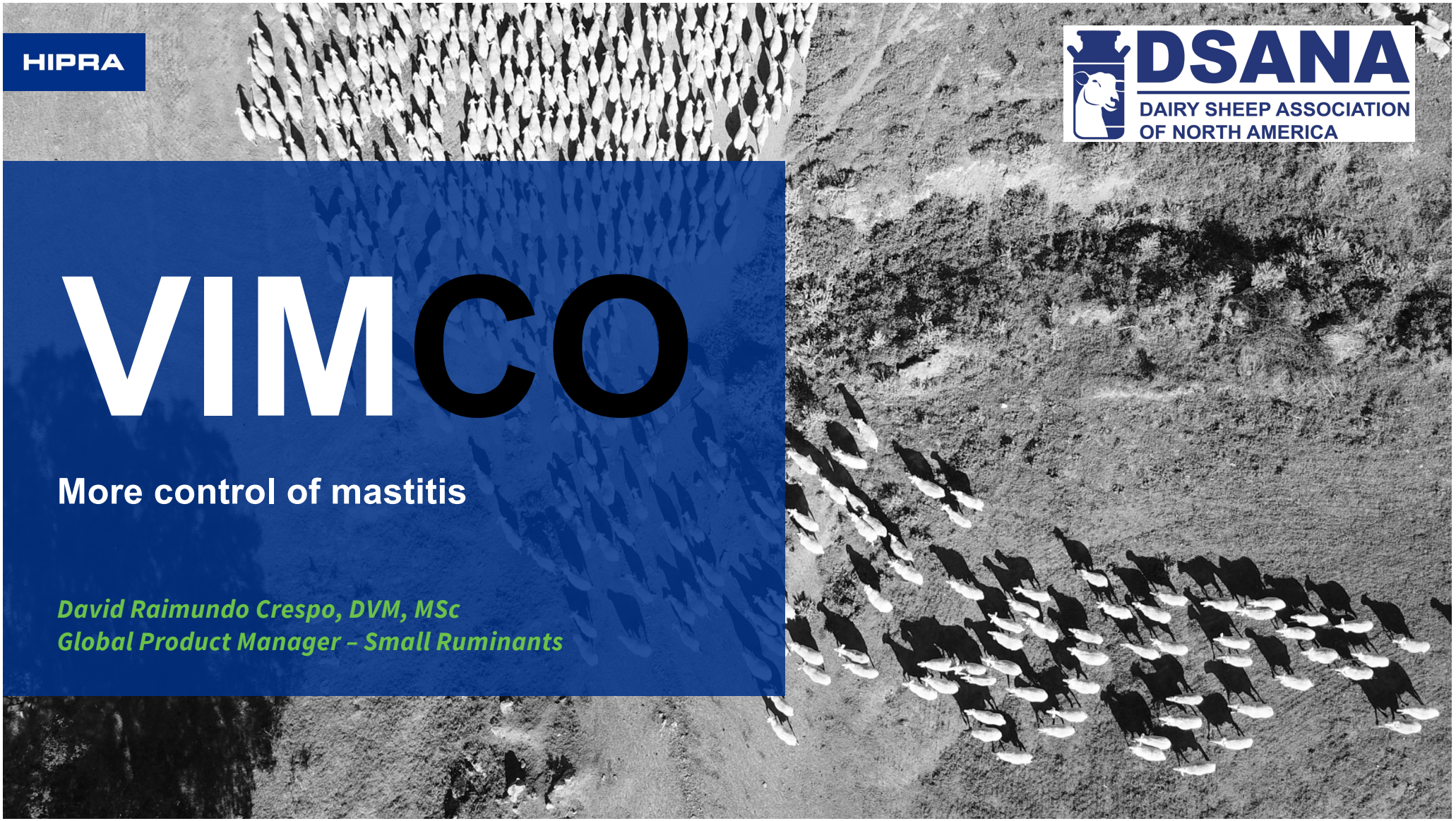
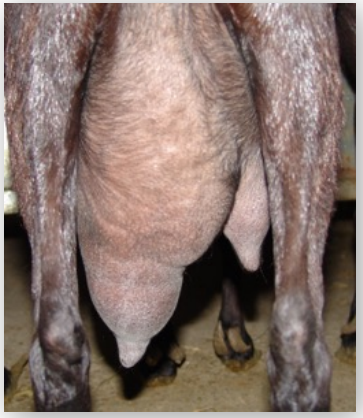

HIPRA
DSANA
DAIRY SHEEP ASSOCIATION
OF NORTH AMERICA
VIMCO
More control of mastitis
David Raimundo Crespo, DVM, MSc
Global Product Manager – Small Ruminants

HIPRA

MASTITIS IN SMALL RUMINANTS

MASTITIS IN SMALL RUMINANTS



* D. Bergonier et al, JDS 2003

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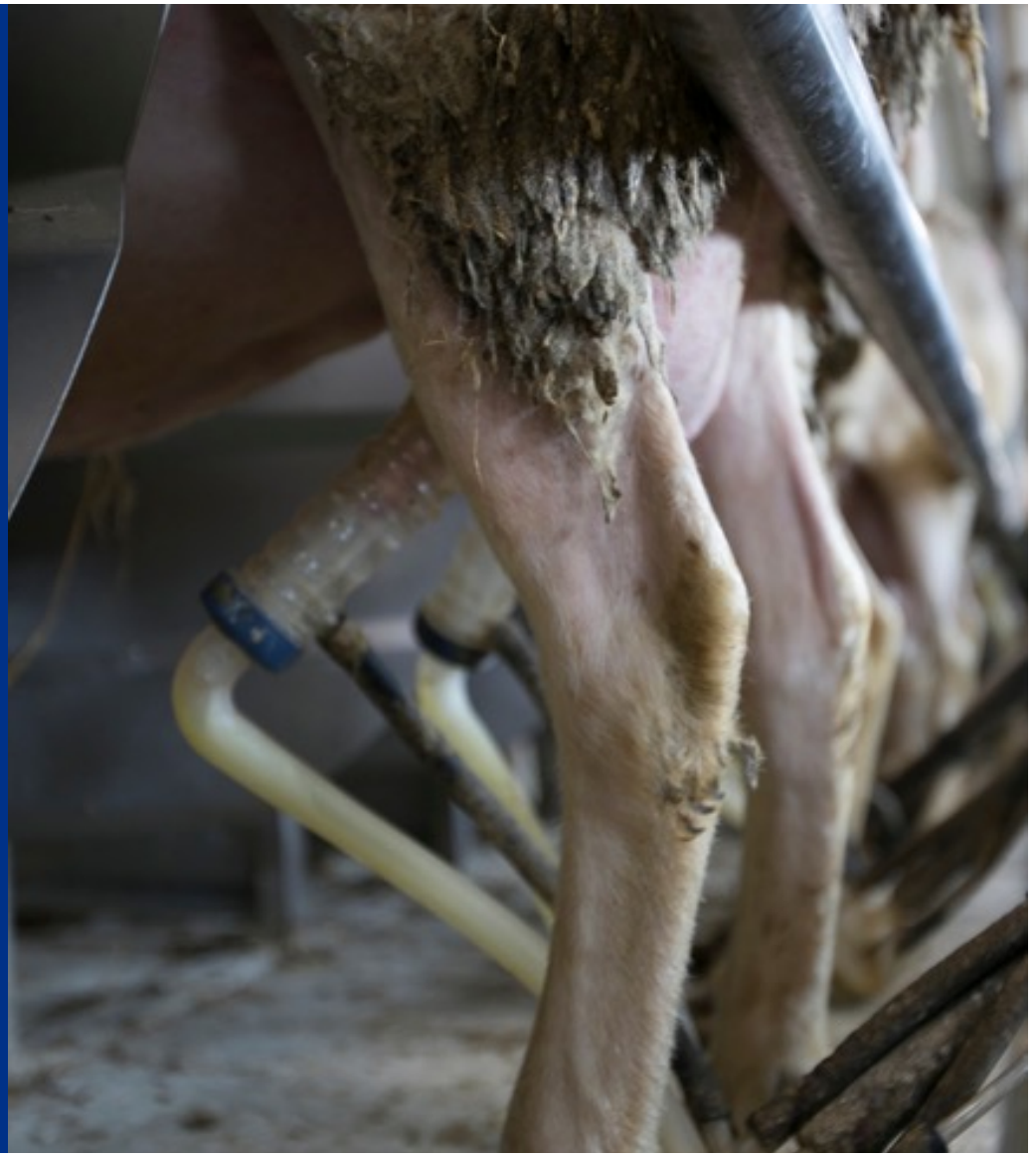
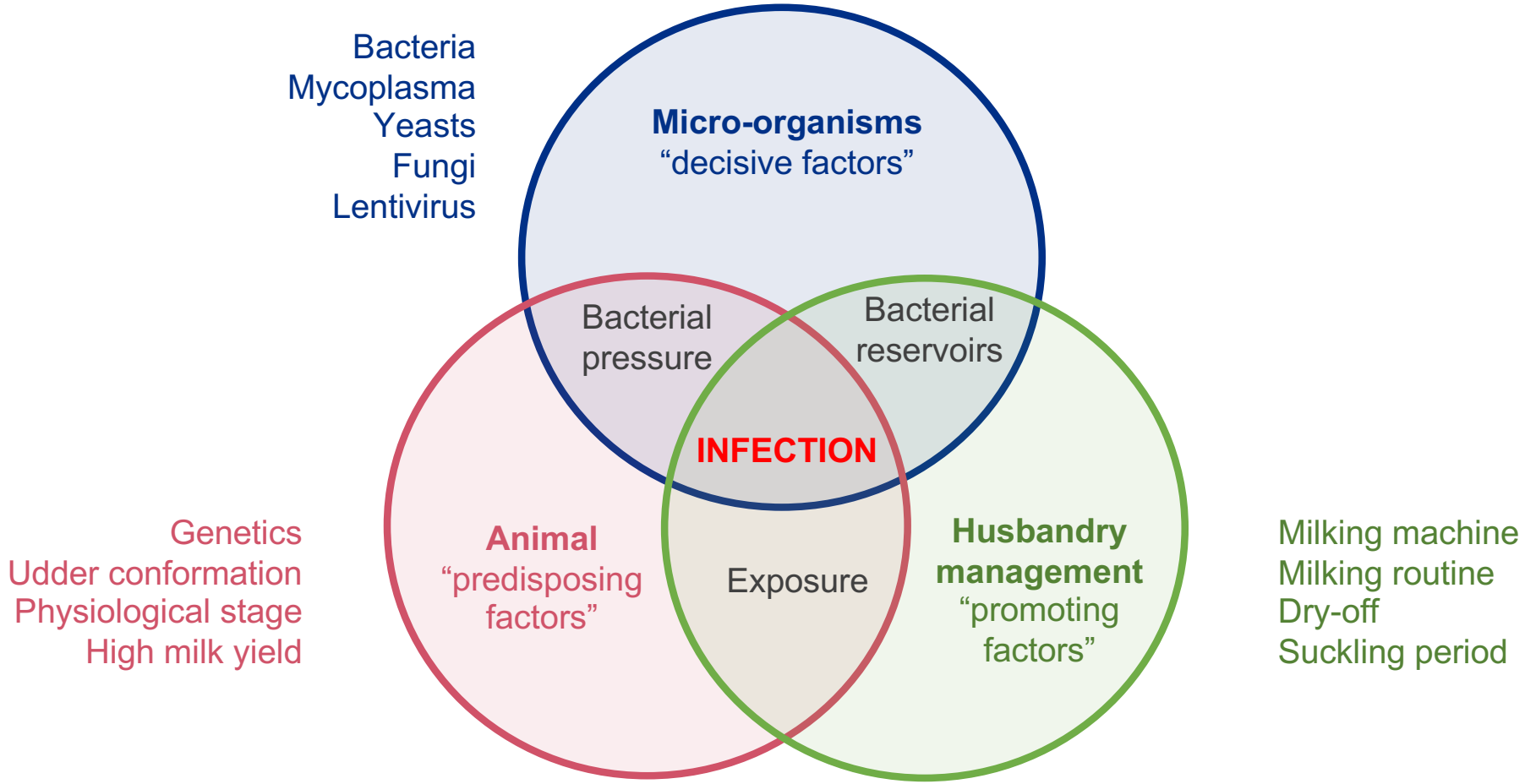
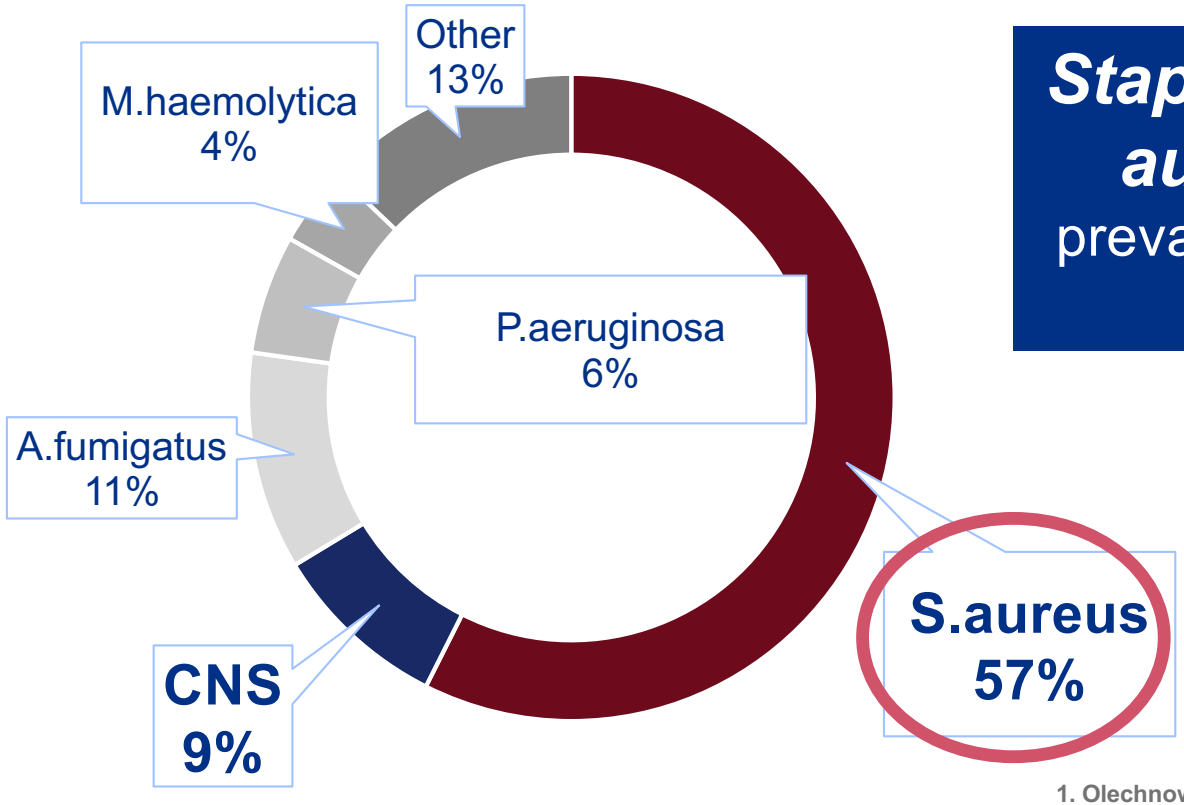
WHAT IS CAUSING THIS?



MULTIFACTORIAL DISEASE



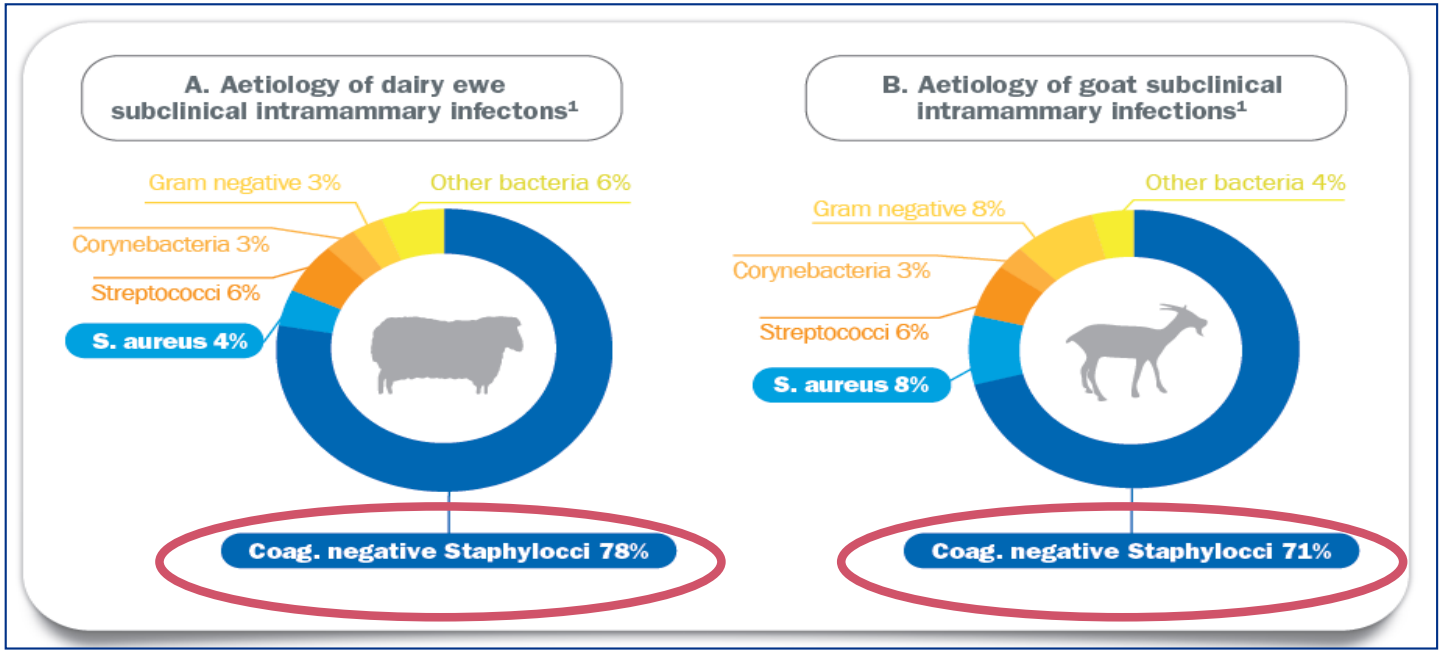
AETIOLOGY CLINICAL MASTITIS



Staphylococcus aureus, most prevalent in **clinical** mastitis

1. Olechnowicz J, Jaskowski J.M; Mastitis in small ruminants (2014)
2. D. Bergonier et al, JDS 2003

AETIOLOGY SUBCLINICAL MASTITIS



CNS, most prevalent in **subclinical** mastitis

1. D. Bergonier et al, JDS 2003

WHY ARE STAPH THE MAIN PATHOGEN?

Staphylococcus aureus + CNS

Skin flora

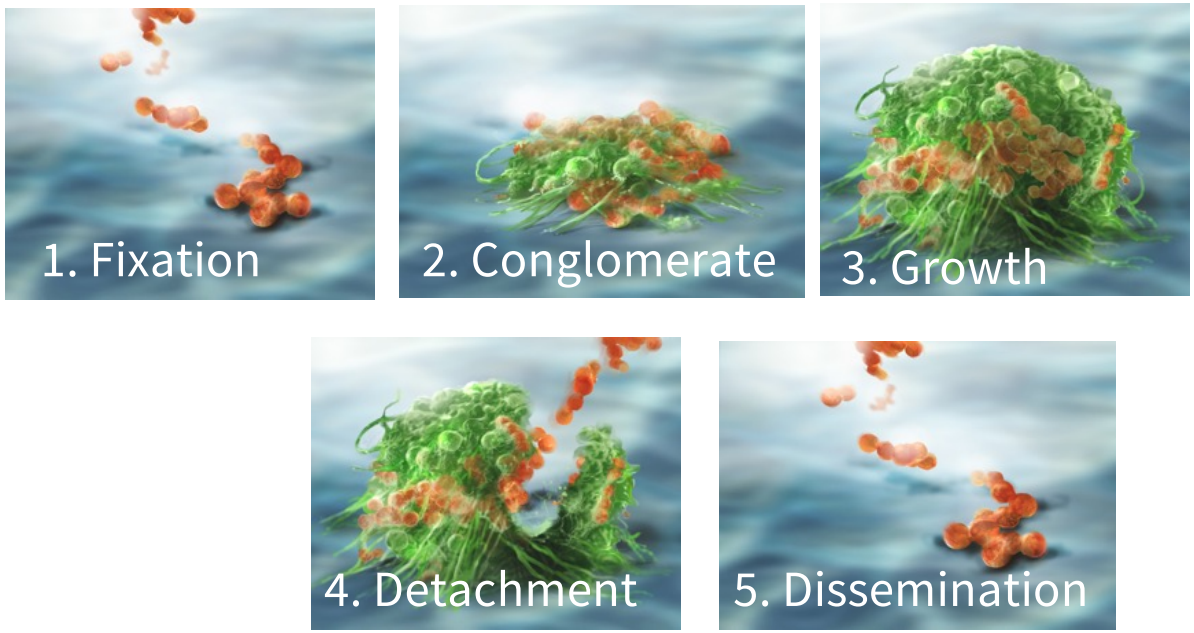
Virulence factors

BIOFILM-FORMING

WHAT IS THE BIOFILM?

"Shield" which covers and protects bacteria

- Factor of pathogenicity
- Antibiotic's failure
- Chronicity factor



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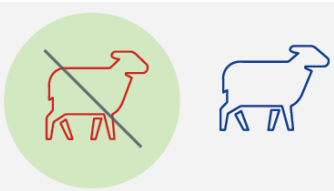
Mastitis Control Program

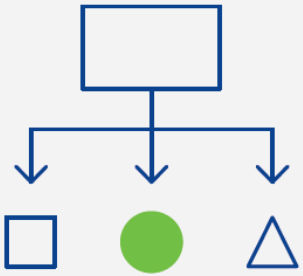
MILKING MACHINE

MILKING ROUTINE

ENVIRONMENTAL CONTROL



CULLING OF CHRONIC



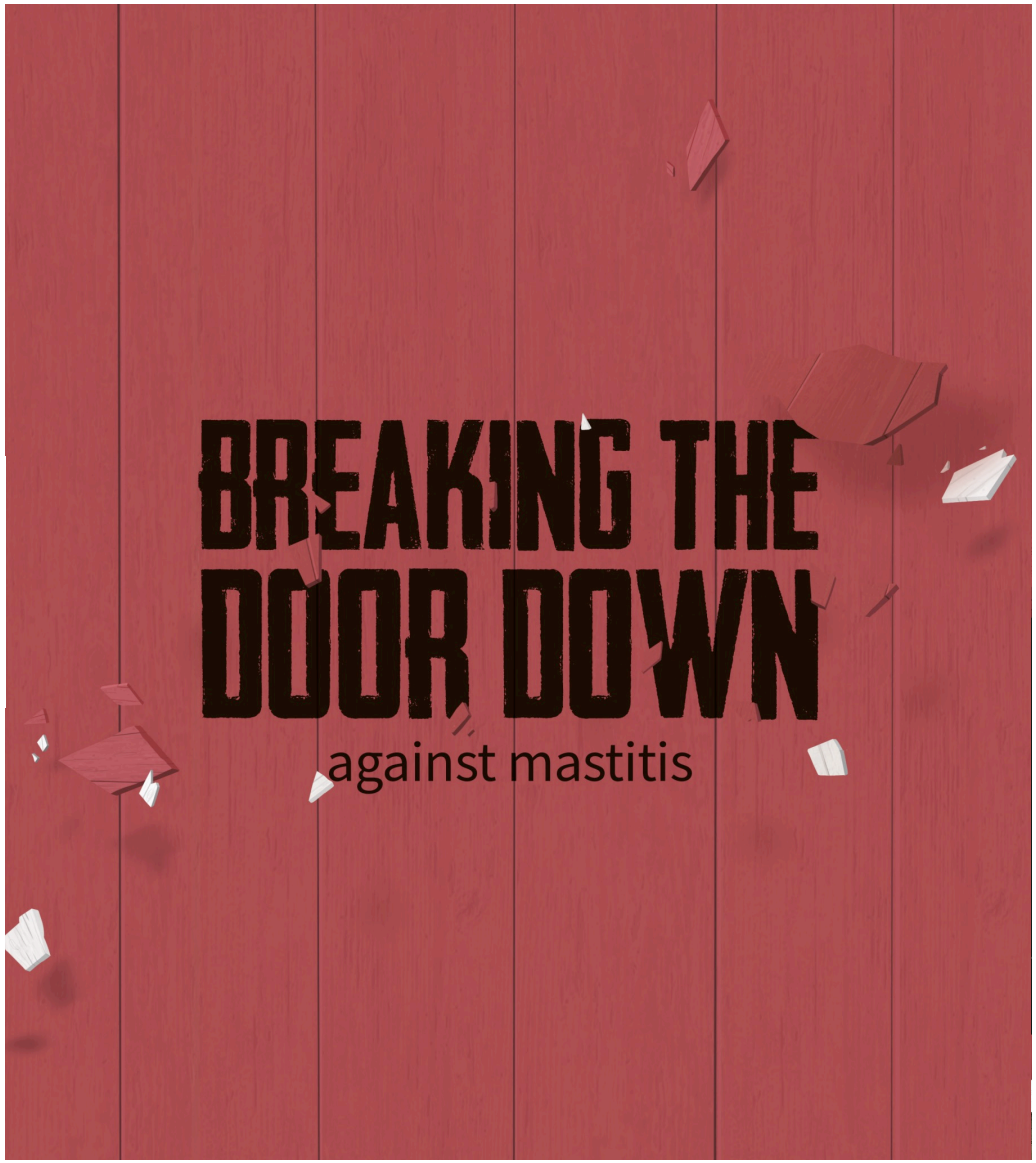
DRY-OFF MANAGEMENT

HIPRA

Mastitis Control Program

HIPRA

VIMCO®



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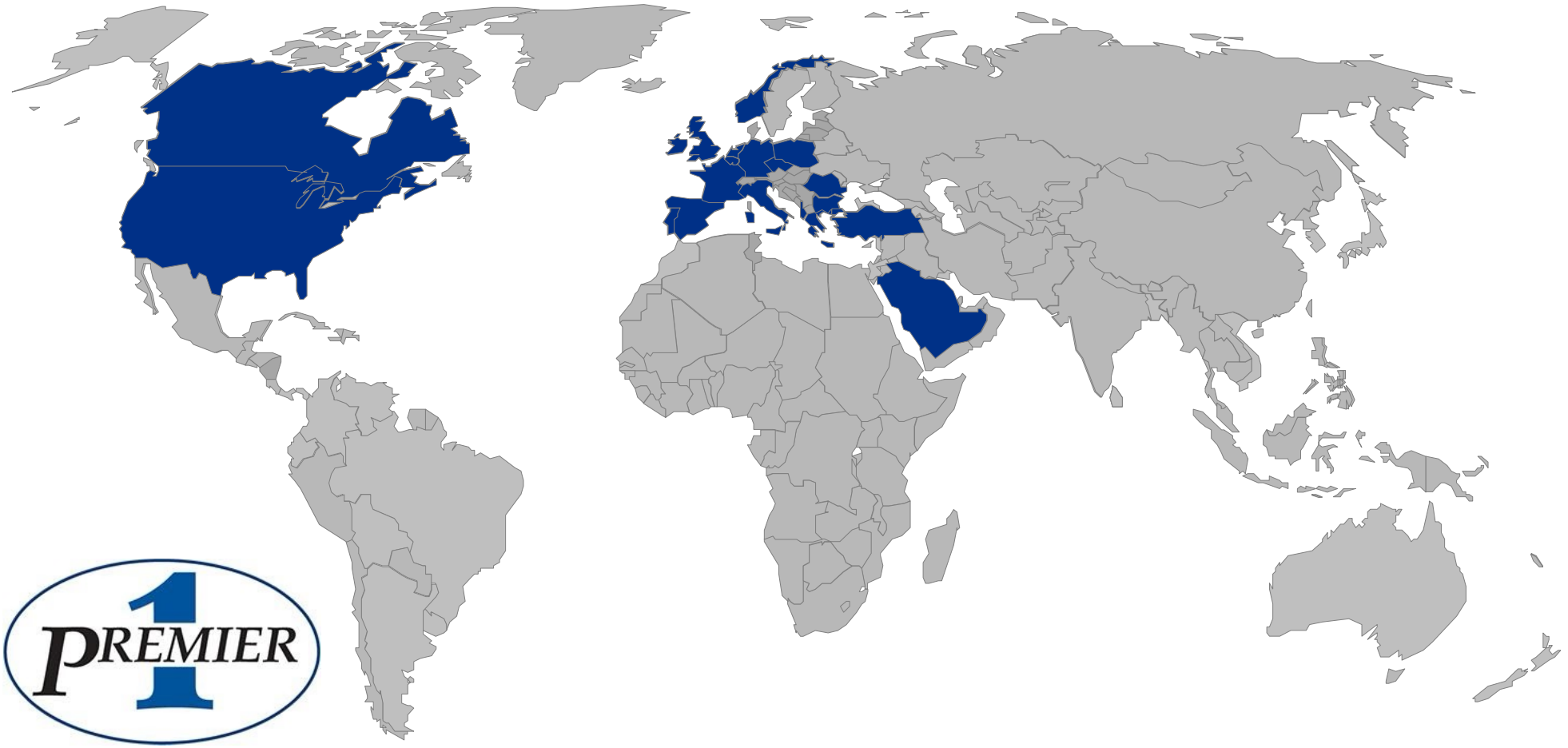
VIMCO®

2023



PREMIER 1

Why is **VIMCO** different?

Inactivated ***Staphylococcus aureus*** **expressing BIOFILM**

Antibodies against **BIOFILM**

CROSS PROTECTION

S.aureus **+ CNS**

(clinical + subclinical)

REDUCTION OF SHEDDING =

Prevention

HIPRA

Why is **VIMCO** different?

Vaccine 27 (2009) 2379–2386

Contents lists available at ScienceDirect

Vaccine

journal homepage: www.elsevier.com/locate/vaccine

VIMCO®

Protection from *Staphylococcus aureus* mastitis associated with poly-*N*-acetyl β-1,6 glucosamine specific antibody production using biofilm-embedded bacteria

M.M. Pérez[a,b], A. Prenafeta[c], J. Valle[d], J. Penadés[e], C. Rota[f], C. Solano[d], J. Marco[g], M.J. Grilló[d], I. Lasa[d], J.M. Irache[h], T. Maira-Litran[i], J. Jiménez-Barbero[j], L. Costa[c], G.B. Pier[i], D. de Andrés[d], B. Amorena[a,d,*]

[a] Departamento de Sanidad Animal, SIA-CITA (DGA) Ctra. de Montañana, Zaragoza, Spain
[b] Departmento de Anatomía, Embriología y Genética, Facultad de Veterinaria, 50013 Zaragoza, Spain
[c] Laboratorios HIPRA S.A., 17170 Amer, Girona, Spain
[d] Instituto de Agrobiotecnología, CSIC-Universidad Pública de Navarra-Gobierno de Navarra, 31192 Mutilva Baja, Spain
[e] Instituto Valenciano de Investigaciones Agrarias, 46113 Moncada, Spain
[f] Departamento de Producción Animal y Ciencia de los Alimentos, Facultad de Veterinaria, 50013 Zaragoza, Spain
[g] Laboratorio Normativo de Salud Pública, Departamento de Sanidad, Gobierno Vasco, 48010 Bilbao, Spain
[h] Centro Galénico, Universidad de Navarra, 31080 Pamplona, Spain
[i] Channing Laboratory Brigham and Women's Hospital, Harvard Medical School, Boston, MA 02115, USA
[j] Centro de Investigaciones Biológicas, CSIC, 28040 Madrid, Spain

→ **Bacterins from strong biofilm-producing bacteria** triggered the **highest production of antibodies** to the exopolysaccharide matrix and conferred the **highest protection against infection** and mastitis in an immunization-challenge study in sheep, compared with weak biofilm-producing bacteria, **crude extract or purified PNAG**.

Strong biofilm producing S. aureus strain

HIPRA

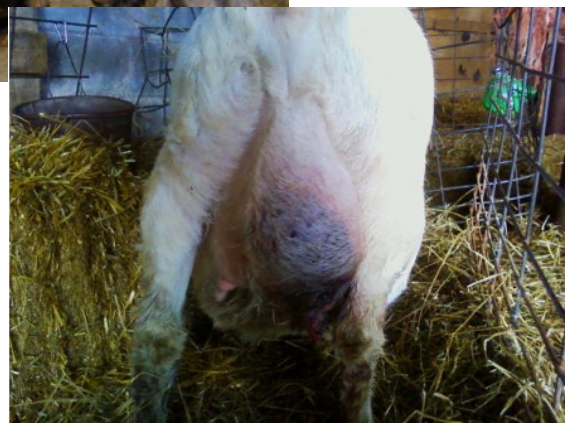
What can we expect from **VIMCO?**

Reduction **clinical signs**

Reduction **shedding**

Improvement **milk production**

HIPRA



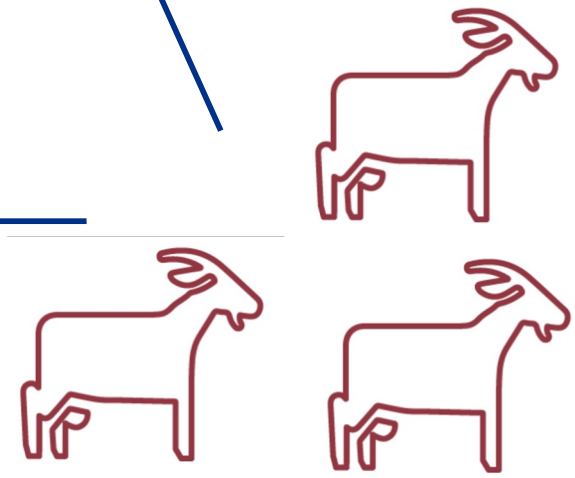
Reduction **clinical signs**

HIPRA

TBC

Reduction **shedding**

Risk of infection

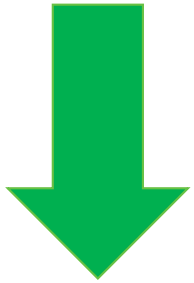


HIPRA

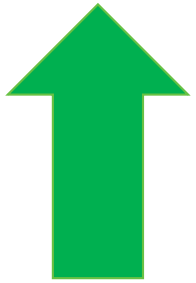
	Reduction of milk production	
BTSCC	SHEEP[1]	GOAT[2]
1.000.000	-14,1%	-11,40%
2.000.000	-21,1%	-19,50%
3.000.000	-25,2%	-24,20%

1 GONZALO C. Productive and economic loses related to subclinical mastitis in dairy sheep (assaf Breed). Revista Consorcio Promocion Ovino. 2016, nº17 page 17
2 Pleguezuelos et al., Variation in Milk Yield, Contents and Incomes According to Somatic Cell Count in a Large Dairy Goat Population. J Adv Dairy Res. 2015, 3:3

Improvement **milk production**

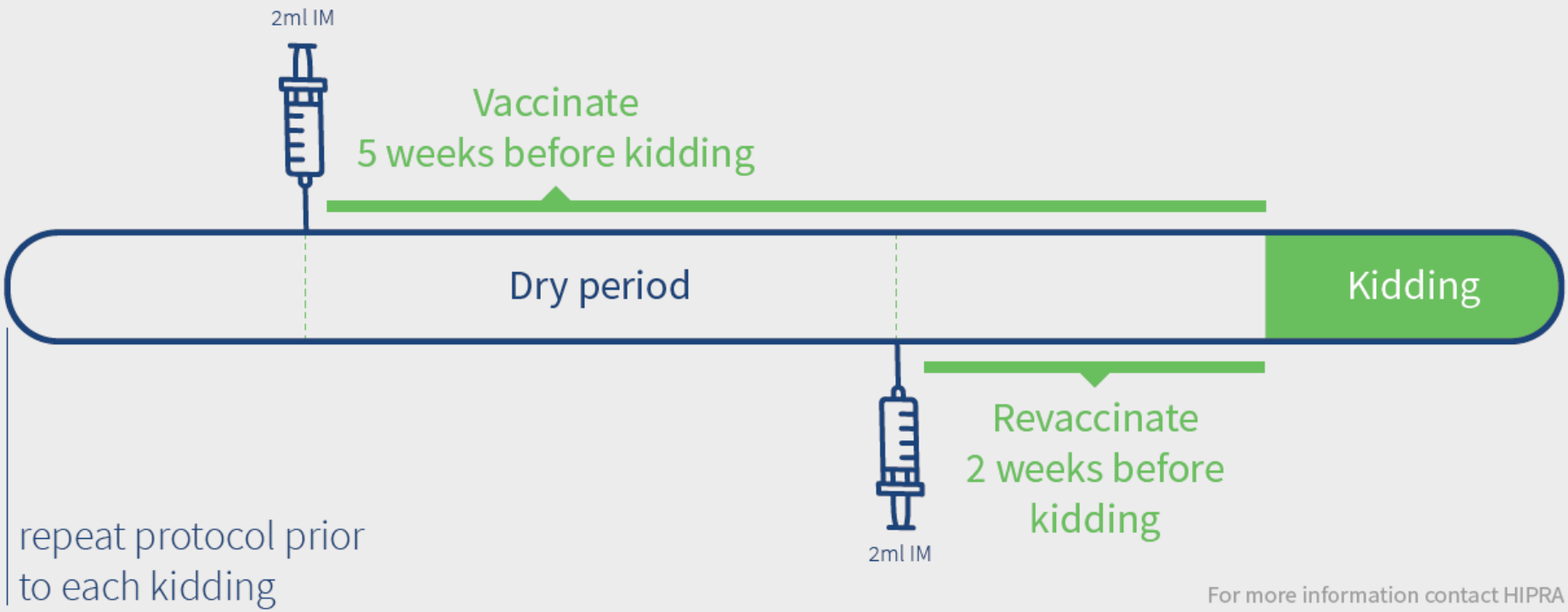


SCC



Vaccination protocol

IM

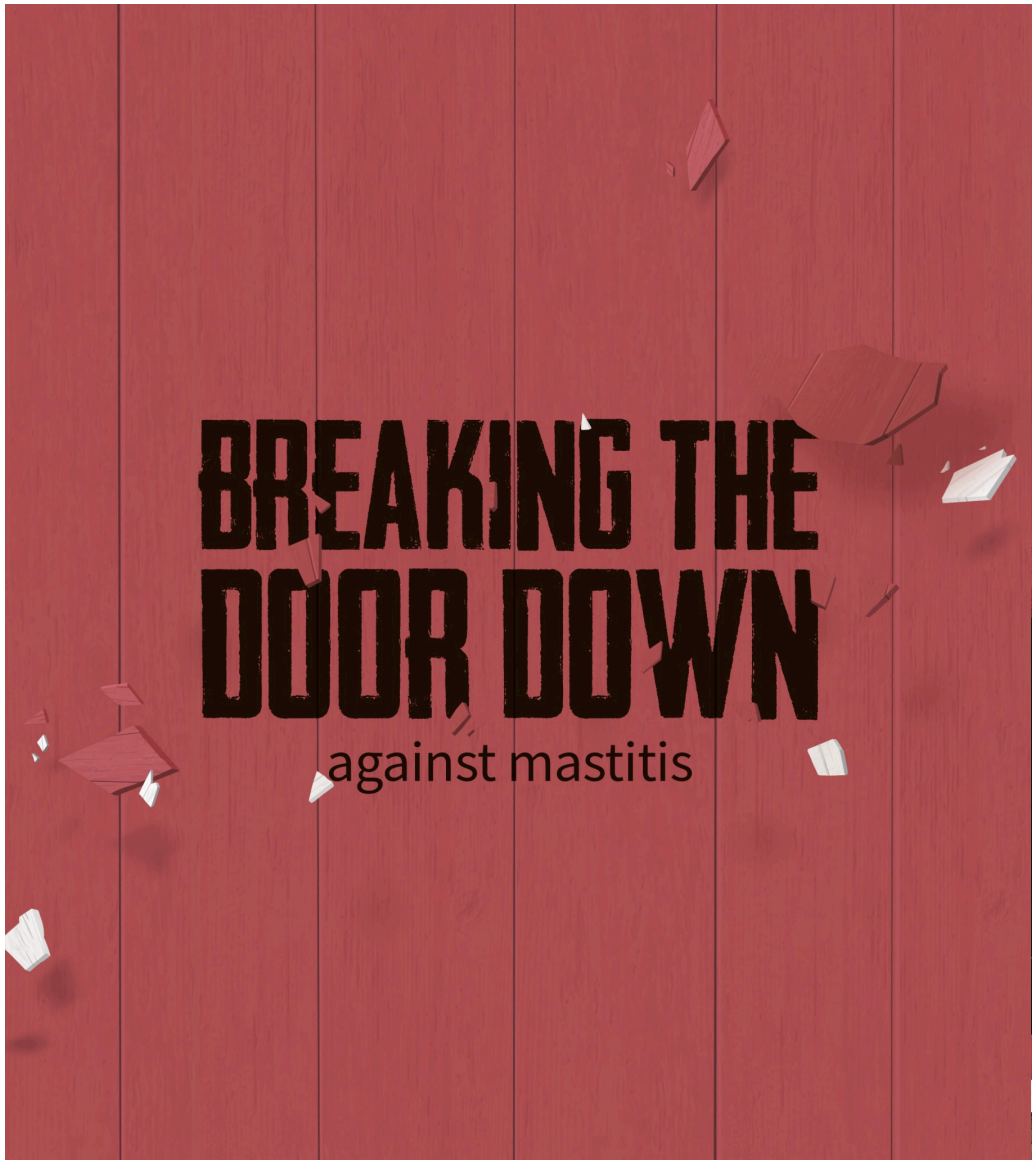


For more information contact HIPRA

HIPRA

VIMCO®

Spain – field study



HIPRA

CASE OF STUDY: EVALUATION OF THE IMPACT OF MASTITIS VACCINATION ON MASTITIS TREATMENT IN A DAIRY GOAT FARM IN THE SOUTHWEST OF SPAIN.

R. Sánchez[1], M. Sanz[2], T. Calvo[2], J. Martinez[1]

[1]ALIMER S. COOP., Lorca (Murcia), [2]Hipra, Amer (Girona), Spain

***contact mail: r.sanchez@alimer.es**

2015-0006
POS-001-143

OBJECTIVES

Staphylococci are the main pathogens responsible for mastitis in dairy goat herds. Implementation of a mastitis control program is an essential step in improving milk quality and preventing infection. One of the measures that can be included in these control programs is vaccination. The objective of this field trial was to evaluate the efficacy of vaccination for Staphylococcal mastitis in reducing mastitis treatments.

MATERIALS AND METHODS

The study was performed in a dairy goat farm (Murciano-Granadina) where goats were vaccinated with a commercially available staphylococcal mastitis vaccine (VIMCO®, Hipra). The farm has 550 goats and 5 kidding periods (February, April, June, September and November). The main mastitis pathogen described is Staphyloccocus (CNS and S. aureus). The vaccination program started in August 2014 and was implemented according to the recommended administration schedule. The study compared mastitis treatments before (monthly average of 2 years) and after (1 year) the first immunization of the herd. No changes other than vaccination occurred during this time. Two different mastitis treatments, which were recorded monthly, were used: (A) antibiotic and nonsteroidal anti-inflammatory drugs (NSAIDs) for severe mastitis and (B) nonsteroidal anti-inflammatory drugs for mild mastitis. Total treatment (A+B) was also calculated.

RESULTS

The number of mastitis treatments per year before vaccination was 88 in group A, 50 in group B, and 138 in the A+B groups combined. After vaccination the number of treatments recorded was 61 in Group A, 5 in Group B and 65 in Groups A+B (Figure 1).

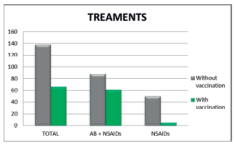


Figure 1. Number of treatments (by severity) comparing before and after starting vaccination.

Overall, fewer mastitis treatments (A, B and A+B) were required after starting vaccination than before (-31%, -90% and -52%, respectively). The total reduction in treatments (A+B) from before to after vaccination program was introduced was as follows: September (-25%), October (-44%), November (-92%), December (-40%), January (-24%), February (-85%), March (-33%), April (-20%), May (5%), June (-11%), July (-68%), and August (-88%).

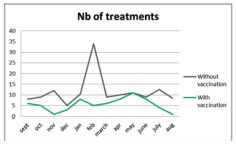


Figure 2. Number of treatments per month comparing before and after starting vaccination.

CONCLUSION

Results show that vaccination against Staphylococcal mastitis with VIMCO® can effectively minimize the amount of mastitis treatments (antibiotics and NSAIDs) in the herd. Furthermore, the drop in mastitis treatments was associated with a reduction in mastitis cases. These results suggest that including vaccination in a mastitis control program may be a good approach to prevent the disease and reduce the use of mastitis treatments, thereby improving milk quality and public health.

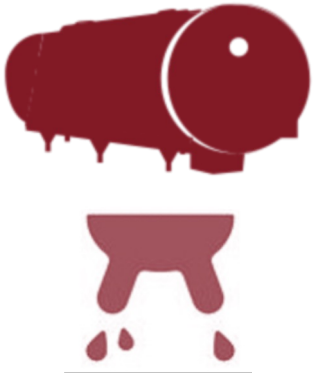
WORLD BUIATRICS CONGRESS Dublin 2016

WORLD BUIATRICS CONGRESS
Dublin 2016

HIPRA

550 Murciano - Granadina goats

5 kidding period/year



Staph aureus

CNS

HIPRA

2 years **before**

1 year **after**

VIMCO®

Mild and severe mastitis

1st dose
5 weeks before kidding

2st dose
2 weeks before kidding

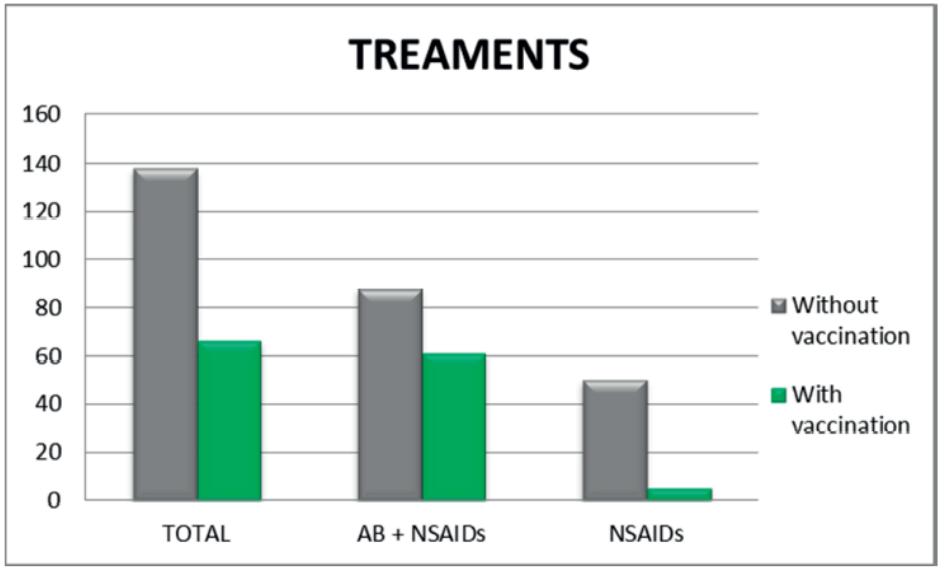
Kidding

HIPRA

BEFORE

88 severe mastitis cases

50 mild mastitis cases



AFTER

61 severe mastitis cases

5 mild mastitis cases

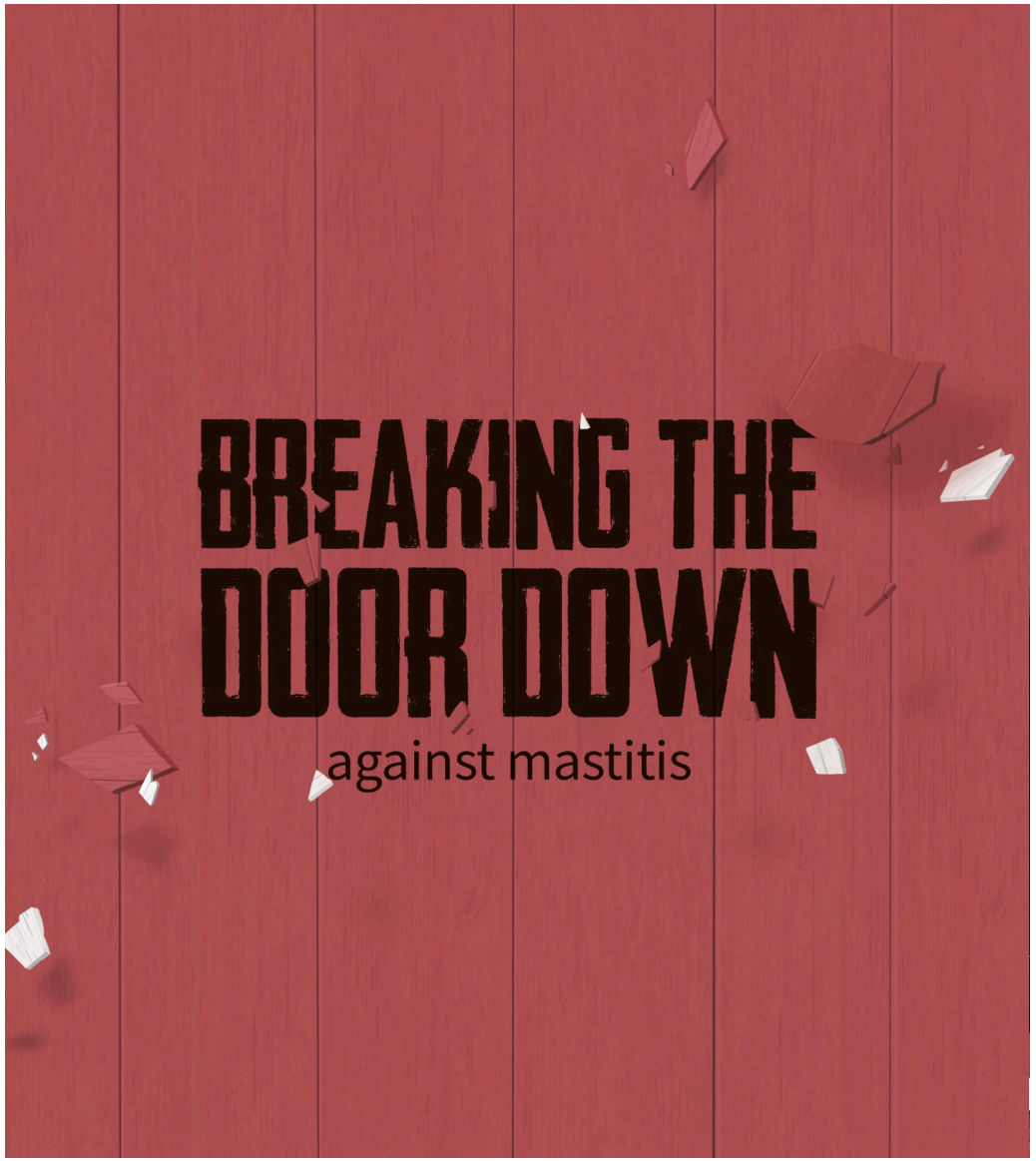
31% severe

90% mild

HIPRA

VIMCO®

USA – Challenge trial



HIPRA

EFFICACY OF *S. AUREUS* INACTIVATED VACCINE AGAINST AN EXPERIMENTAL INTRAMAMMARY HETEROLOGOUS CHALLENGE IN DAIRY GOATS

Carlos Montbrau[1,*], Gregori Bech-Sabat[1], Maximiliano Cesio[1], Teresa Calvo[2], Ricard March[1]
[1] HIPRA Scientific S.L.U., Amer, Spain *carlos.montbrau@hipra.com;
[2] Laboratorios Hipra S.A., Amer, Spain.

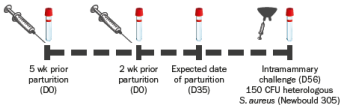
The Reference in Prevention for Animal Health

OBJECTIVES

The aim of the present study was to evaluate the efficacy of *S. aureus* vaccine against caprine mastitis (VIMCO®, HIPRA, Spain) after an experimental intramammary challenge with a heterologous *S. aureus* strain in US dairy goats.

MATERIALS AND METHODS

Thirty-two gestating goats were randomly distributed in two groups, 17 vaccinated and 15 control and were vaccinated intramuscularly and infected as described:



Clinical signs of mastitis (milk and udder abnormalities) were monitored from 5 days before challenge until the end of the study (14 days after challenge). Milk samples for the bacteriological analysis were collected 5, 2 and 1 day before challenge, and from challenge to 14 days after. Blood samples were collected as described above. Serum samples were analyzed using an indirect ELISA for anti-slime antibodies of *S. aureus*.

RESULTS

Vaccinated animals showed a statistically significant reduction (P <0.01) of clinical signs of mastitis (Figure 1) caused by *S. aureus* compared to control animals.

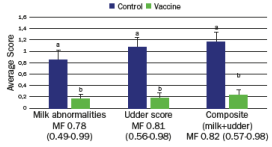


Figure 1. Clinical signs of mastitis score from d1 to D14 post-challenge per group. **Different superscript indicates significant differences (P<0.01).

Furthermore, the percentage of vaccinated animals with clinical signs of mastitis was significantly (P<0.01) than control goats. The PF analysis described a reduction of 58% of clinical signs of mastitis in the vaccinated group compared to control animals.

Control animals had significantly (P<0.05) greater bacterial count than vaccinated group in 2 time-points (Figure 2). In overall, vaccinated animals tended (P = 0.07) to reduce bacteriological count compared to control group during the 14 days after challenge.

The ELISA results were similar between the vaccinated and control group before first vaccination, no positive animals and no significant differences were observed. But after that, vaccinated group had significantly (P<0.05) greater values compared to control group (Figure 3).

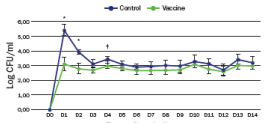


Figure 2. Average of bacterial count (LogCFU/ml) of vaccinated and control groups after infection. *Indicates significant differences (P < 0.05); † indicates trend (P < 0.10).

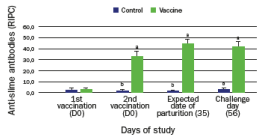


Figure 3. Average of anti-slime antibodies of *S. aureus* (RIPC) of vaccinated and control group at sample points. **Different superscripts mean significant differences (P < 0.05)

CONCLUSIONS

Results presented in this study demonstrate that the intramuscular immunization of goats with VIMCO® vaccine significantly reduces clinical signs of mastitis and tended to reduce bacteriological count after an intramammary infection with *S. aureus* heterologous strain.

2018-0203

NATIONAL MASTITIS COUNCIL
ANNUAL MEETING
JANUARY 29 - FEBRUARY 1, 2019 NMC
• SAVANNAH, GEORGIA, USA •

TBC

HIPRA

Trial Conditions

32 pregnant goats

10 first kidders

22 multiparous

S. aureus antibodies negative (<15 IRPC)

No clinical sign of mastitis or other pathologies

150 UFC intramamaries

– 57 days after primo-vaccination

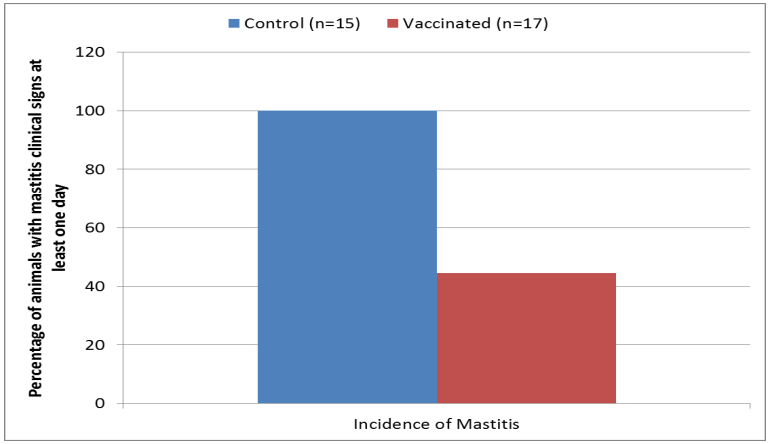
– 5-20 days after kidding

HIPRA

Clinical signs

One goat culled
(control group)

100% of control group with **Mastitis**

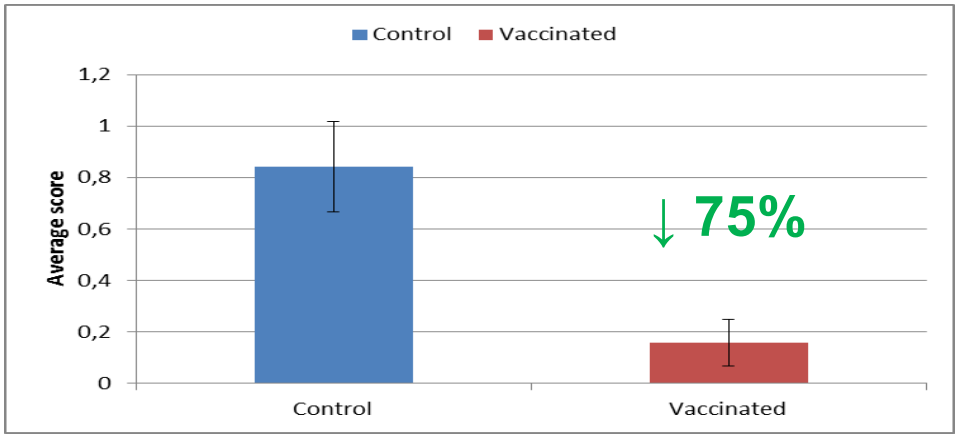


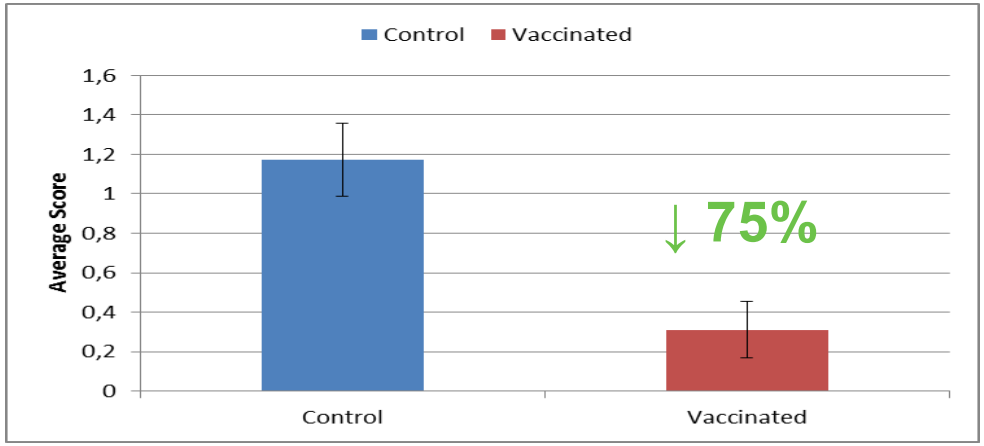
58% of vaccinated group **protected**

HIPRA

Clinical signs

75% reduction in
milk alterations





75% reduction of
udder lesions

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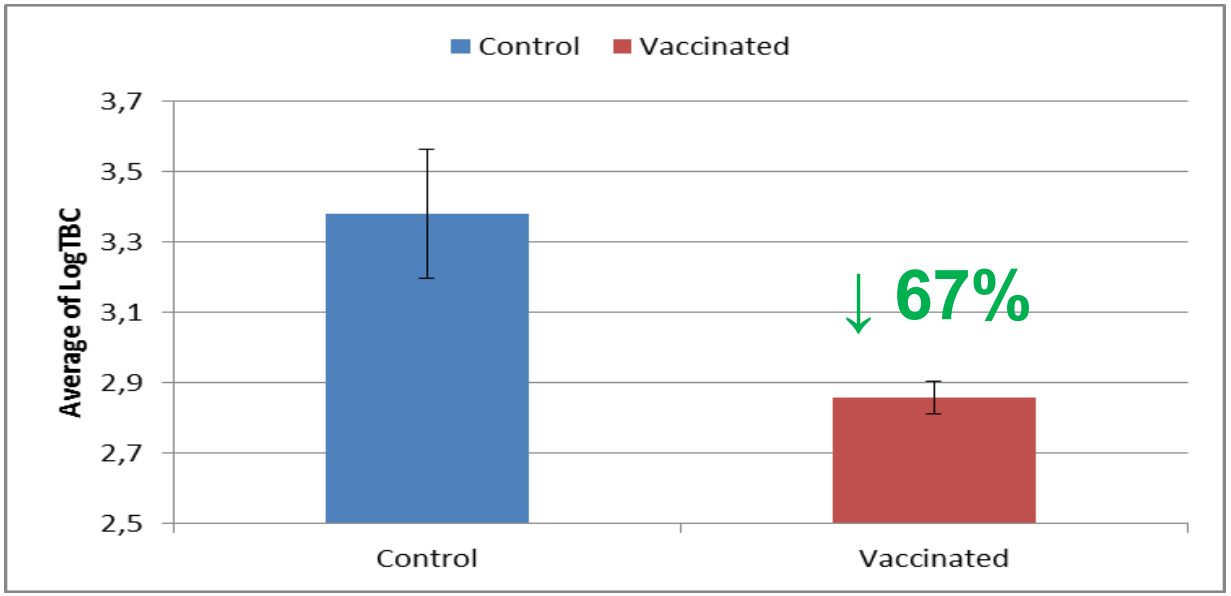
Bacterial count

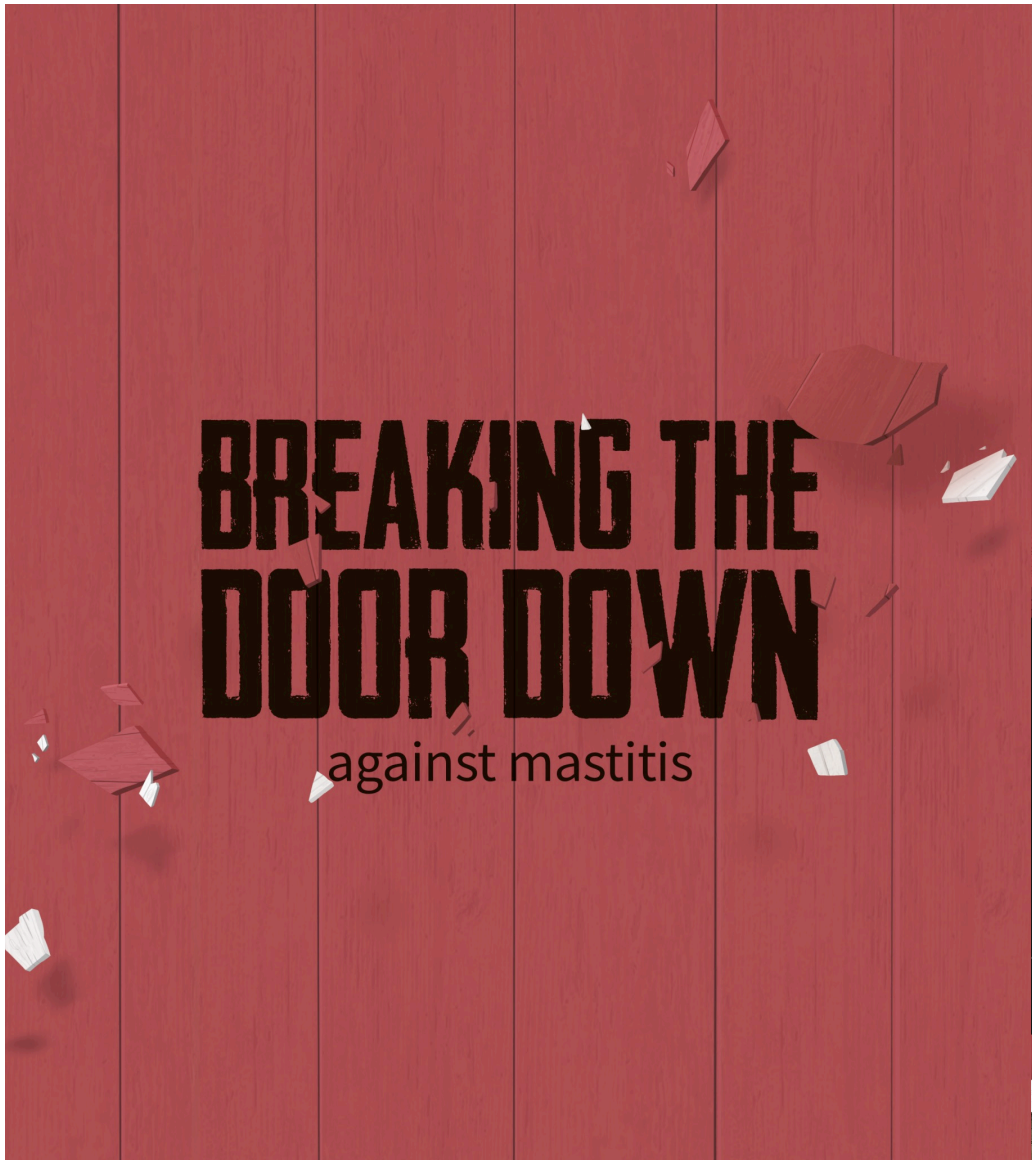
67%
reduction of
TBC



HIPRA

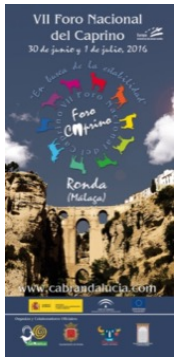
VIMCO®

Spain – field study



HIPRA

Materials & Methods



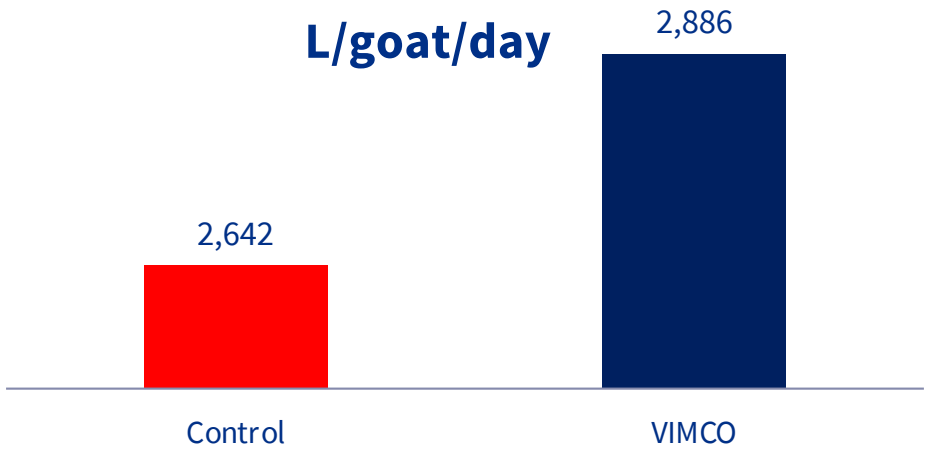
- 550 murciano-granadino.
- 58 goats were vaccinated before kidding with VIMCO® and 60 were left as control group (february).
- Controls of less than 10 DIM and animals of more than 6 lactation were taken out of the study.
- iSCC (cells/ml) and Individual productions (liters) were compared by:
  - Global production in average
  - Monthly milk controls

HIPRA

Production (L/goat/day)

CONTROL		VIMCO			
liters	n	liters	n	Dif liters	Dif %
2.642	187	2.886	189	0.244	**9.2%**

9.2% L/day



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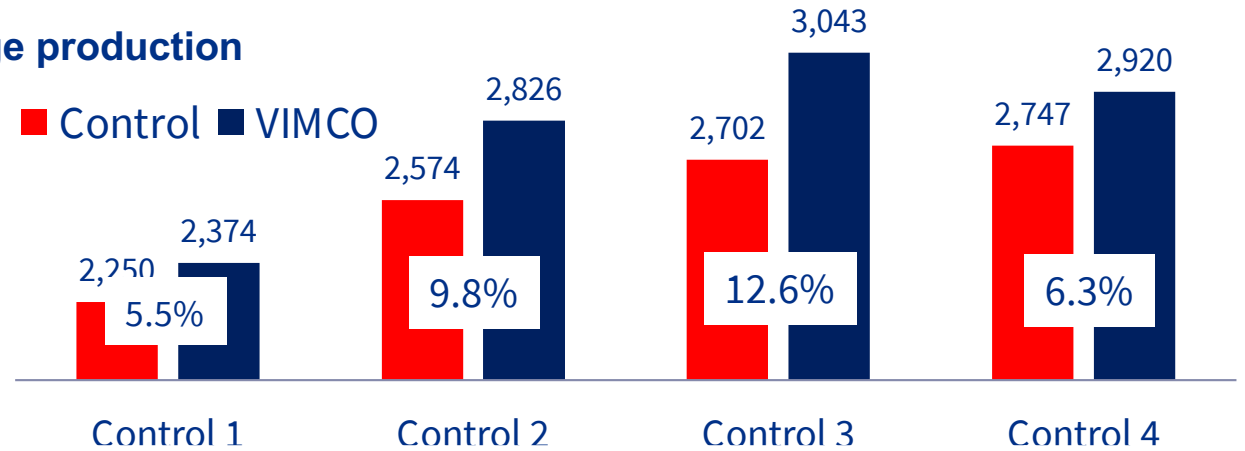
Results

- **Daily average production**



	Control 1	Control 2	Control 3	Control 4
Difference Litres/day	0.124	0.252	0.341	0.173
Difference Litres/month	3.472	7.812	10.23	5.363
Price €/L	0.7149	0.6971	0.6018	0.5674
Difference €/month	2.48	5.45	6.16	3.04

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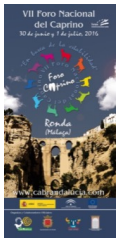
VIMCO® vs NO VIMCO®



BENEFITS (4 months)

Exchange rate

€ GOAT/MONTH	Feb	Mar	Apr	May	TOTAL
Difference in production	2.48	5.45	6.16	3.04	17.13 €

+ EUR **17.13**/goat (ONLY production)

+ EUR **9.421**/herd

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Let’s share some experience with VIMCO®

FIELD EXPERIENCE: THE NETHERLANDS

660 Saanen goats

long lactation

2019

↑ Cases **acute clinical mastitis**
↑ **Mortality**
↑ SCC: 3 mil/ml
↑ bacteria count

What was the **vet** recommendation?

VACCINATION WITH VIMCO®

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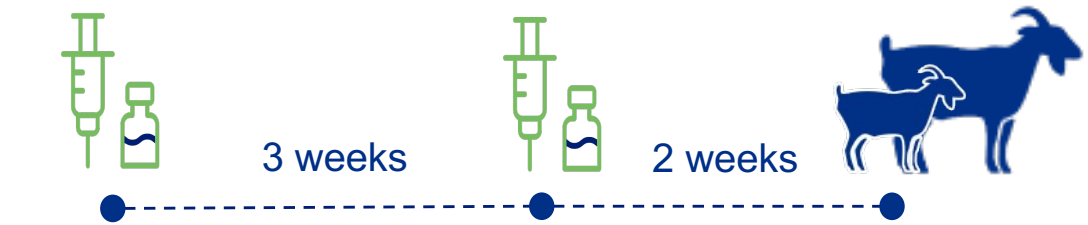
WHAT PROTOCOL?



1st Shot
5 weeks before kidding

2nd Shot
2 weeks before kidding

kidding

WHY?

- Reduce **clinical signs**
- Reduce **shedding**
- Protect **uninfected animals**
- More **milk in tank**

WOULD YOU LIKE TO SEE THE **RESULT**?

https://www.youtube.com/watch?v=ZYeqwGZlhN4&list=PL7fOBIEcrBF-lu_NEF0GLVukyOXpjSHv1&index=12

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They have achieved very good results:

- **50%** reduction in **SCC**
- **60%** less acute **clinical mastitis**.
- Greater **production**.
- **Less mortality** and better **animal welfare**

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ONE MORE THING...

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