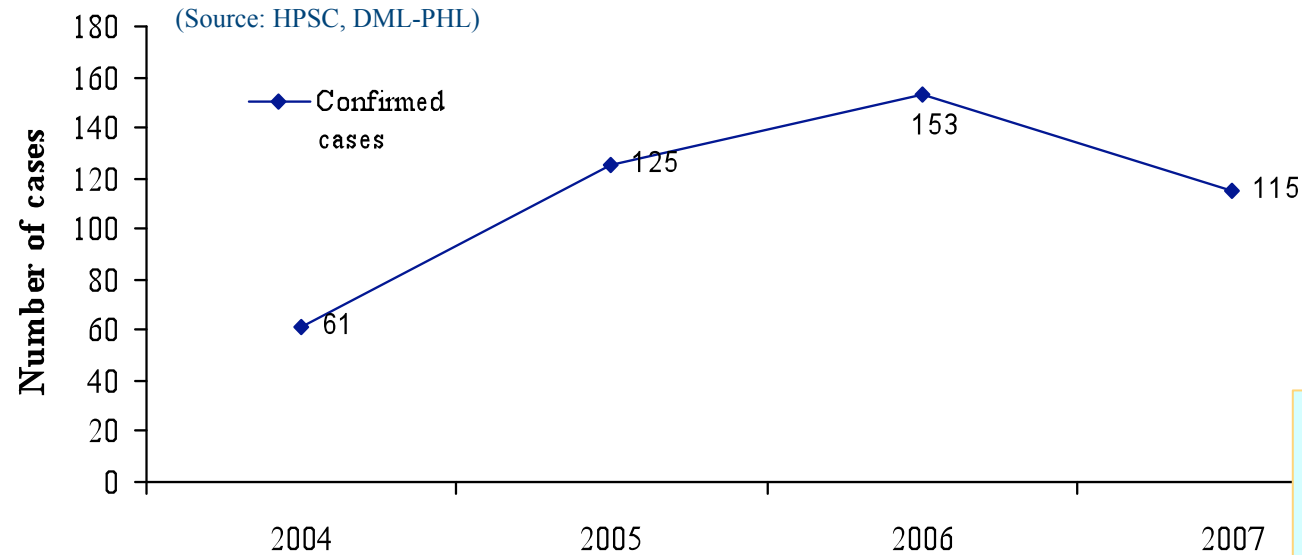


# Survey on the presence of VTEC in cattle and sheep in Irish Abattoirs

Irish National Reference Laboratory E. coli, CVRL

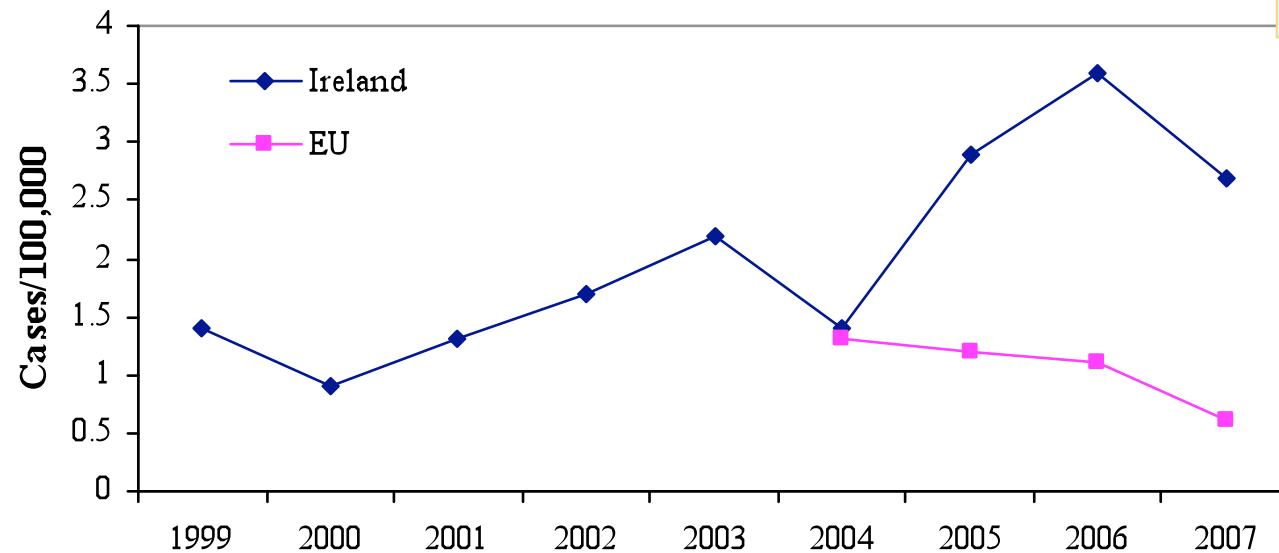


### Confirmed Human VTEC Cases, 2004-2007



Approx. 70%  
O157

### Confirmed Human VTEC cases, 1999-2007



# Background

- Transmission routes
  - Person to person
  - Food
  - Water
  - Animal contact
- Cattle and sheep are reservoirs: Farm intervention
- Beef and sheep meat contamination: Abattoir intervention



# Transmission routes Ireland

Year	Suspected mode of transmission	Outbreaks	Confirmed cases	Ill
2006	Animal contact	1	3	3
	Person-to-person	5	21	8
	Water	1	2	2
	Person-to-person and food	3	9	7
	Food	1	2	1
	Person-to-person and water	1	3	2
	Unknown/not specified	18	50	43
	<b>Total</b>	<b>30</b>	<b>90</b>	<b>66</b>
2007	Animal contact	1	4	1
	Food	1	4	56
	Person-to-person	9	34	27
	Water	2	10	8
	Unknown/not specified	8	19	11
	<b>Total</b>	<b>21</b>	<b>71</b>	<b>103</b>
<b>Overall total</b>		<b>51</b>	<b>161</b>	<b>169</b>

(Source: HPSC)

## E. coli O157 in bovine chain in Ireland

Sample type	Sample number	% positive	Numbers present (Log <sub>10</sub> CFU)	Reference
<b>Bovine faeces</b>	250	2.4%	-	McEvoy <i>et al</i> , 2003
<b>Rumen</b>	250	0.8	-	McEvoy <i>et al</i> , 2003
<b>Bovine Hide</b>	1500	7.3	0.13-4.24 /100 cm <sup>2</sup>	O'Brien <i>et al</i> , 2005
<b>Beef carcasses</b>	250	3.2	-	McEvoy <i>et al</i> , 2003
<b>Beef carcasses</b>	132	3.0	0.70-1.41 g <sup>-1</sup>	Carney <i>et al</i> , 2006
<b>Head Meat</b>	100	3.0	0.70-1.00 g <sup>-1</sup>	O'Brien <i>et al</i> , 2005
<b>Beef Trimmings</b>	1351	2.36	0.70 –1.61 g <sup>-1</sup>	O'Brien <i>et al</i> , 2005
<b>Retail beef mince/burgers</b>	1533	2.8	0.52 –4.03 g <sup>-1</sup>	Cagney <i>et al</i> , 2004

# E. coli O157 in ovine chain in Ireland

Lenahan *et al*, 2007

Ovine	Sample type	Sample number	% positive
	Fleece	400	5.75
	Faeces	400	0
	Carcass Pre- chill	400	1.5
	Carcass Post-chill	400	1.0

# CVRL Survey on VTEC

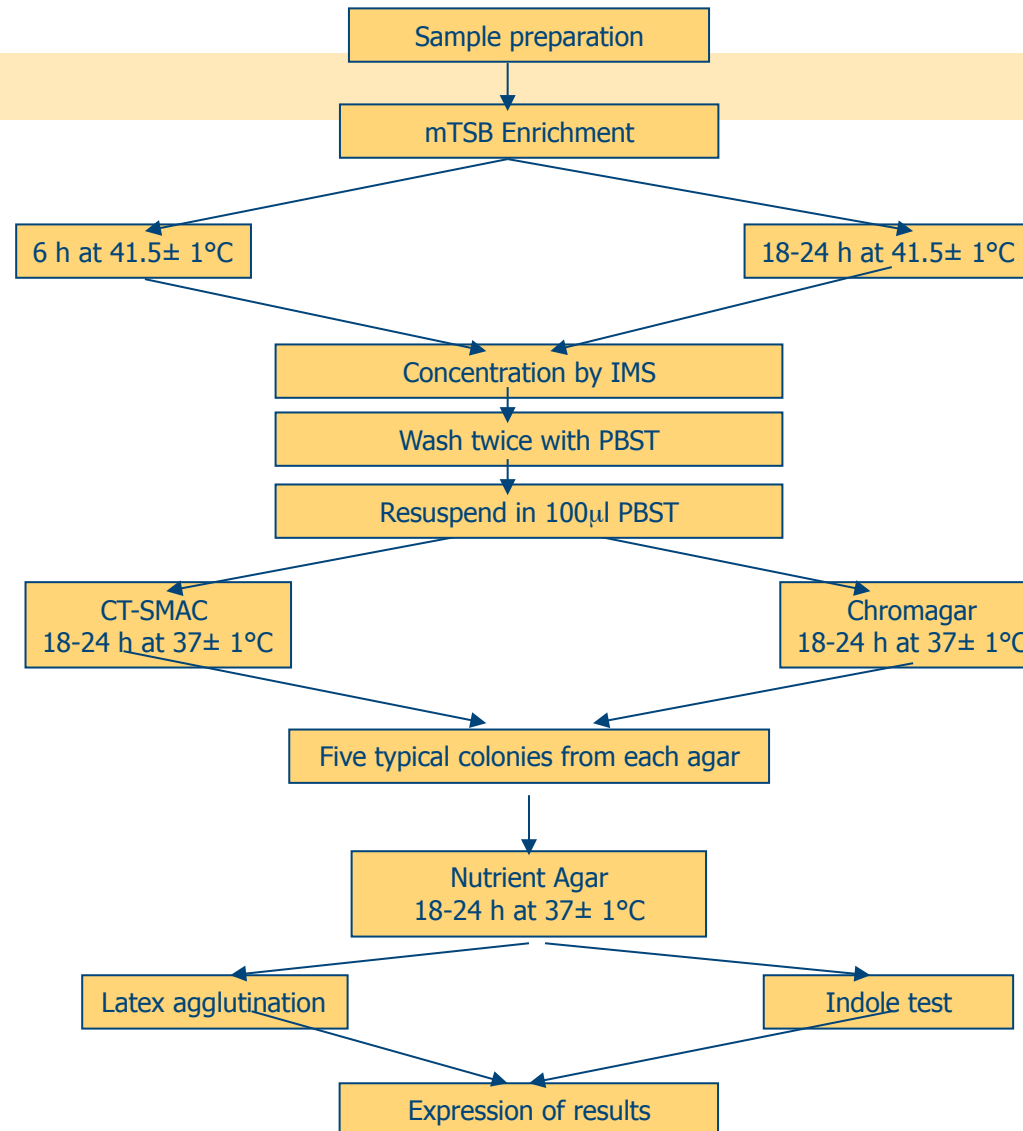
- First DAFF official survey at abattoir level
- Started in May 2008, 12 m
- E. coli O157
- 25 plants: Beef (20) and sheep (7)
- Samples
  - Rectal swabs: To assess farm prevalence
  - Carcase swab: To assess cross-contamination and hygiene at plant level
  - Minced meat: To assess contamination in meat

## CVRL Survey: Samples

- 408 sampling events:
  - 304 beef and 103 sheep
  - Rectal swabs and Carcass swabs pre-chilling from 5 animals from same herd/flock
  - 5 Rectal swabs pooled into one sample
  - 5 Carcass swabs pooled into one sample
- Minced meat: 77 beef and 14 sheep



# CVRL Survey: O157 isolation



# CVRL Survey: VTEC O157 confirmation and typing

- Genotypic characterisation by PCR
  - O serogroup: O157,
  - *vtx1*
  - *vtx2*
  - *eae*
- VTEC: *vtx* and *eae* positive
- EPEC: *vtx* negative and *eae* positive
- Non-pathogenic *E. coli* O157: *vtx* and *eae* negative
- Antimicrobial Resistance
- Molecular typing

# CVRL Survey: Results

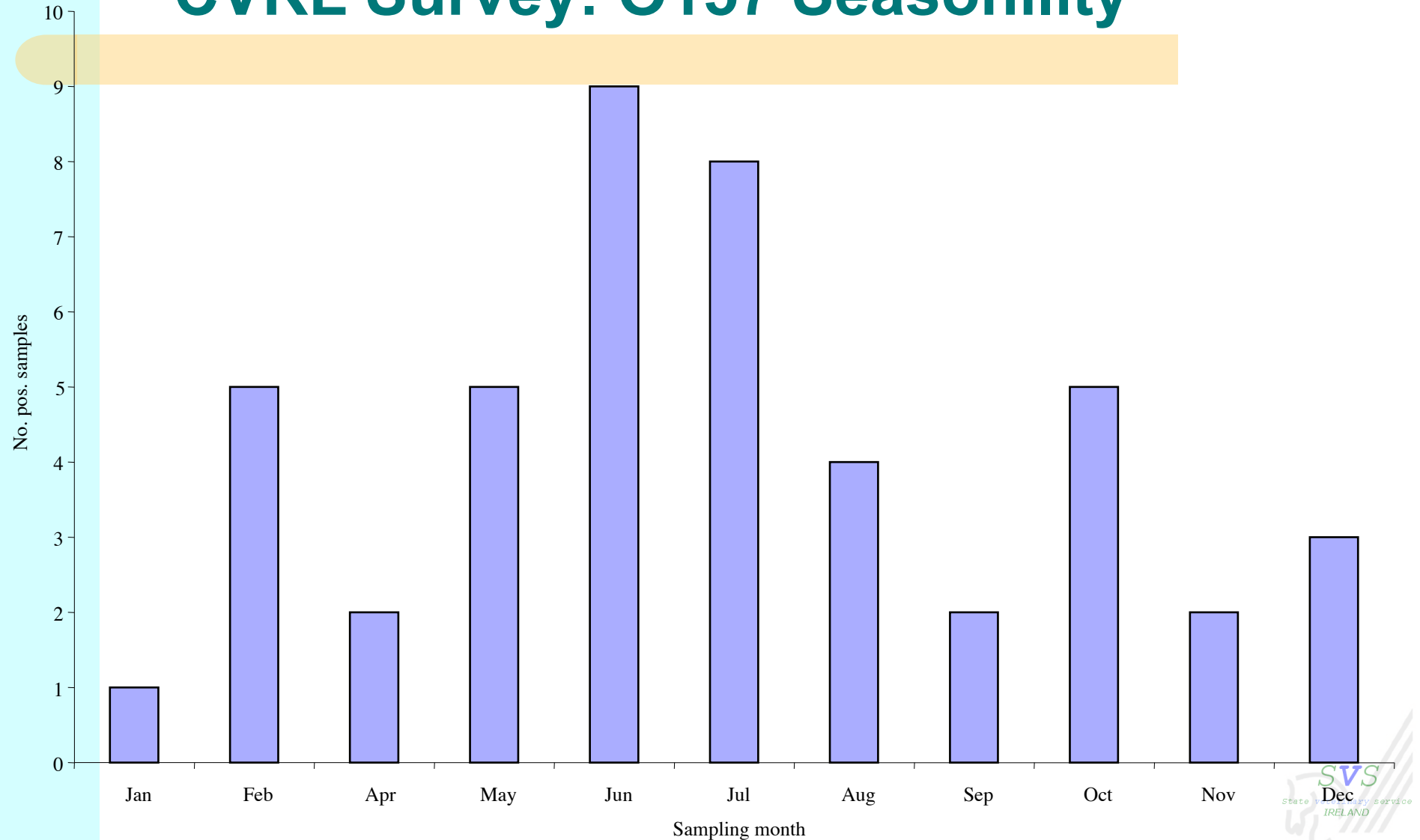
Bovine				
	Rectal swab	Carcass swab	Minced meat	Total
Negative	272	287	76	635
VTEC	22	12	0	34
EPEC	1	3	1	5
Non-pathogenic O157	8	2	0	10
Total	304	304	77	685

Ovine				
	Rectal swab	Carcass swab	Minced meat	Total
Negative	95	96	13	204
VTEC	7	3	1	11
EPEC	1	3	0	4
Non-pathogenic O157	0	1	0	1
Total	103	103	14	220

# CVRL Survey: Prevalence

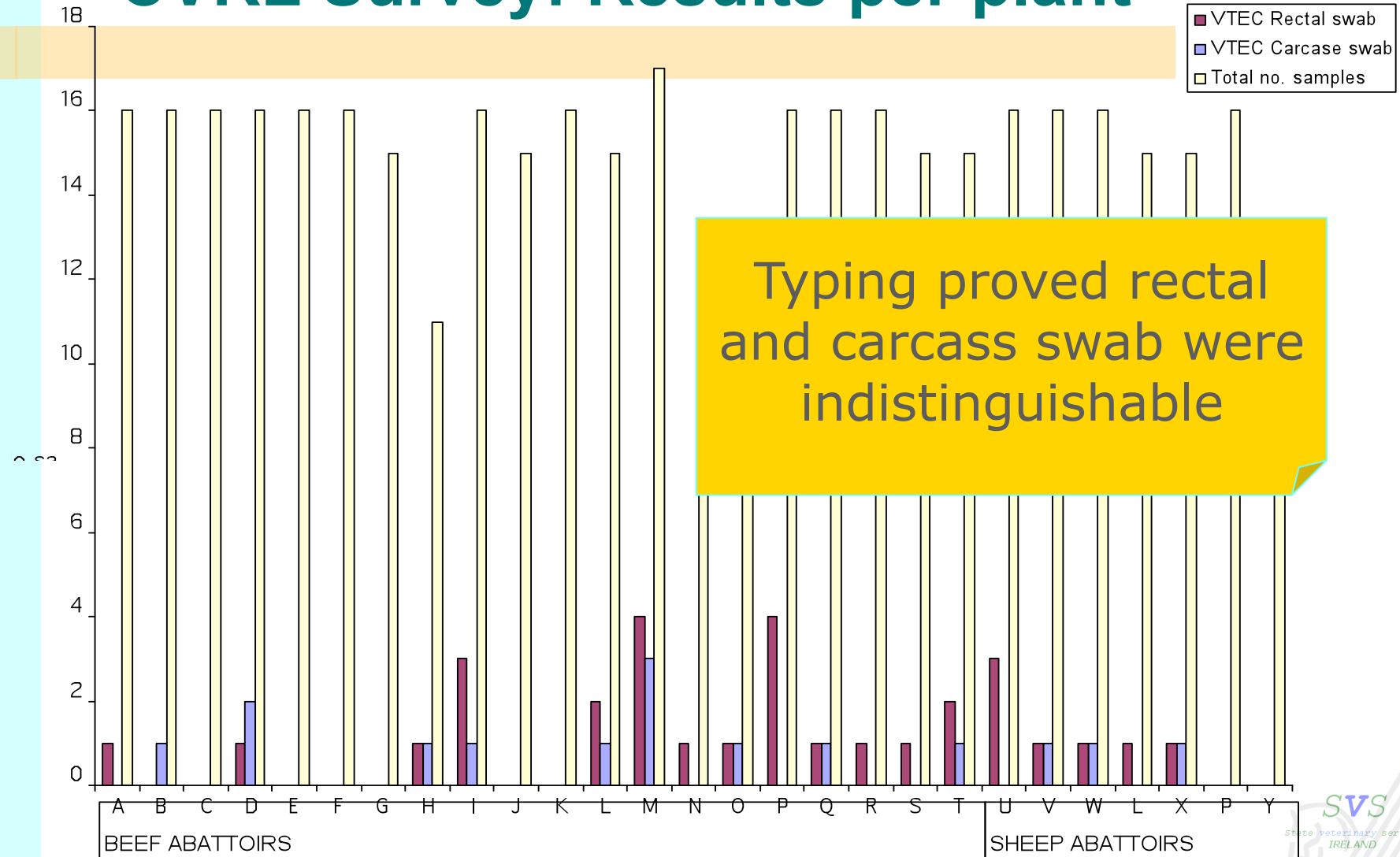
- VTEC O157 Herd Prevalence:
  - Cattle: 7.2%
  - Sheep: 6.8%
- VTEC O157 Pooled Carcase Swab Prevalence:
  - Cattle: 3.9%
  - Sheep: 2.9%
- VTEC O157 in Minced meat:
  - Beef: VTEC O157 not recovered from 77 samples studied
  - Ovine: VTEC O157 contamination in 1 out of 14 samples

# CVRL Survey: O157 Seasonality





# CVRL Survey: Results per plant



## CVRL Survey: AMR results

- 2 isolates resistant to Streptomycin, Sulfonamide and Tetracycline
- All the other isolates fully susceptible

# Acknowledgements

- DAFF staff at abattoirs
- CVRL and CMCL staff