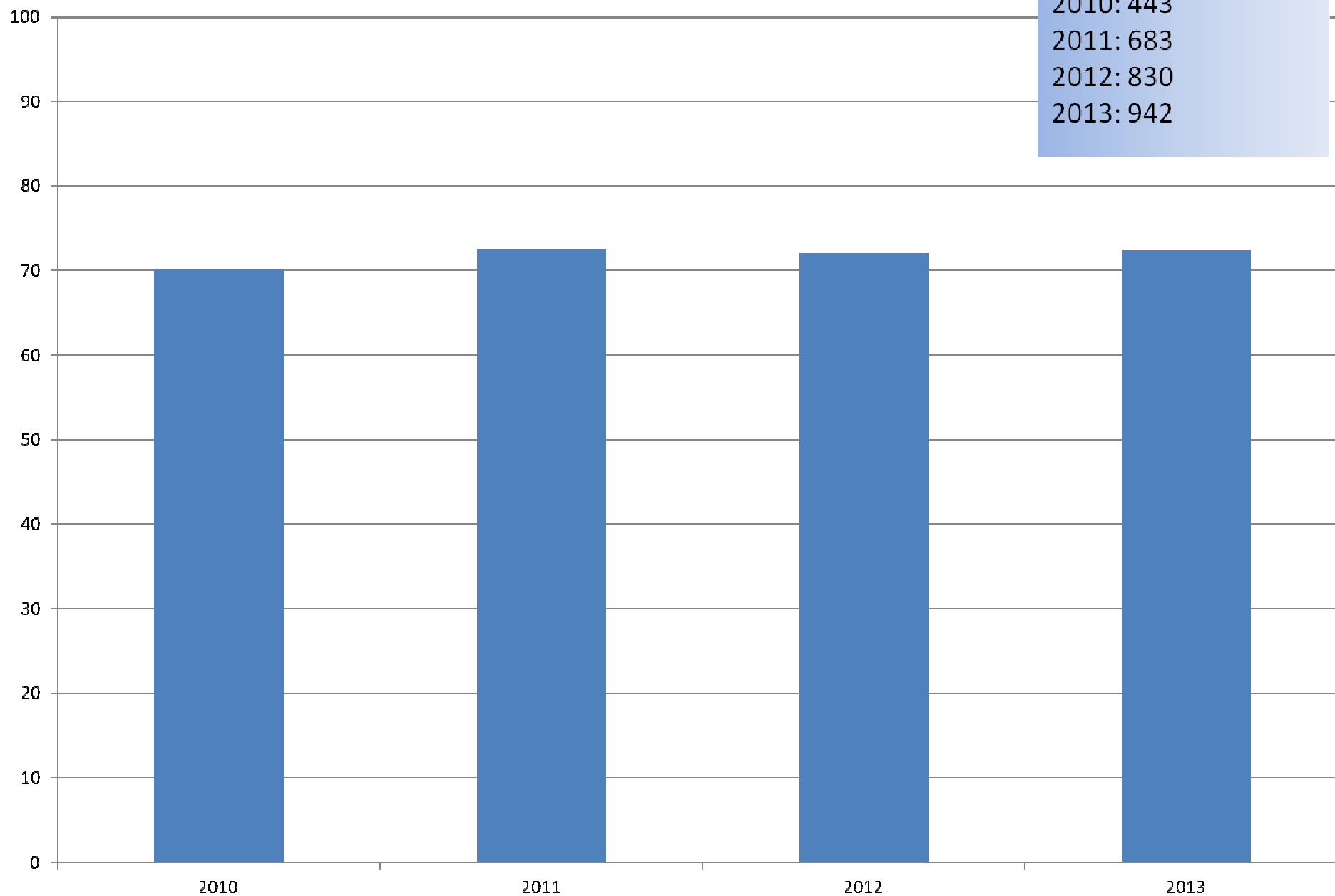
testati:

2010: 443

2011: 683

2012: 830

2013: 942



PORDENONE : % MSSA

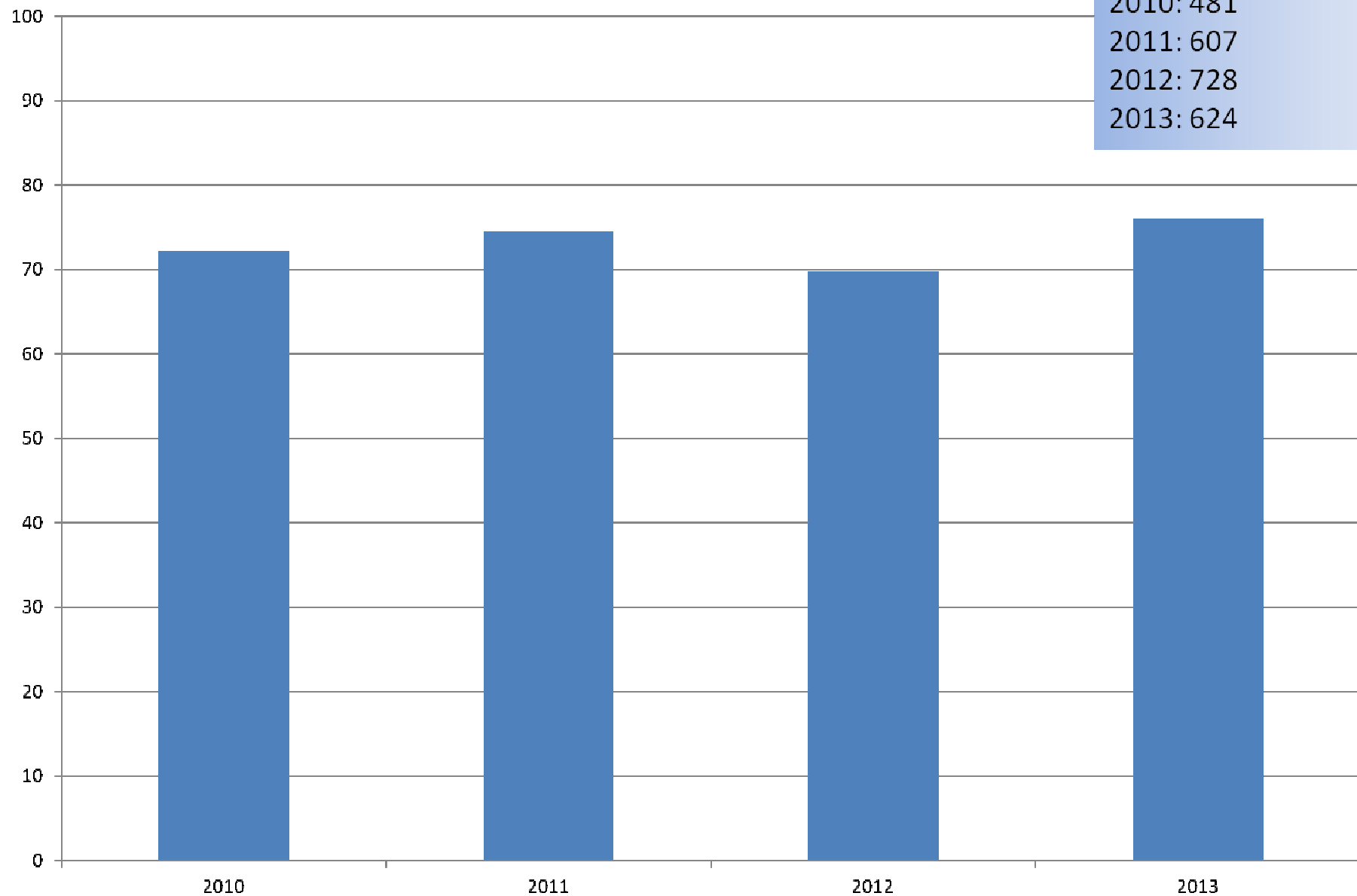
Numero di ceppi
testati:

2010: 481

2011: 607

2012: 728

2013: 624



CONEGLIANO : % MSSA

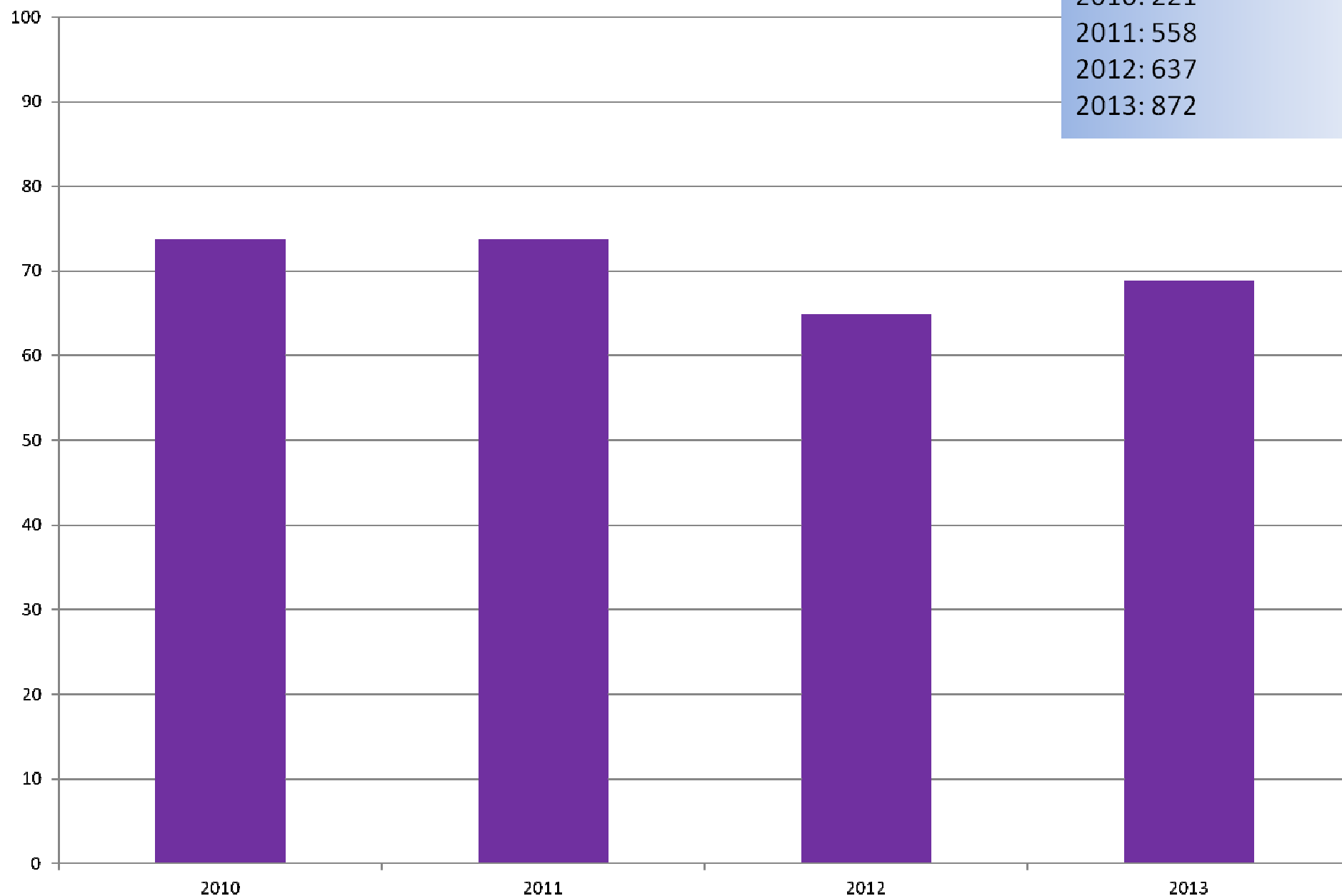
Numero di ceppi testati:

2010: 221

2011: 558

2012: 637

2013: 872



ROVIGO : % MSSA

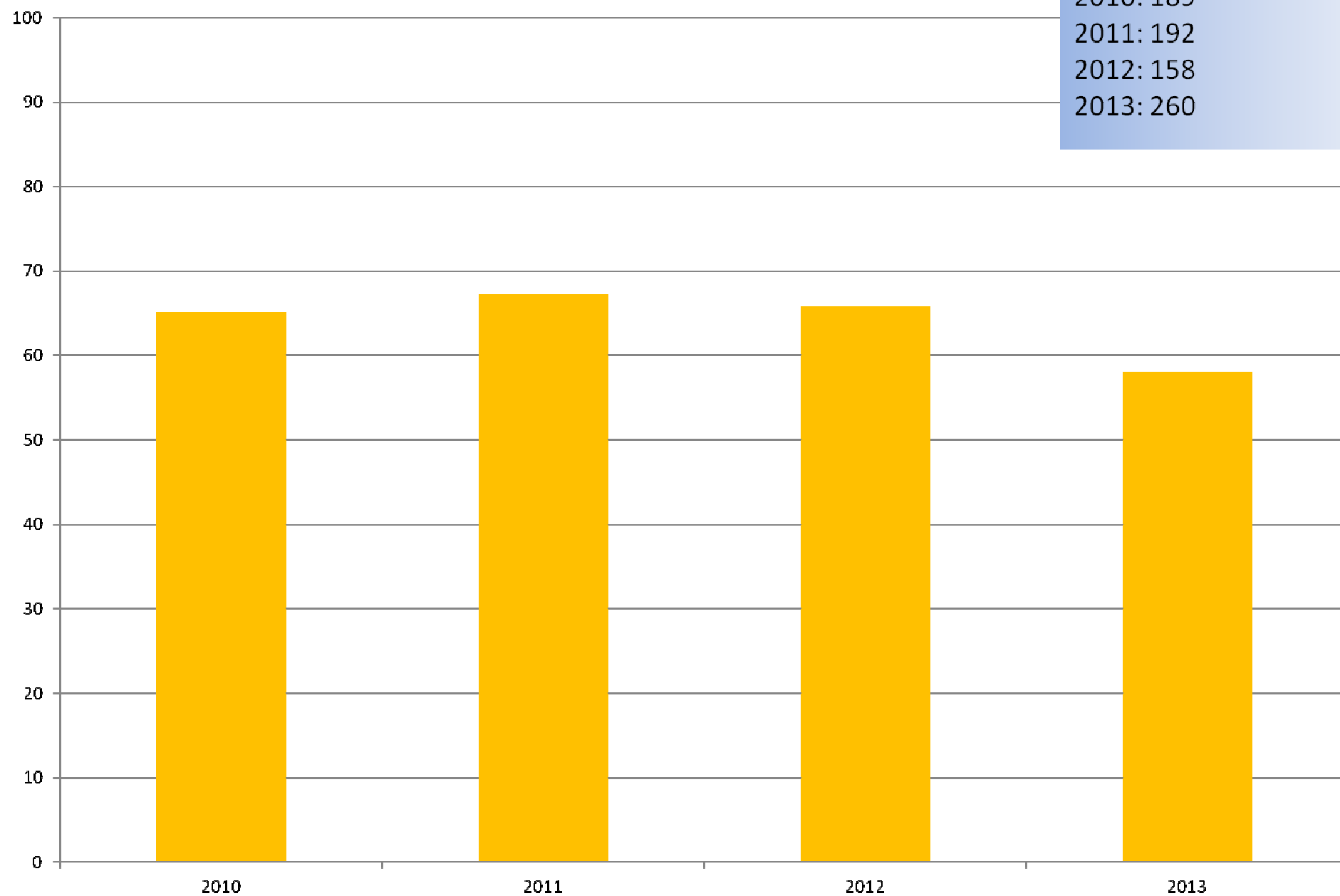
Numero di ceppi
testati:

2010: 189

2011: 192

2012: 158

2013: 260

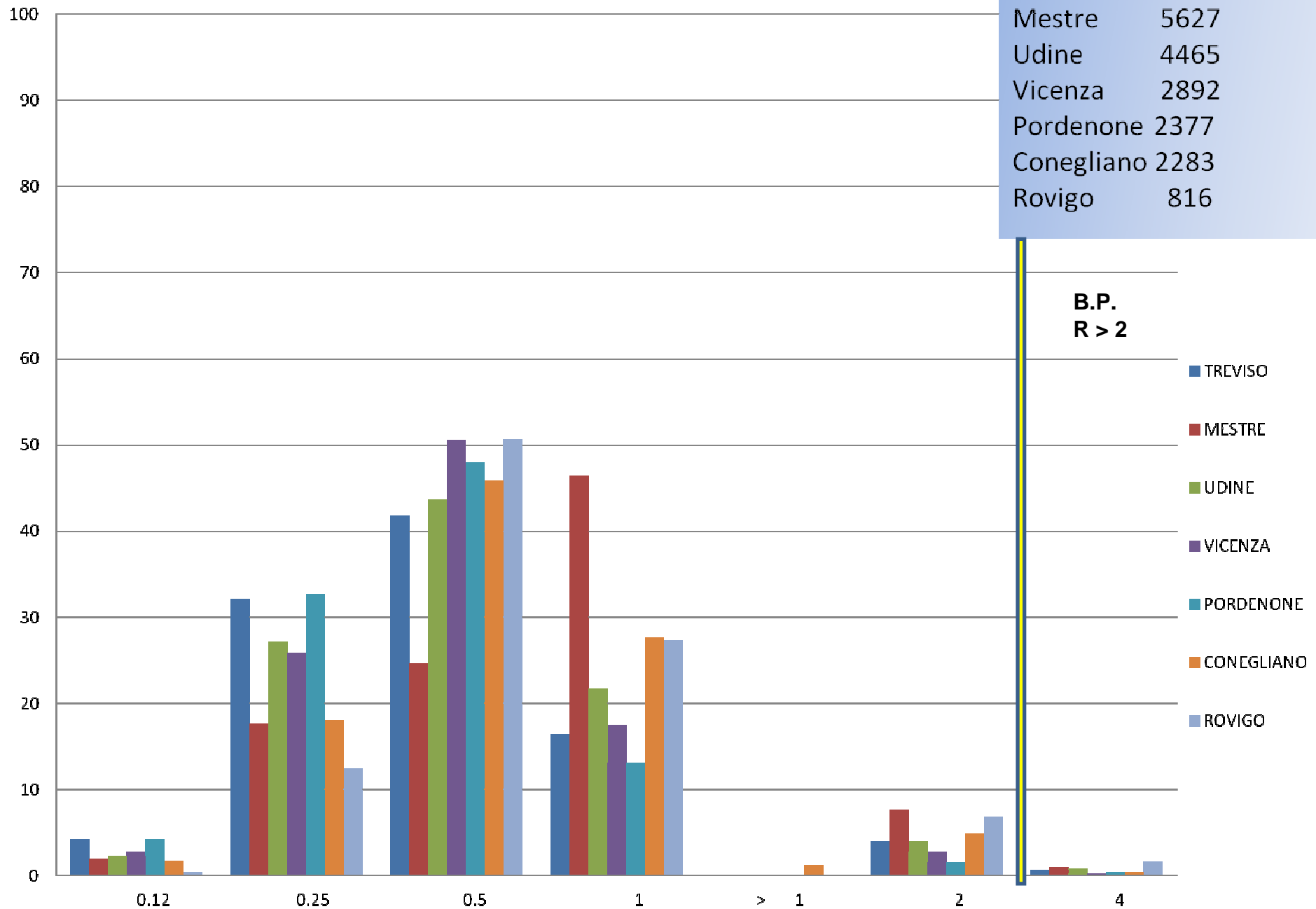


	Ceppi Testati	TOT SENSIB	% SENSIB
DAPTOMICINA	7904	7900	99,95
LINEZOLID	7655	7591	99,16
TEICOPLANINA	8652	8575	99,12
TIGECICLINA	7207	7181	99,64
VANCOMICINA	8653	8648	99,95

TEICOPLANINA : % DISTRIBUZIONE M.I.C.

Numero ceppi testati:

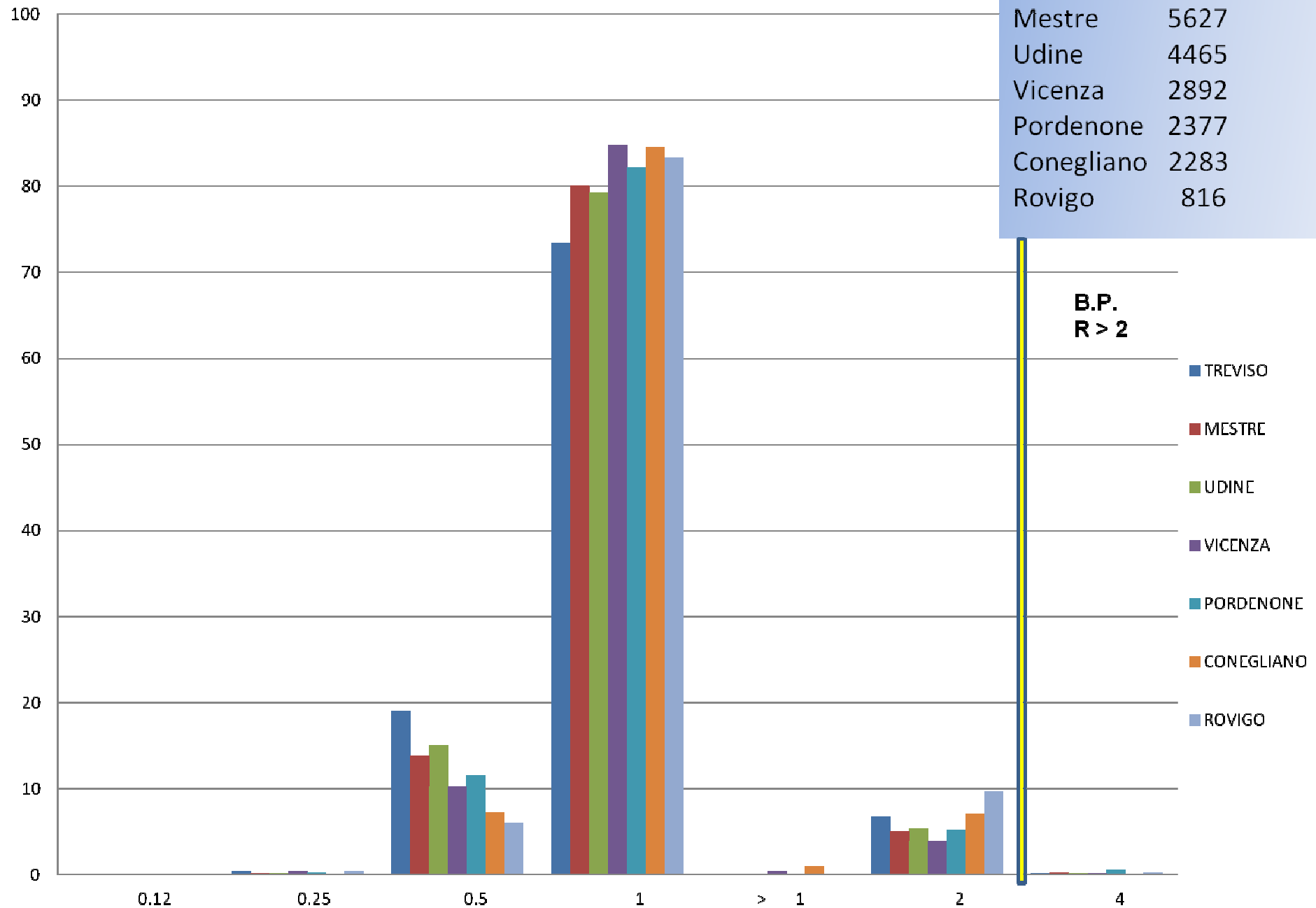
Treviso	7895
Mestre	5627
Udine	4465
Vicenza	2892
Pordenone	2377
Conegliano	2283
Rovigo	816



VANCOMICINA : % DISTRIUZIONE M.I.C.

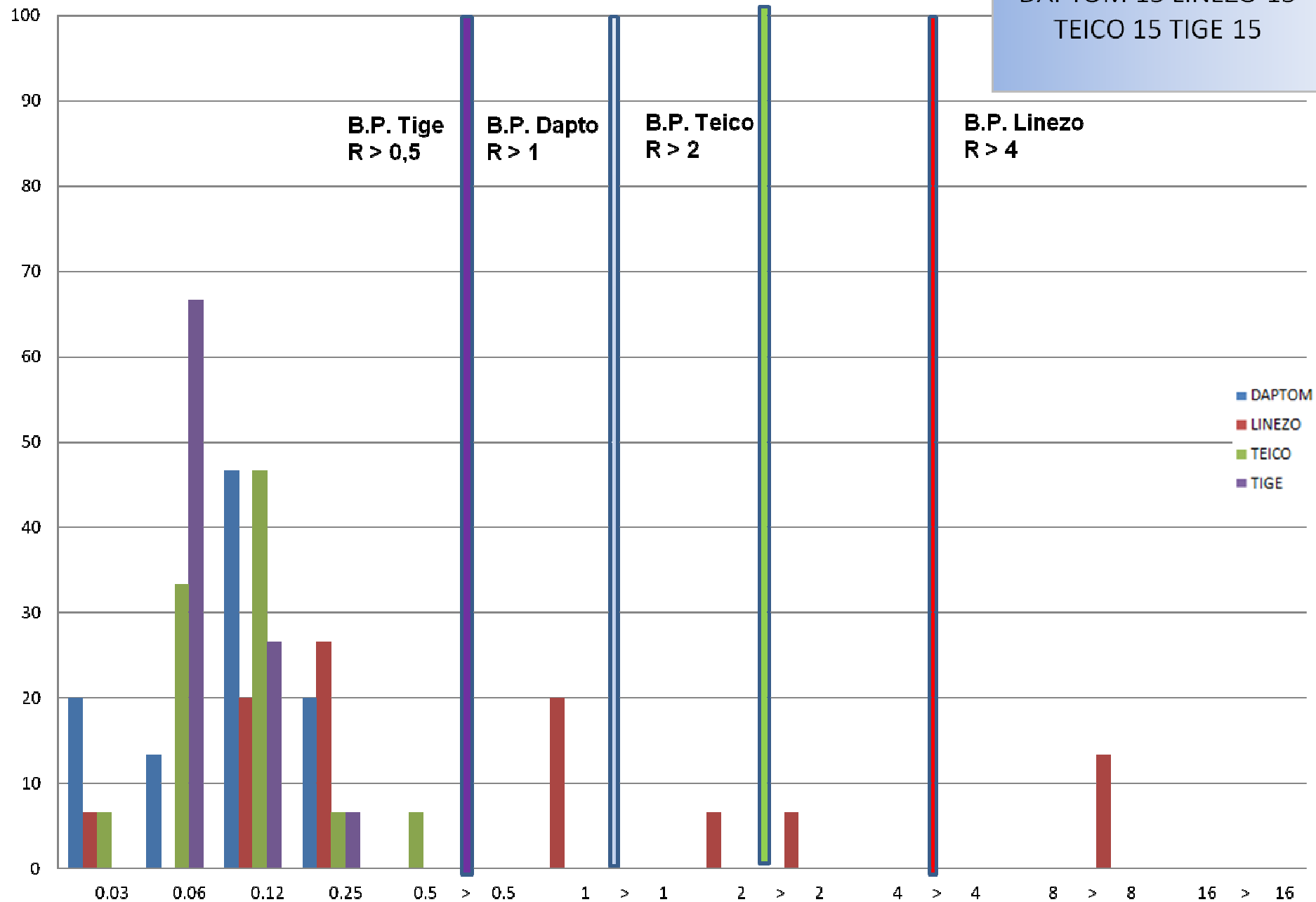
Numero ceppi testati:

Treviso	7895
Mestre	5627
Udine	4465
Vicenza	2892
Pordenone	2377
Conegliano	2283
Rovigo	816



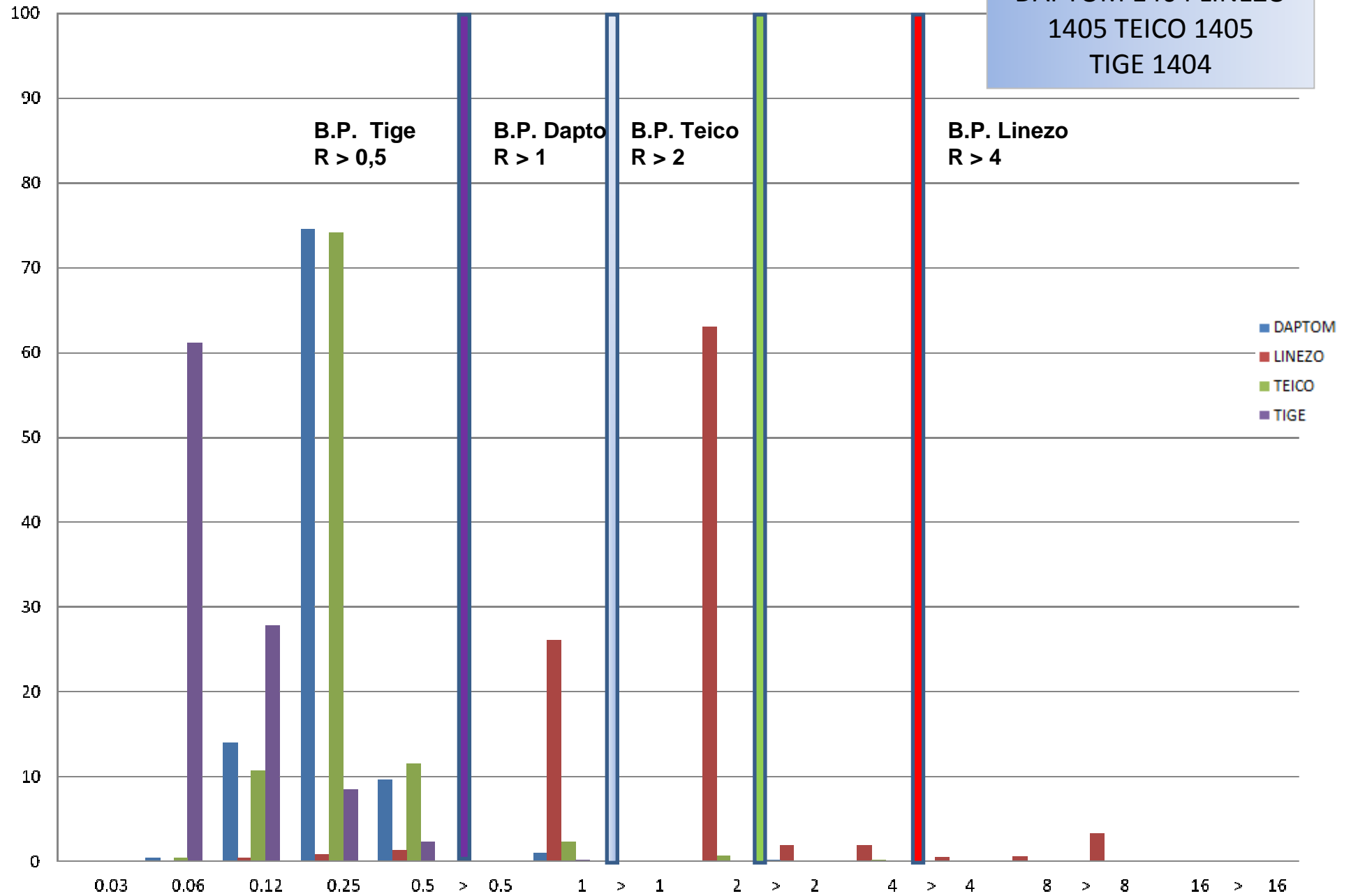
MRSA : VANCO 0.25 mg/L

Numero ceppi testati:
 DAPTOM 15 LINEZO 15
 TEICO 15 TIGE 15



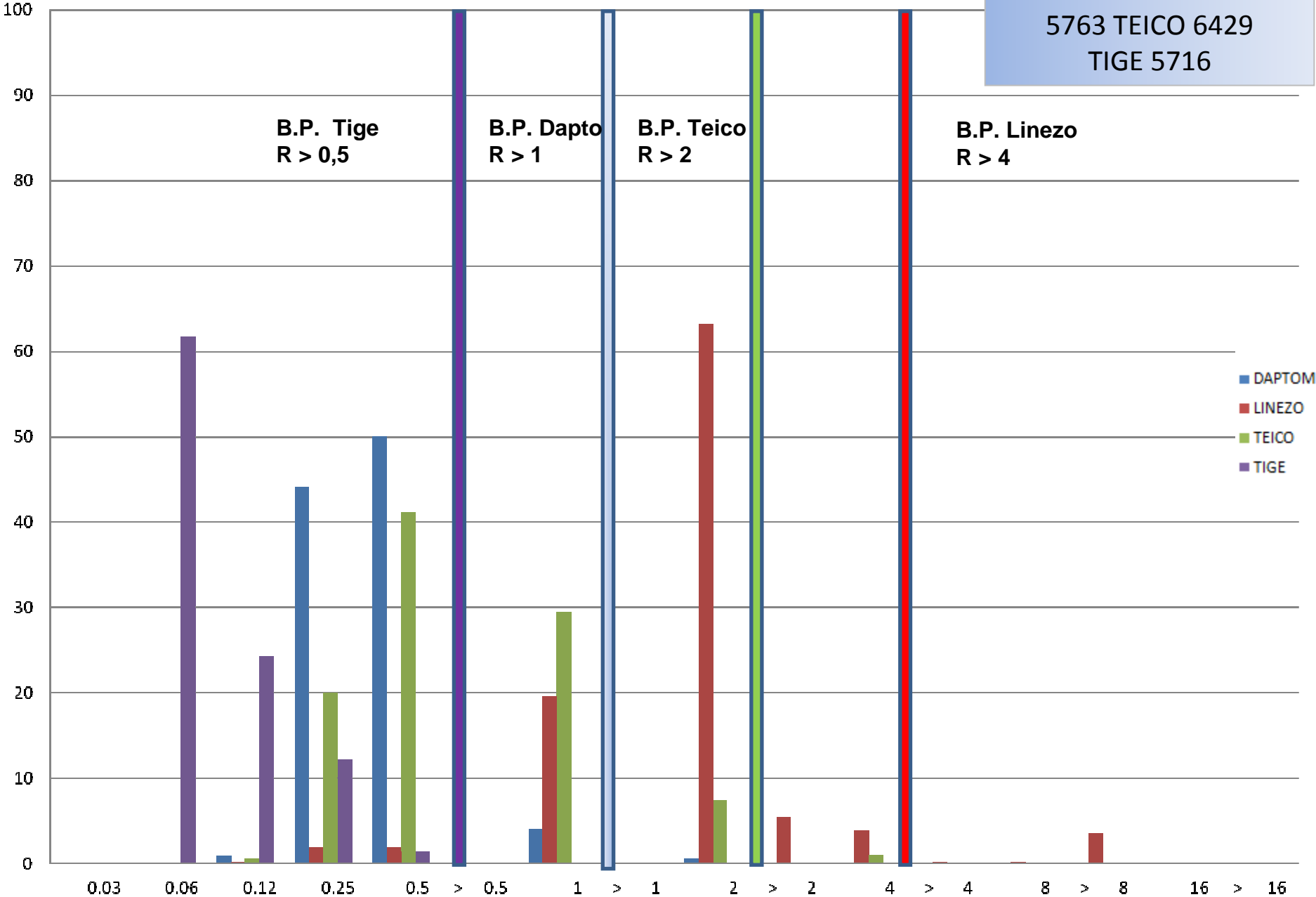
MRSA : VANCO 0.5 mg/L

Numero ceppi testati:
 DAPTOM 1404 LINEZO
 1405 TEICO 1405
 TIGE 1404



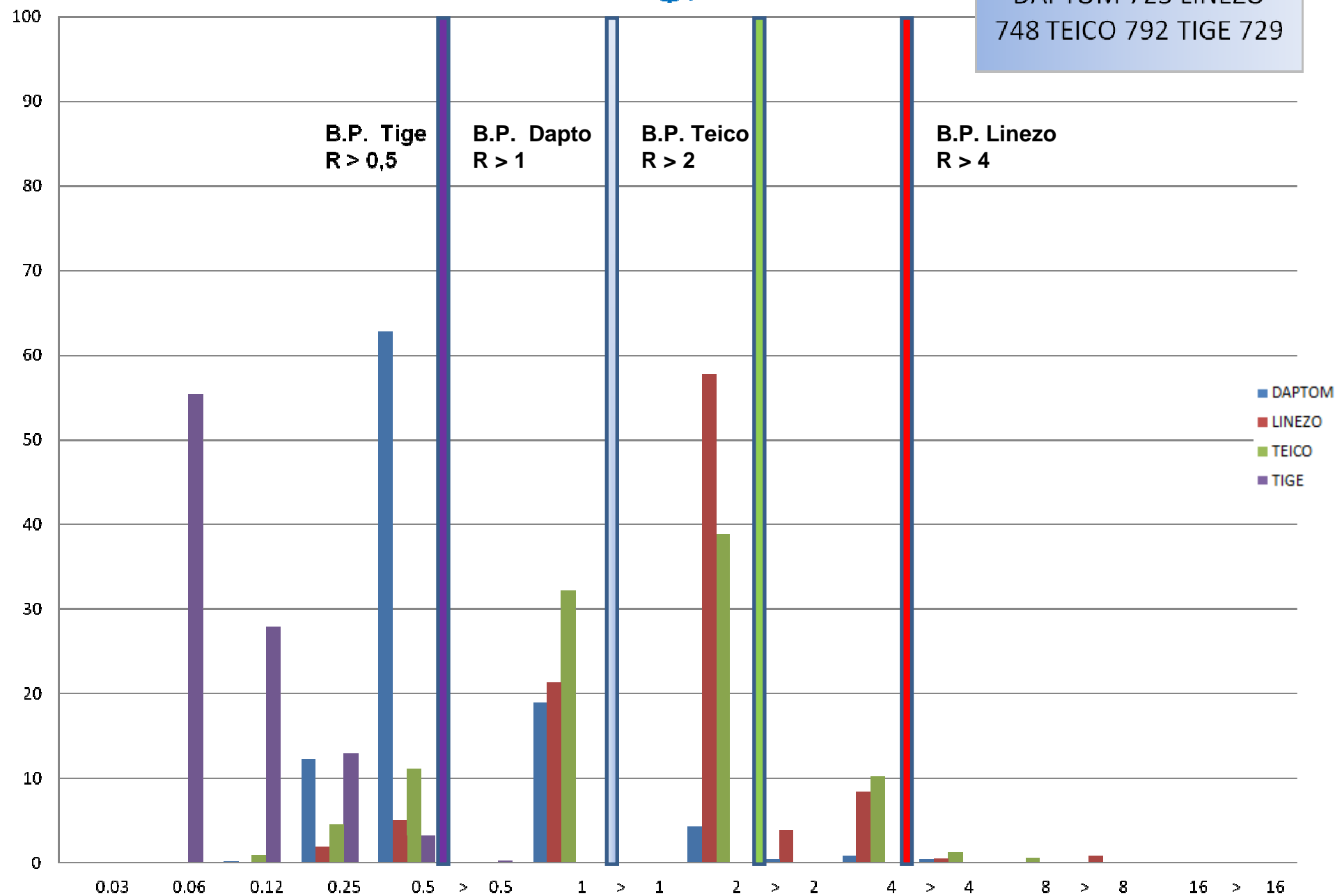
MRSA : VANCO 1 mg/L

Numero ceppi testati:
 DAPTOM 5716 LINEZO
 5763 TEICO 6429
 TIGE 5716



MRSA : VANCO 2 mg/L

Numero ceppi testati:
 DAPTOM 725 LINEZO 748
 TEICO 792 TIGE 729



Report of the 13th Vancomycin-Resistant *Staphylococcus aureus* Isolate from the United States

Brandi M. Limbago,^a Alexander J. Kallen,^a Wenming Zhu,^a Paula Eggers,^b Linda K. McDougal,^a Valerie S. Albrecht^a

Division of Healthcare Quality Promotion, Centers for Disease Control and Prevention, Atlanta, Georgia, USA^a; Delaware Division of Public Health, Dover, Delaware, USA^b

Vancomycin-resistant *Staphylococcus aureus* (VRSA), an important multidrug-resistant organism of public health concern, has been infrequently identified in the United States since 2002. All previous VRSA isolates belonged to clonal complex 5, a lineage associated primarily with health care. This report describes the most recent (13th) U.S. VRSA isolate, the first to be community associated.

TABLE 1 MICs (interpretations) for bacterial isolates associated with U.S. VRSA isolate 13

Isolate	Source	MIC in $\mu\text{g/ml}$ (interpretation) ^a								
		Vancomycin	Cefoxitin	Clindamycin	Doxycycline	Erythromycin	Levofloxacin	Minocycline	Tetracycline	SXT
VRSA	Foot wound	256 (R)	16 (R)	>16 (R)	8 (I)	>8 (R)	8 (R)	8 (I)	>16 (R)	$\leq 0.5/9.5$ (S)
MRSA	Rectum	1 (S)	8 (R)	>16 (R)	8 (I)	>8 (R)	>16 (R)	8 (I)	>16 (R)	>8/152 (R)
MRSA	Nares	1 (S)	8 (R)	≤ 0.25 (S)	≤ 1 (S)	0.5 (S)	>16 (R)	0.12 (S)	≤ 1 (S)	>8/152 (R)
<i>E. faecalis</i>	Rectum	512 (R)	NA	NA	8 (I)	NA	0.5 (S)	NA	NA	NA

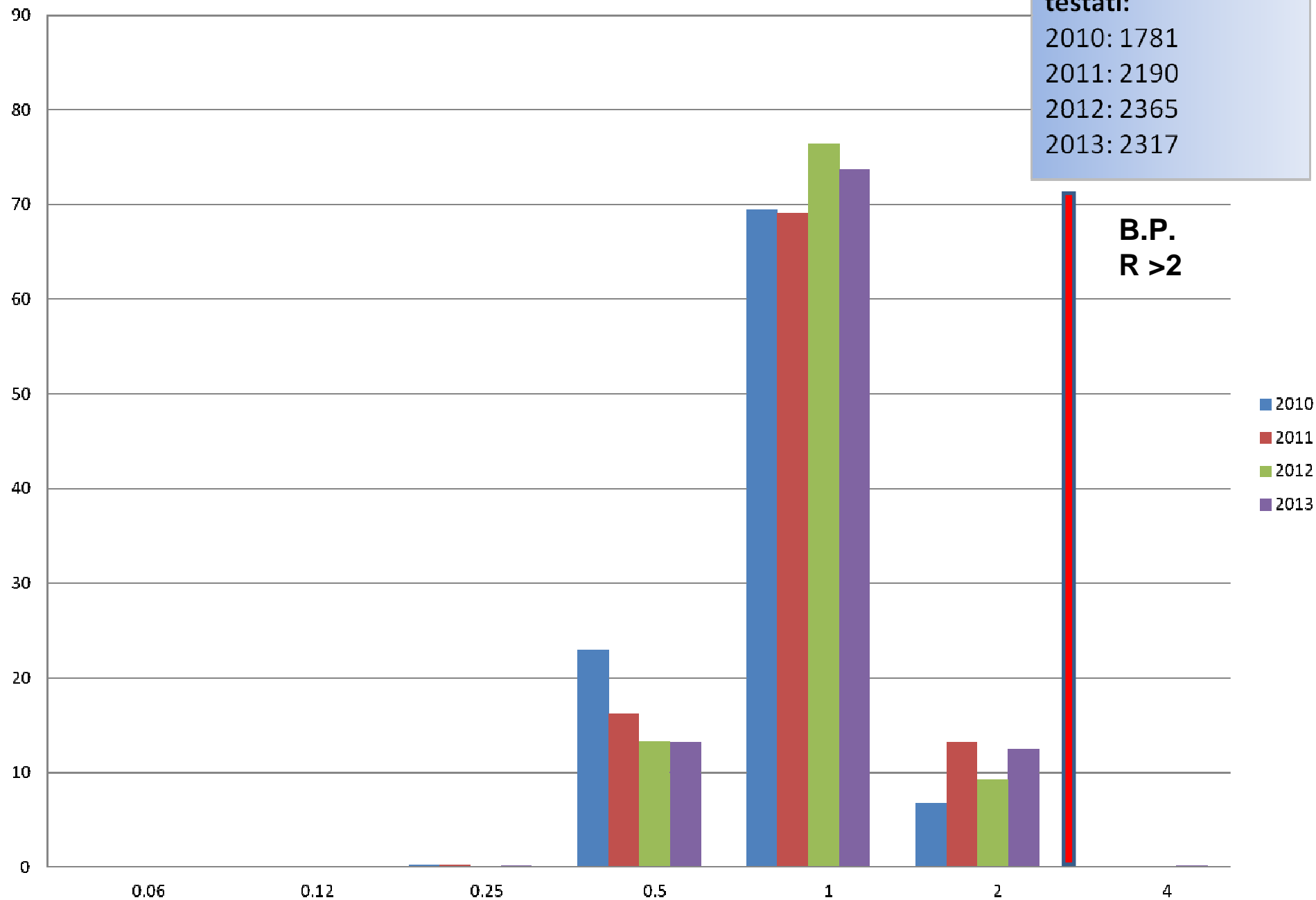
^a SXT, trimethoprim-sulfamethoxazole; R, resistant; I, intermediate; S, susceptible; NA, not applicable.

Vancomicina "MIC creep"

Aumento delle MICs della vancomicina tra i ceppi di *Staphylococcus aureus* sensibili alla vancomicina

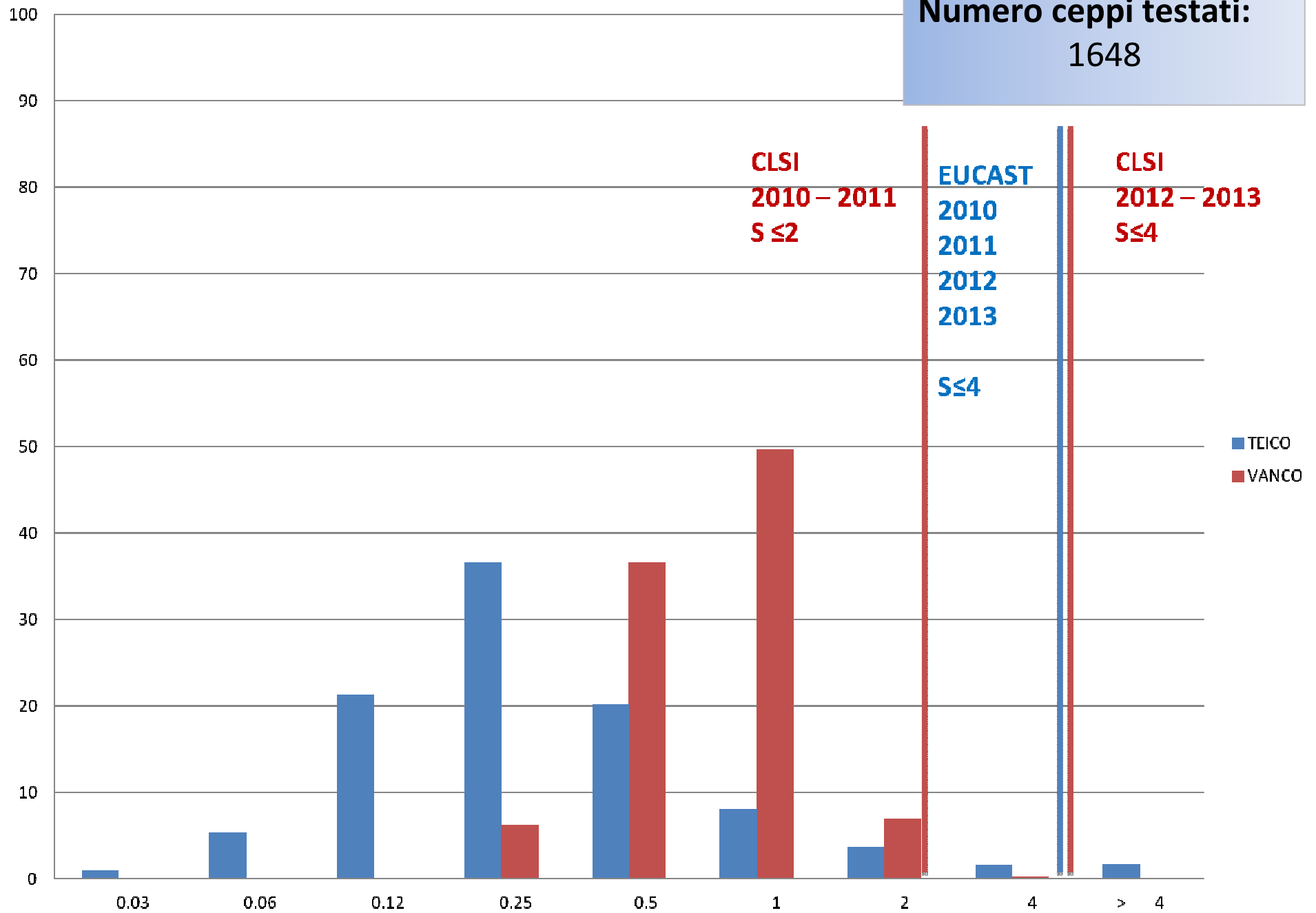
- E' presente in alcune istituzioni (ma non in tutte ...)
- Ritardata risposta alla terapia antibiotica
- Aumentata mortalità
- Aumentata percentuale di ricadute
- Prolungata ospedalizzazione
- Costo di ospedalizzazione totale aumentato
- Coinvolge sia gli MRSA che i MSSA

MRSA : % M.I.C. VANCO



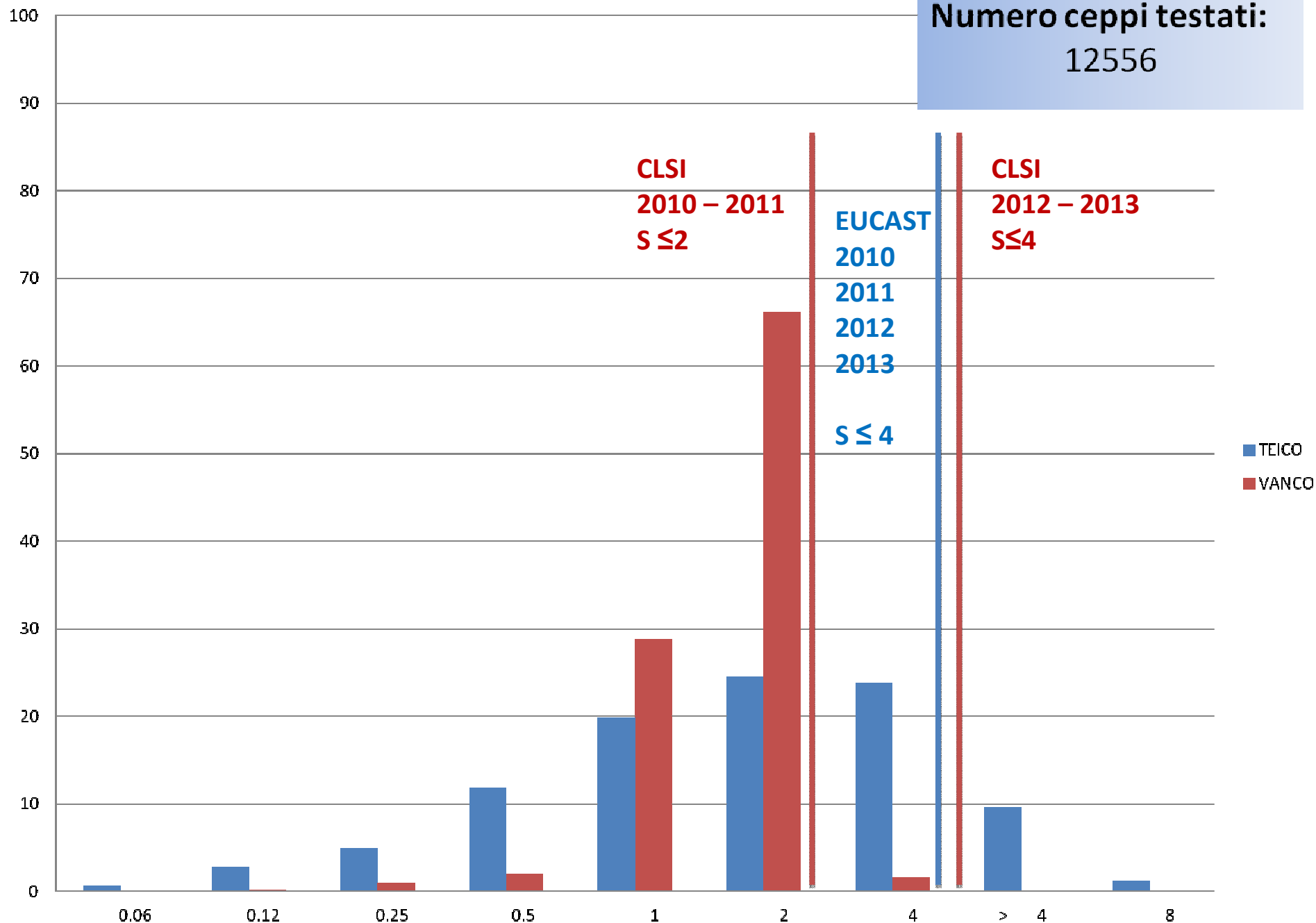
Staphylococcus capitis: M.I.C. Vancomicina e Teicoplanina

Numero ceppi testati:
1648

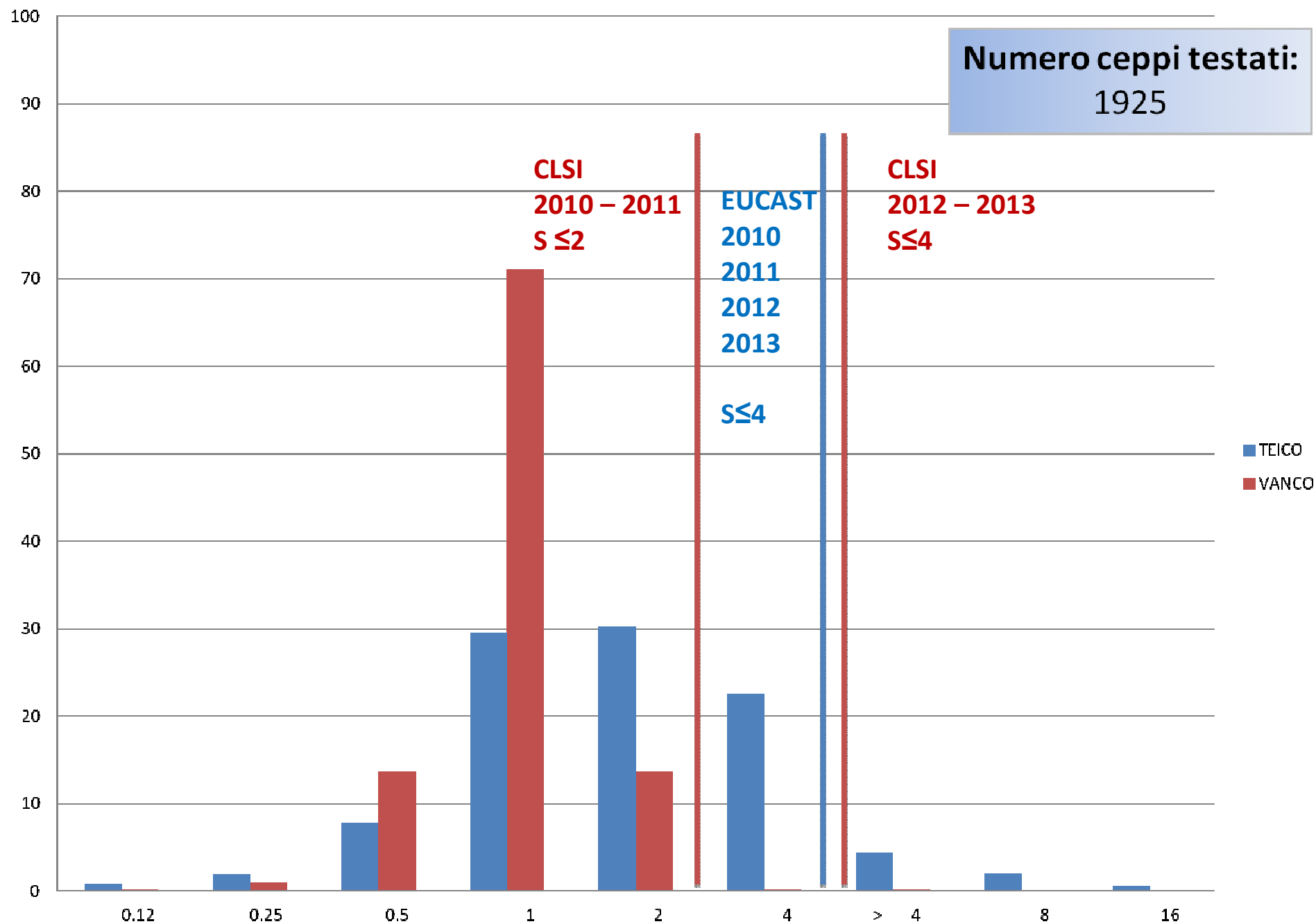


Staphylococcus epidermidis: M.I.C. Vancomicina e Teicoplanina

Numero ceppi testati:
12556

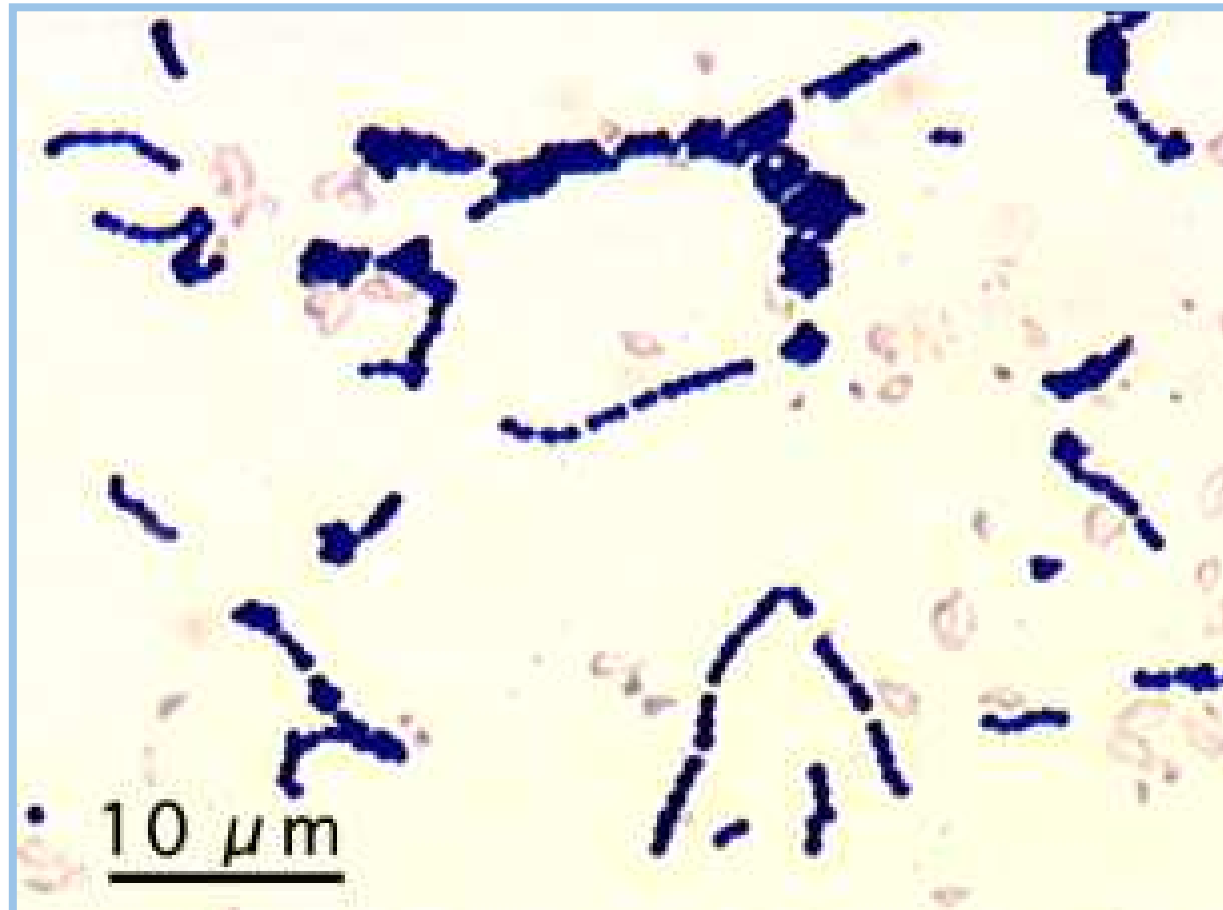


Staphylococcus haemolyticus: M.I.C. Vancomicina e Teicoplanina



Enterococchi

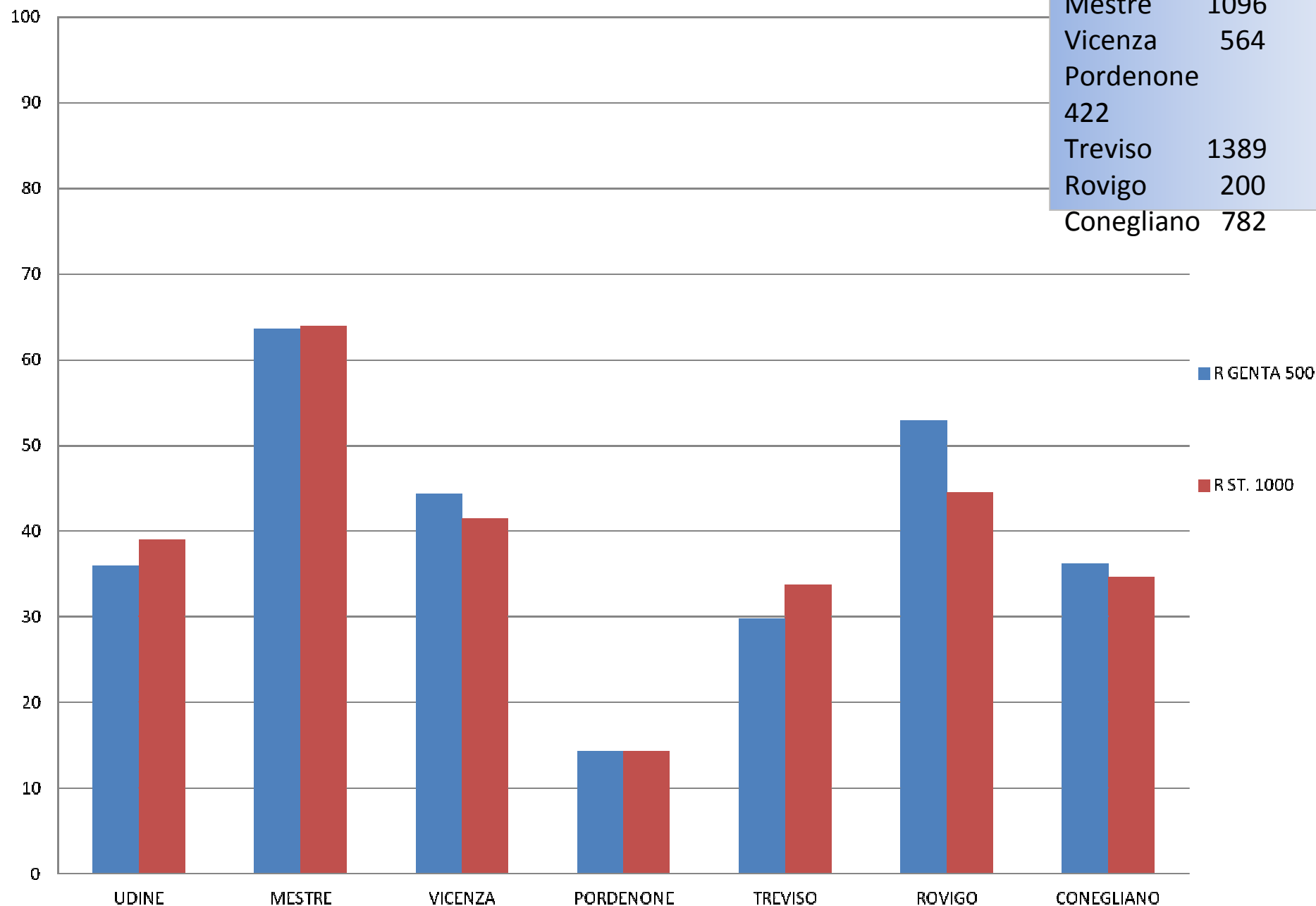
(molte resistenze intrinseche)



Enterococcus faecalis : % HLRA

Numero ceppi testati:

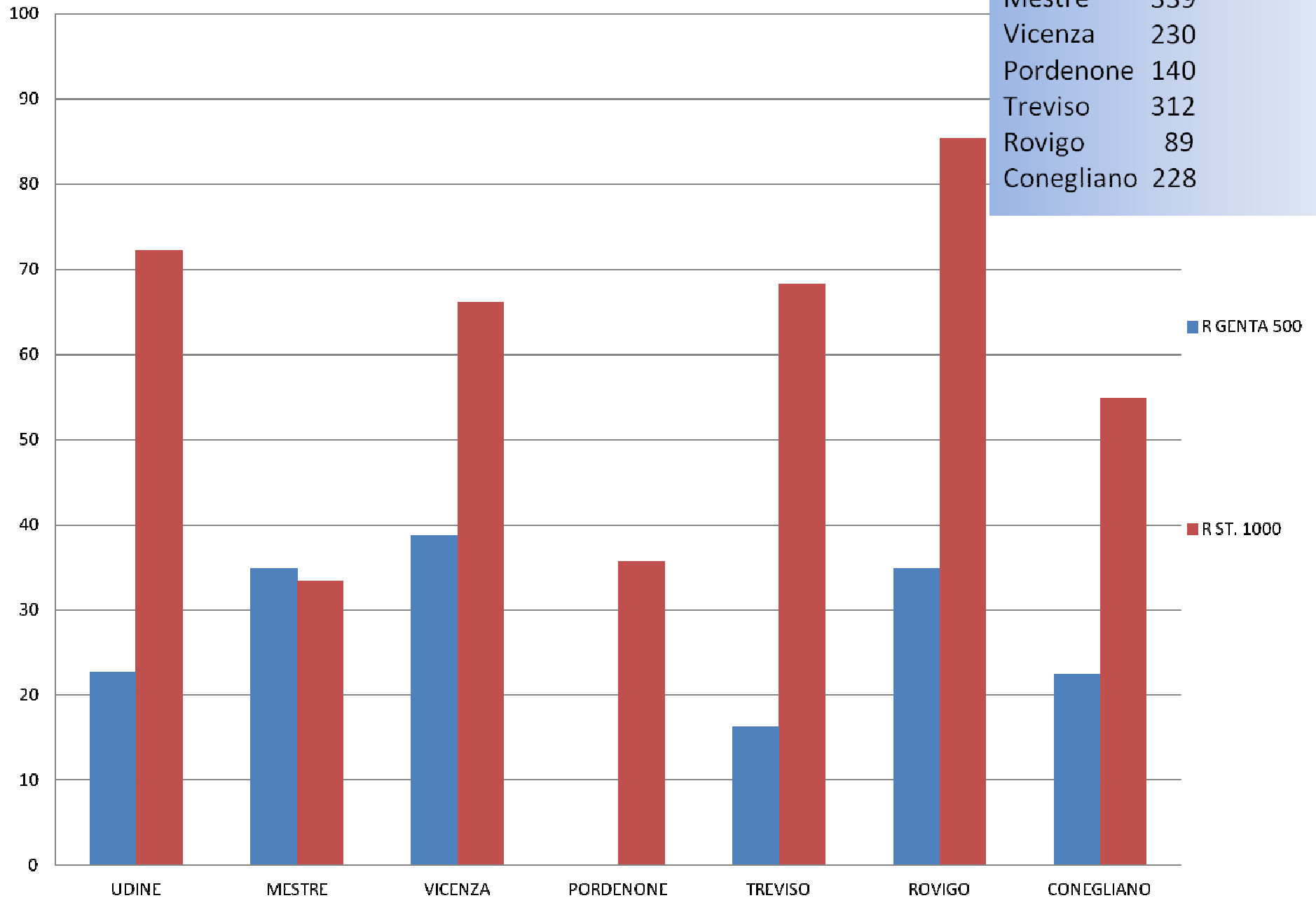
Udine	951
Mestre	1096
Vicenza	564
Pordenone	422
Treviso	1389
Rovigo	200
Conegliano	782



Enterococcus faecium: % HLRA

Numero di ceppi testati:

Udine	562
Mestre	339
Vicenza	230
Pordenone	140
Treviso	312
Rovigo	89
Conegliano	228

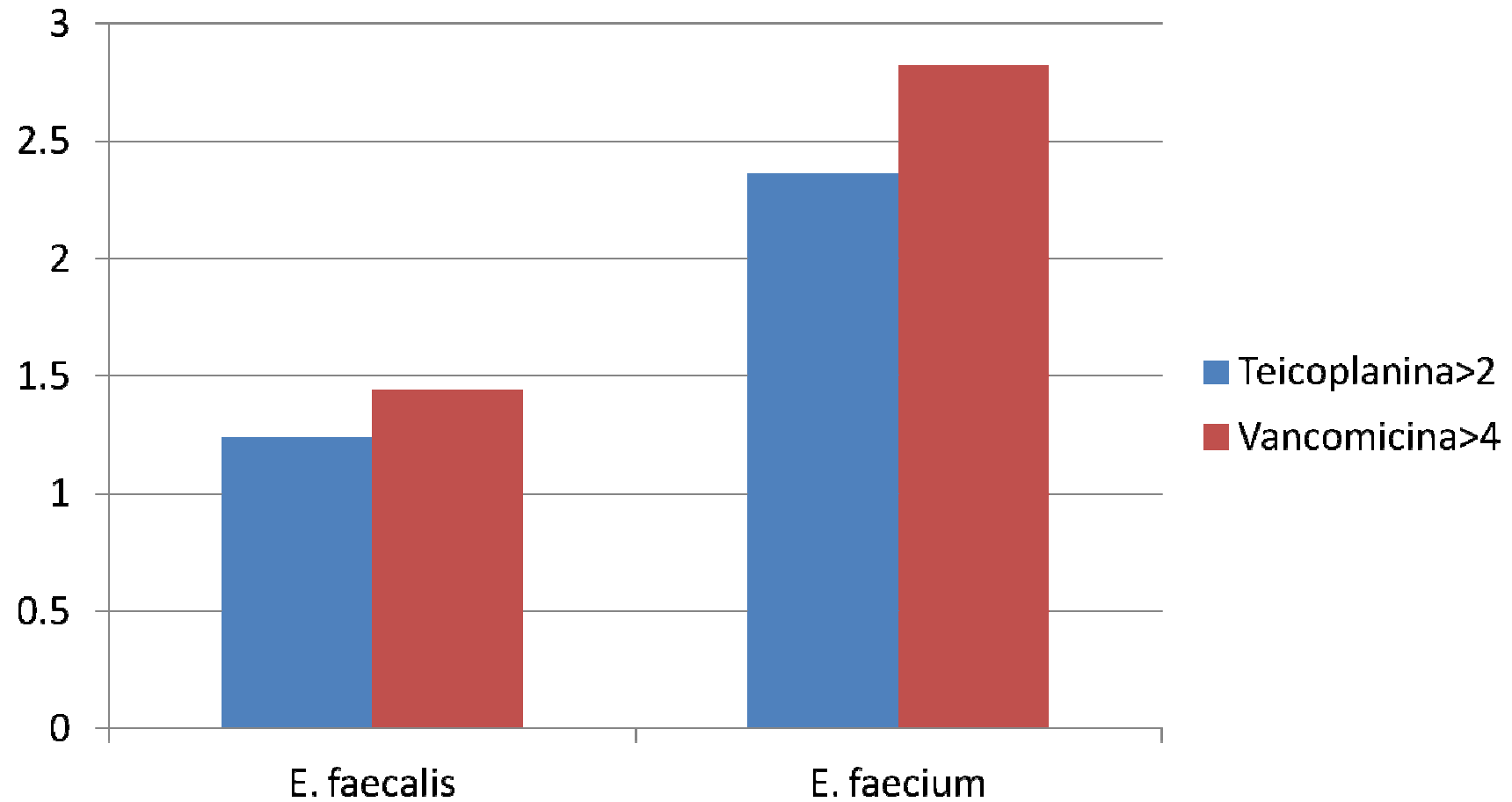


***Enterococcus spp* e resistenza a glicopeptidi**

Numero ceppi testati:

E. faecalis : TEICO 6488 / Vanco 6523

E. faecium : TEICO 1649 / Vanco 1664



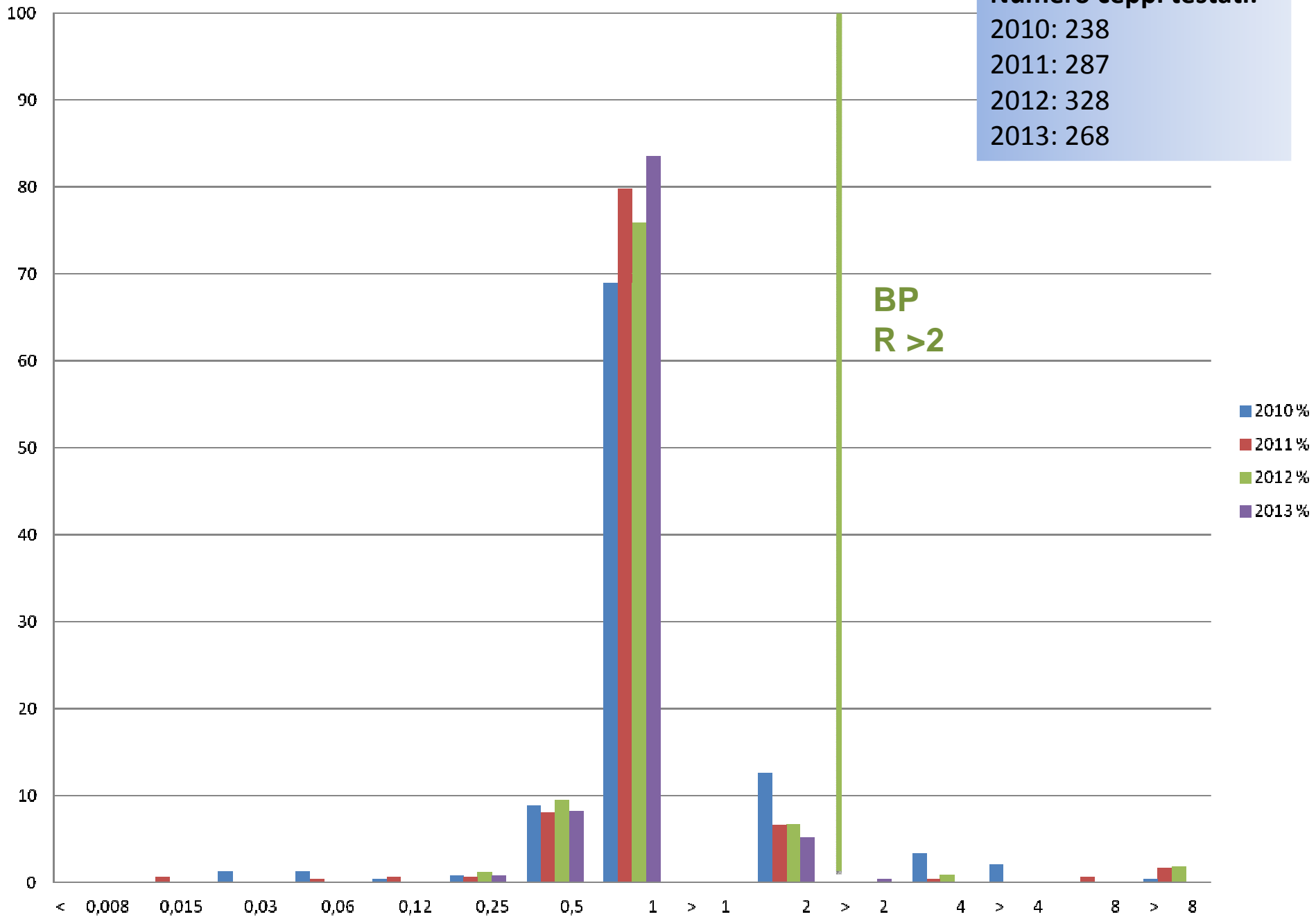
Streptococcus pneumoniae



Cocchi Gram+
Catalasi Negativi
Alfa-emolitici
Optochina-Sensibili
Bile-Sensibili

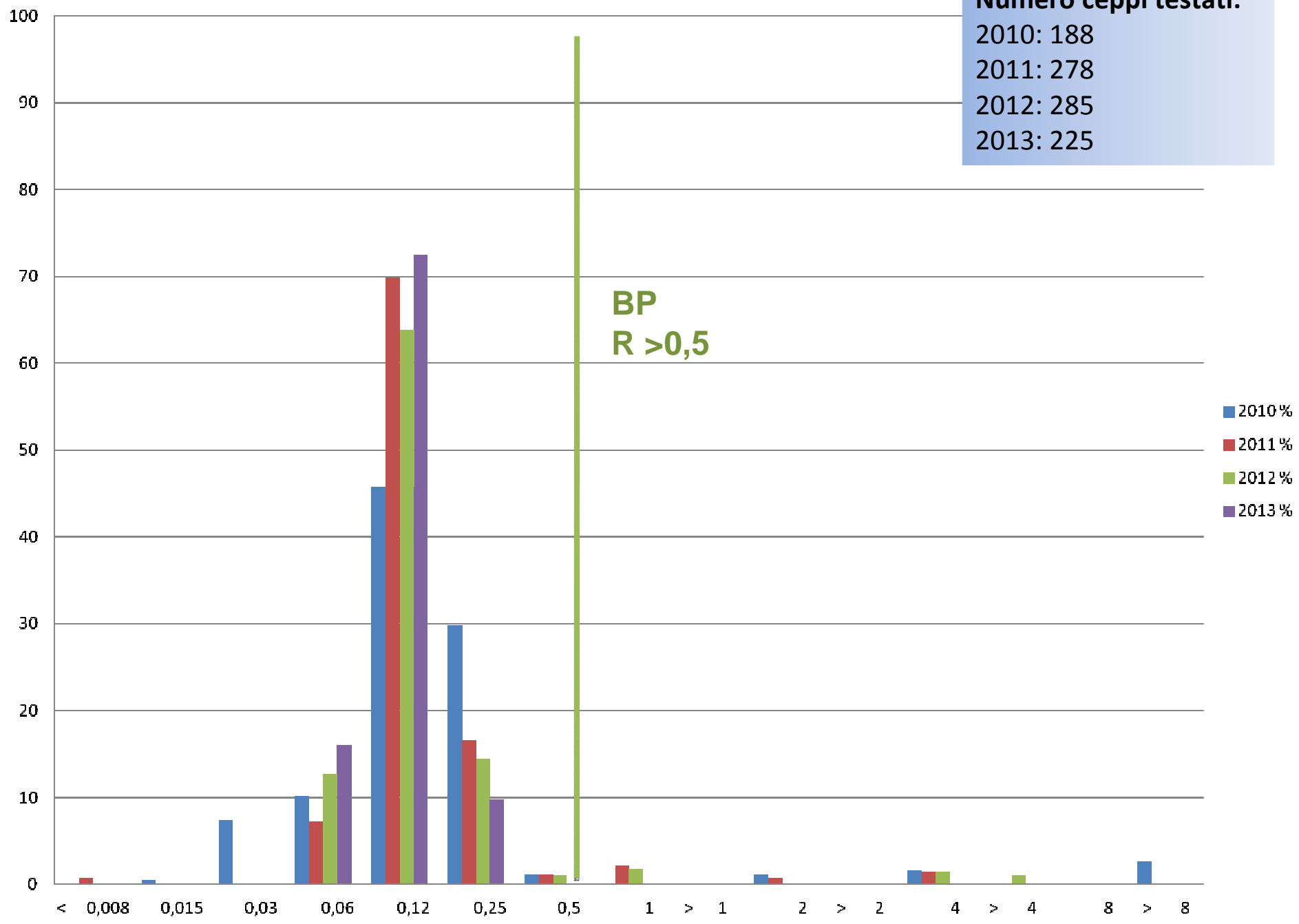
Streptococcus pneumoniae : M.I.C. Levofloxacin

Numero ceppi testati:
 2010: 238
 2011: 287
 2012: 328
 2013: 268



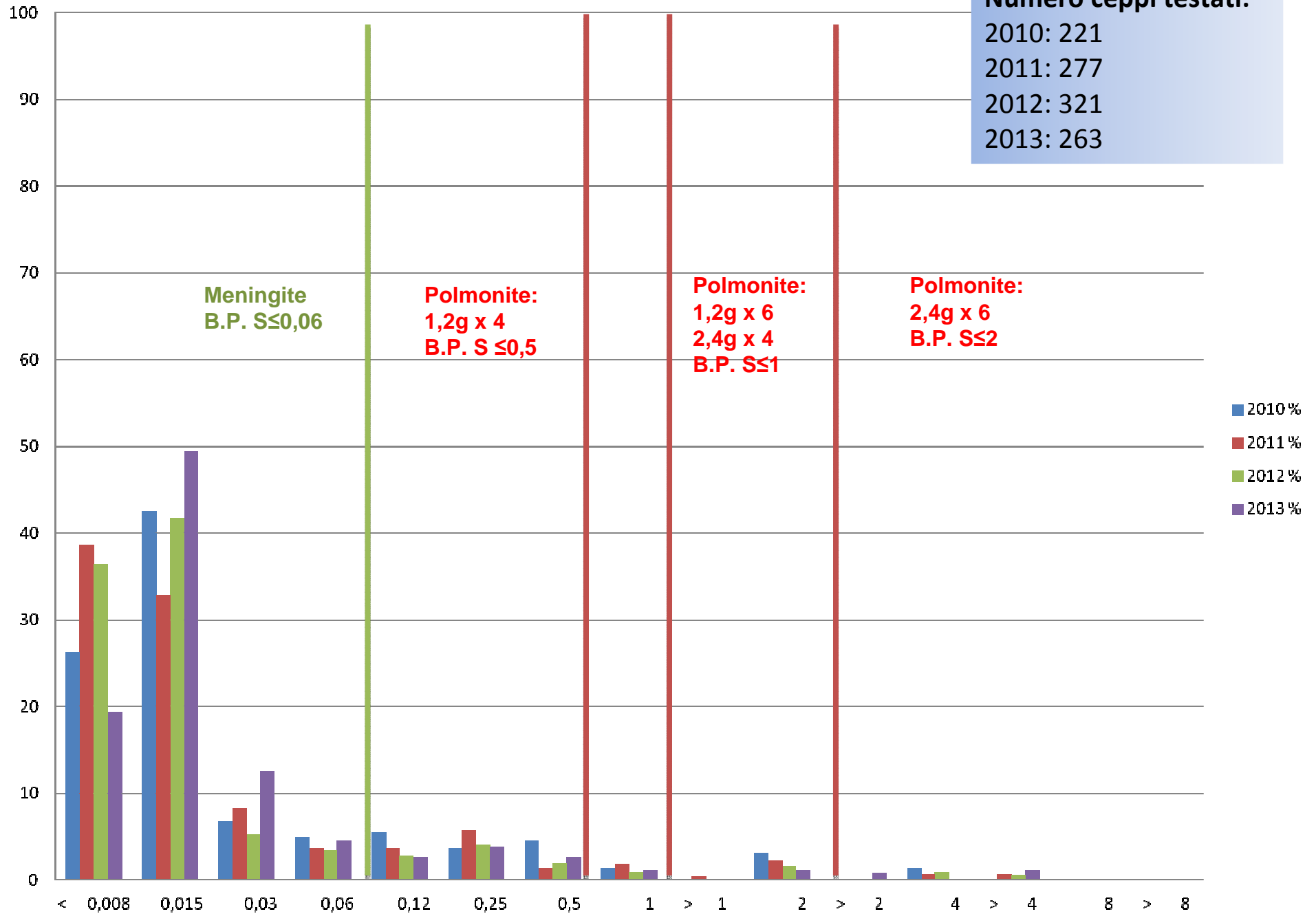
Streptococcus pneumoniae : M.I.C. Moxifloxacina

Numero ceppi testati:
 2010: 188
 2011: 278
 2012: 285
 2013: 225



Streptococcus pneumoniae : M.I.C. Penicillina

Numero ceppi testati:
 2010: 221
 2011: 277
 2012: 321
 2013: 263



GRAZIE a ...

- *in primis al Prof. Marco Toni*
- Treviso (dott. R. Rigoli)
- Udine (dott. C. Scarparo – A. Sartor)
- Pordenone (dott. A. Camporese – M. Avolio)
- Vicenza (dott. M. Rassu – L. Bragagnolo)
- Rovigo (dott. M. Scarin – A. Tessari)
- Conegliano (dott. C. Callegari)

- ... a S. Morciano, A. Vanin, M. Visentin (elaborazione dati)

- ... e anche a tutti VOI che con pazienza mi avete ascoltato !!!

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