

icbf



A New Tool For SCC Management

Matthew Thompson

ICBF Dairy Breeding & Genetics Conference 2024



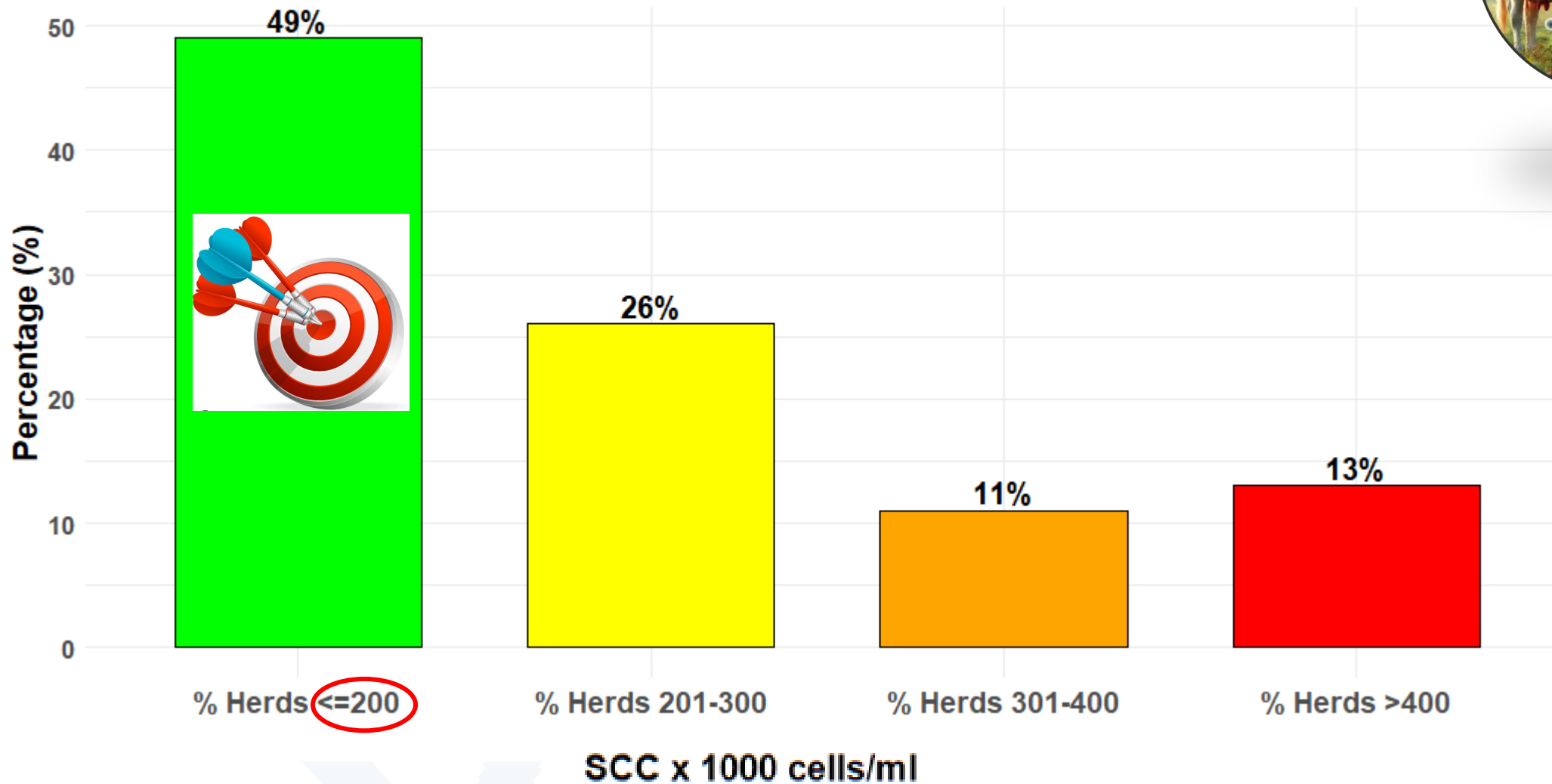
An Roinn Talmhaíochta,
Bia agus Mara
Department of Agriculture,
Food and the Marine



AgTech - it's in our DNA



% Herds In Each SCC Category



Why SCC Matters?

Health Indicator:

- SCC acts as a "warning light" for udder health.



Milk Quality Indicator:

- SCC can impact milk processability and profitability



Best practice for SCC monitoring?

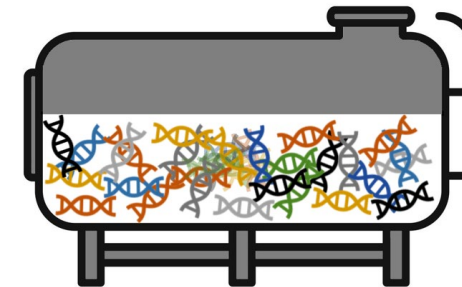
- Regular monitoring of bulk tank for overall herd SCC levels
- Regular milk recording to monitor individual cow SCC levels especially early in lactation

genocells - What Is Genocells?



Genocells is a new innovative genomic technology

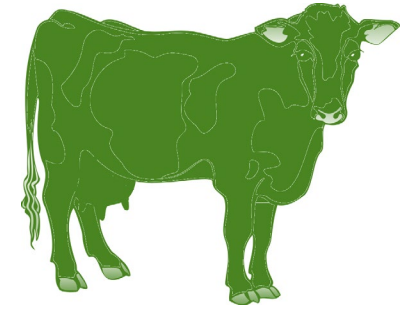
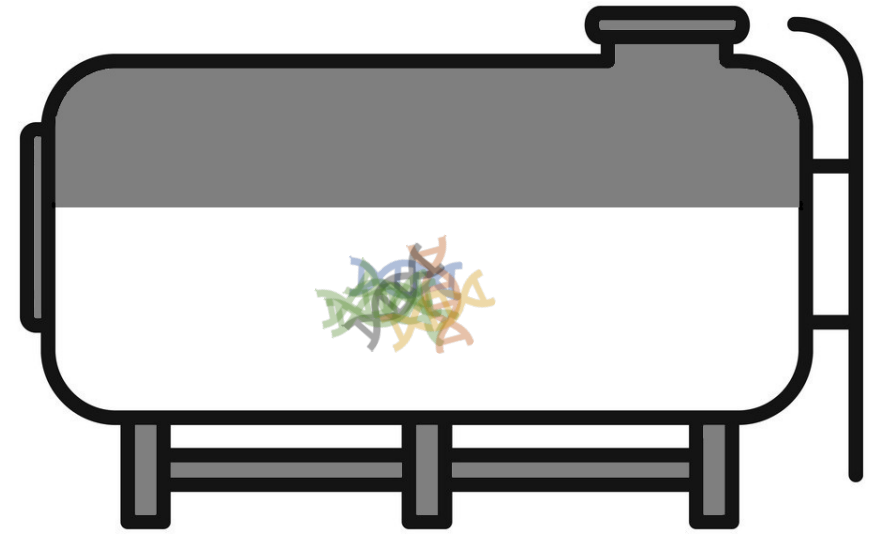
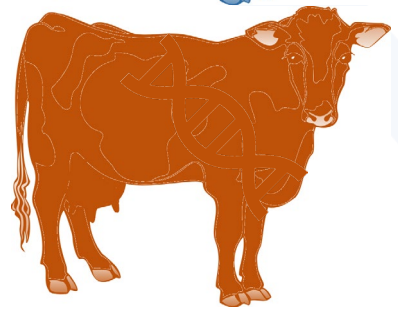
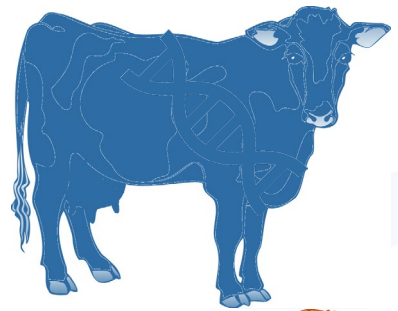
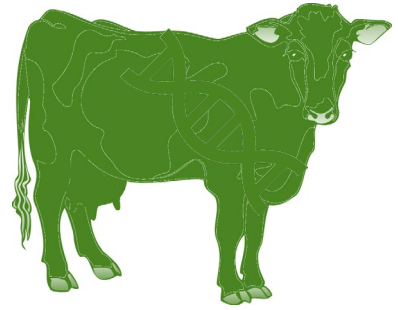
- Developed by Seenovia
- Powered by Genomic Data
- Identification of high SCC Cows
- Irish Licence Obtained



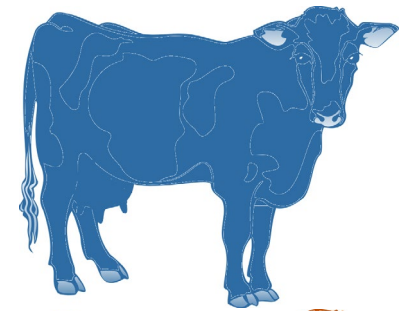
All Cows must be Genotyped



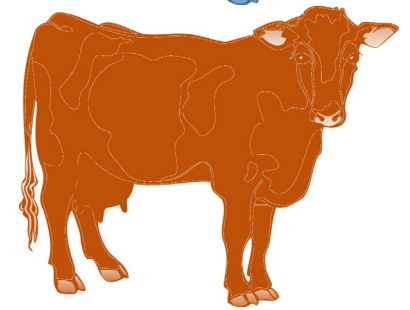
% Bulk Tank Contribution Report



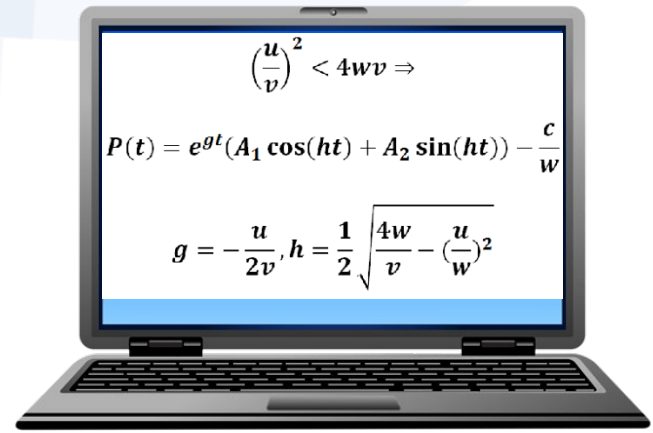
2.7%



6.9%

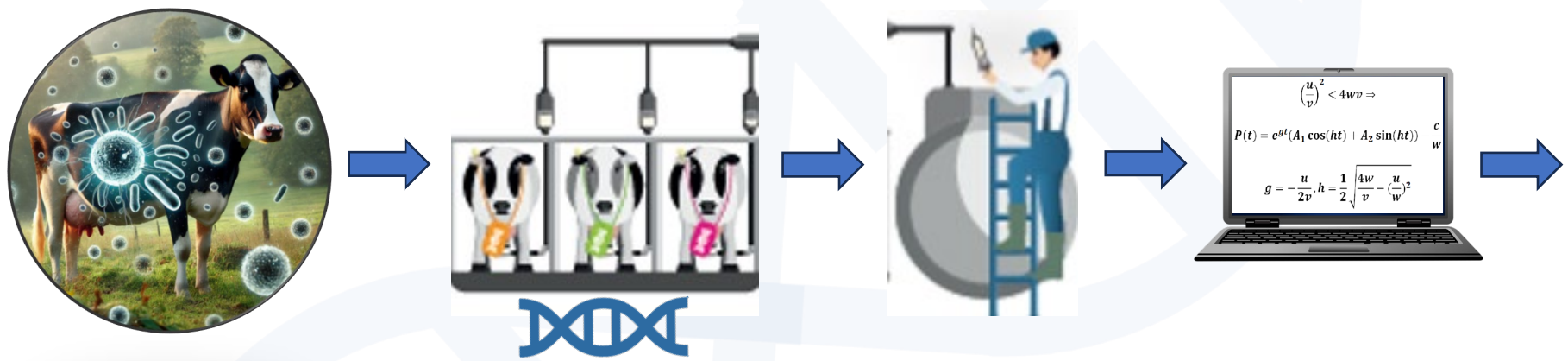


1.3%

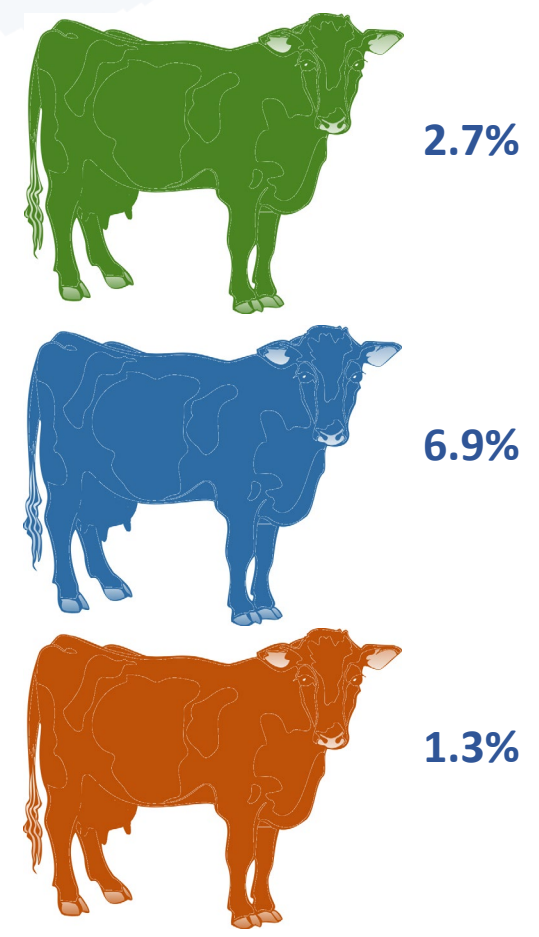


genocells - How Does It Work?

- Calculates the total SCC of a bulk tank through single sample
- Using DNA, calculates the % contribution of each cow to the tank SCC



% Contribution To Tank SCC



However

- All cows in bulk tank must be genotyped
- Bulk sample must be collected after one milking following empty tank

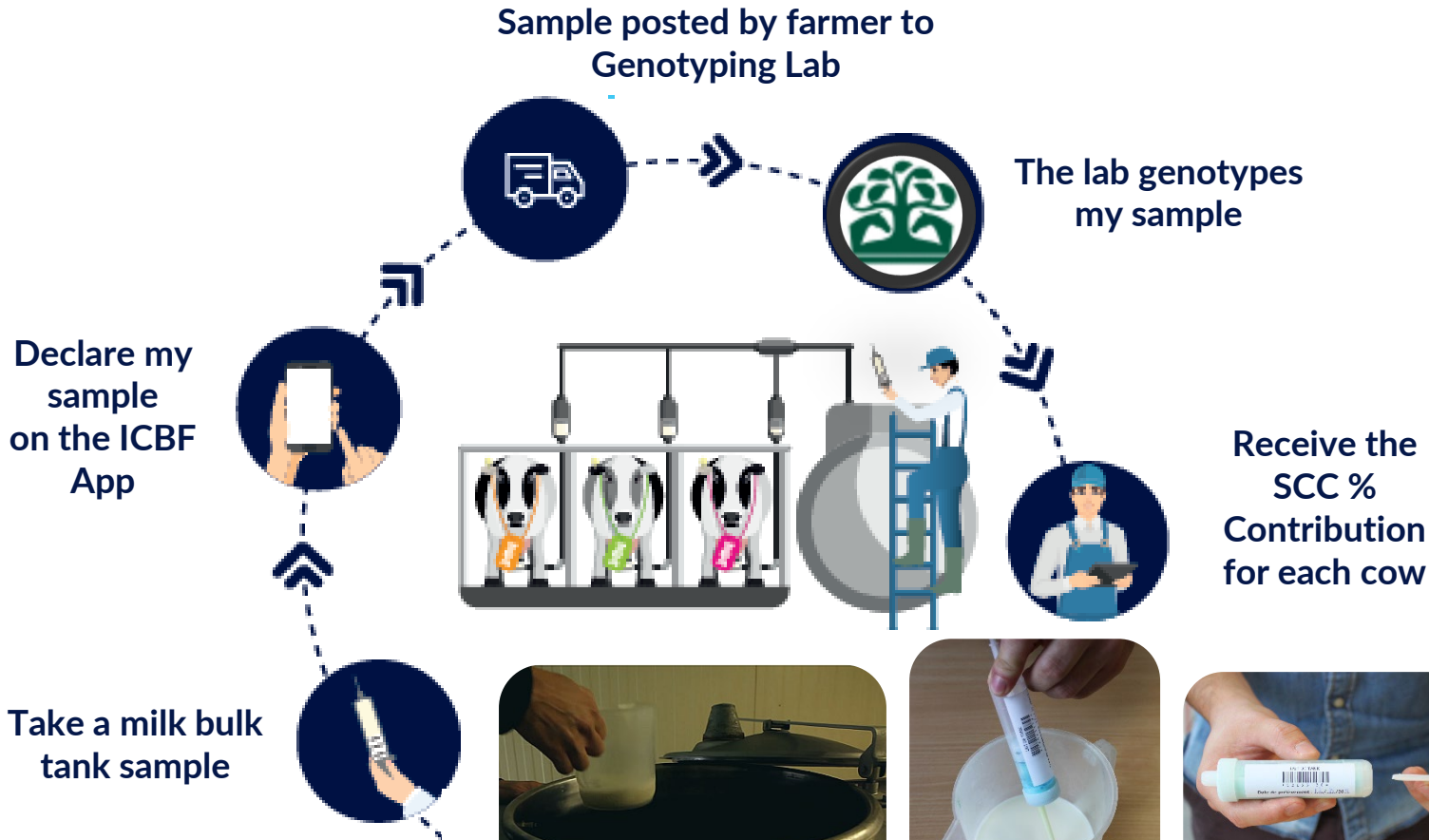
genocells - Overview

Genocell Female Selection

Sample Num: 12-Jun-2024

Search by Tag: +

- Tag: IE151013761665
Genotype: 0.9875
Lact: # 10
- Tag: IE151013731761
Genotype: 0.993
Lact: # 9
- Tag: IE151013791791
Genotype: 0.9937
Lact: # 9
- Tag: IE151013741845



MUNSTER BOVINE

Herd Owner: KEVIN DOWNING
Herd Number: D2690749
Sample Date: 11/08/2024
Genocells Test: 2 of 3 completed

Tel: 022 43228
web: munsterbovine.ie

genocells

Sample Details

Number of cows marked in the bulk tank sample: 143
Number of cows marked not in the bulk tank sample: 2
Non-Genotyped cows in the bulk tank sample: 0
Sample Number: GMB20167

Focus on SCC Management

Genocells Bulk Tank SCC: 123

Jumbo	% Bulk Tank SCC Cattle Contribution
2788	15.3%
2288	7.9%
2312	6.0%
2884	5.3%
1925	4.0%
2890	4.0%
1903	4.0%
2888	2.1%
2467	2.1%
2829	1.6%

Highest cows contributing to overall SCC expressed as a % responsibility

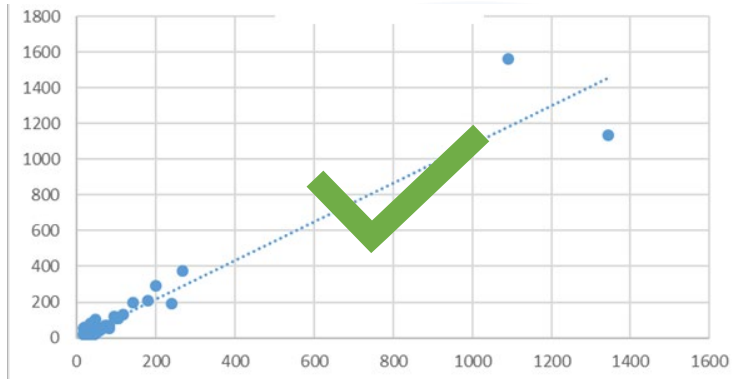
Cow ID	Jumbo	Days in Milk	Lactation	% Contribution
37222061962788	2788	168	3	15.3%
37222061922389	2289	196	6	7.9%
37222061992312	2312	133	5	6.0%
37222061932884	2884	172	1	5.3%
IE151013711925	1925	151	8	4.0%
37222061912890	2890	198	1	4.0%
IE151013741903	1903	146	8	4.0%
37222061972888	2888	172	1	2.1%
37222061972467	2467	164	5	2.1%
37222061952829	2829	189	2	1.6%
37222061912825	2825	198	2	1.5%
37222061942860	2860	193	2	1.4%
IE151013711958	1958	192	8	1.3%
37222061922891	2891	205	1	1.2%

Note: The remaining 129 cows have an individual DNA contribution less than 1.2%





- Comprehensive validation process - 85 herds participating
- Stress tested the rollout of Genocells as a service:
 - Accuracy of Genocells
 - Admin Genocells
 - Logistical turnaround times (Farm to Lab to Results)
 - Reporting Results



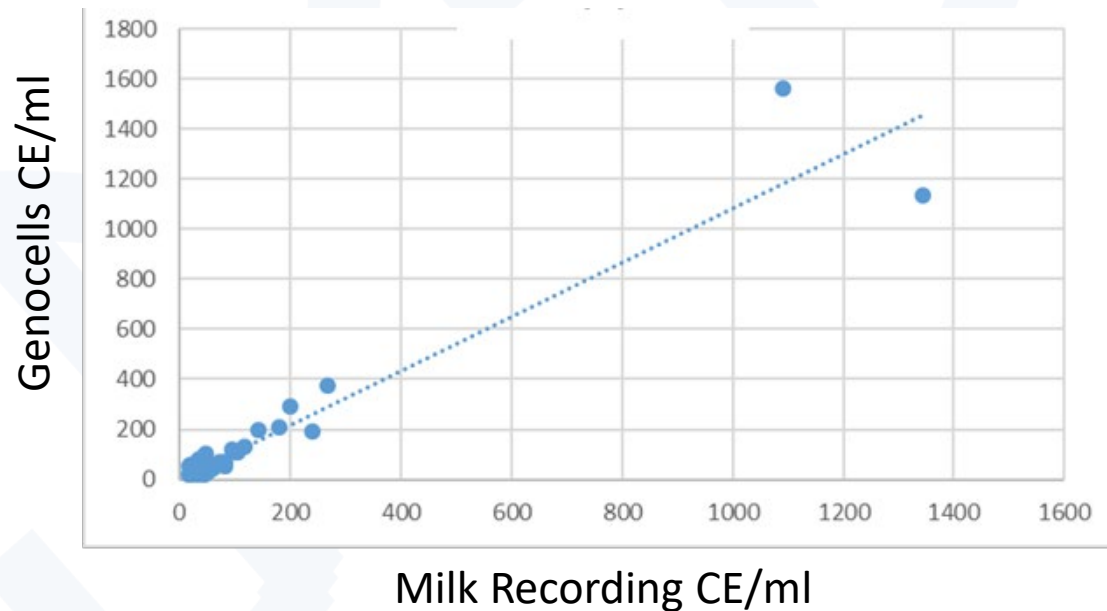
Sample Details					
Number of cows marked in the bulk tank sample: 112					
Number of cows marked not in the bulk tank sample: 1					
Non-Genotyped cows in the bulk tank sample: 0					
Sample Number: GPG10031					
Focus on SCC Management					
Genocells Bulk Tank SCC: 90				Jumbo	% Bulk Tank SCC Cattle Contribution
				706	12.8%
				512	11.6%
				973	5.4%
				803	3.3%
				400	3.2%
				1048	2.9%
				628	2.9%
495	2.6%				
914	1.9%				
677	1.9%				
Highest cows contributing to overall SCC expressed as a % responsibility					
Cow ID	Jumbo	Days in Milk	Lactation	% Contribution	Genocells SCC Band
37225429860706	706	154	3	12.8%	1000+
37225429820512	512	96	5	11.5%	1000+
IE121362440973	973	101	7	5.4%	250-499
37225429840903	803	153	2	3.3%	250-499
37225429860400	400	150	6	3.2%	250-499
372219622151048	1048	154	6	2.9%	250-499
37225429810528	628	151	5	2.9%	200-249
37225429820495	495	134	5	2.6%	200-249
IE121362440914	914	162	7	1.9%	100-199
37225429820677	677	156	3	1.9%	100-199
3722542989690	690	163	3	1.6%	100-199

Note: The remaining 191 cows have an individual DNA contribution less than 1.6%

genocells - Identification Of High SCC Cow's

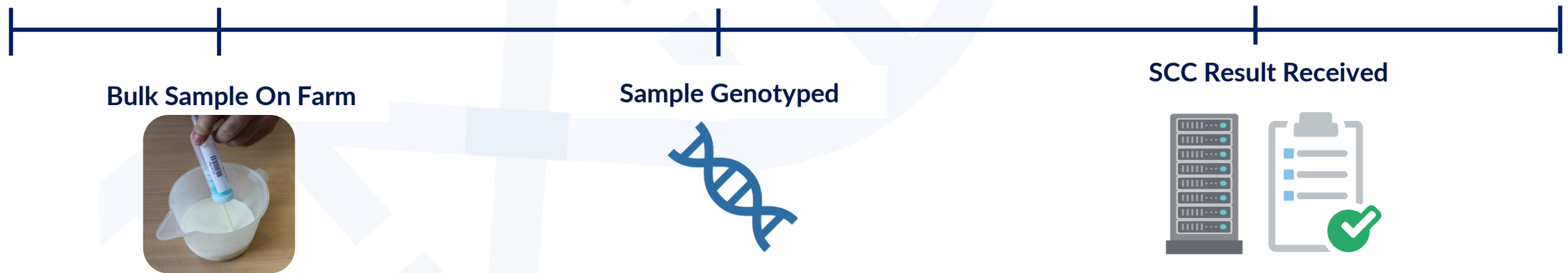


- Consistently identified the highest SCC cows!
- Accuracy of genocells ranged from 90 to 98%
 - ❑ Accuracy drops when non genotyped animals are included in the bulk tank





Farm to Result in 7 Days



icbf D2690749 MENU ▾ Herd Info HerdPlus ▾ Taurus ▾ Services ▾

ADMIN ▾
 APPLICATIONS ▾
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 RECORD EVENTS ▾
REPORTS ▾ All Reports
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 VIEW PROFILES ▾

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Choose a report from the menu

Genocells Report

22-AUG-24

22-AUG-24

22-AUG-24

22-AUG-24

11-AUG-24

29-JUL-24

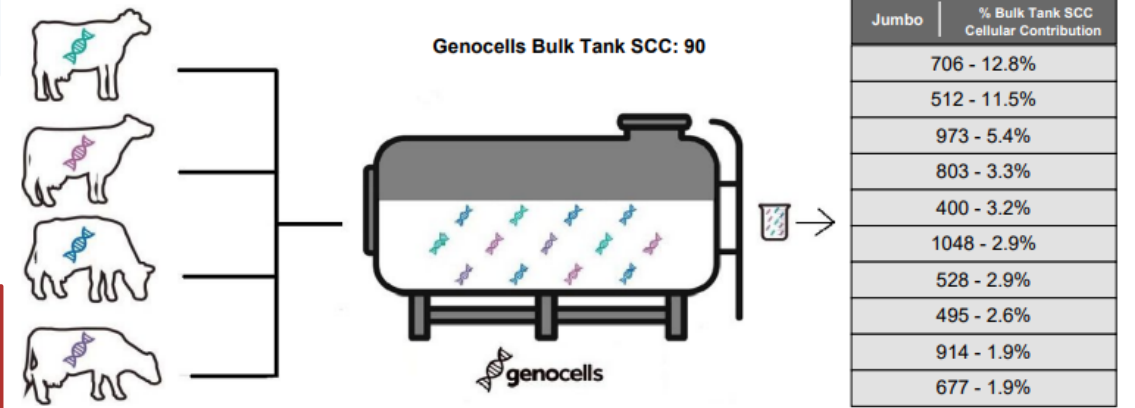
Genocells Results Available On icbf Website or App



Sample Details

Number of cows marked in the bulk tank sample: 112
 Number of cows marked **not** in the bulk tank sample: 1
Non-Genotyped cows in the bulk tank sample: 0
 Sample Number: GPG10031

Focus on SCC Management



Highest cows contributing to overall SCC expressed as a % responsibility

	Cow ID	Jumbo	Days in Milk	Lactation	% Contribution	Genocells SCC Band
●	372225429860706	706	154	3	12.8%	1000+
●	372225429820512	512	96	5	11.5%	1000+
●	IE121352460973	973	101	7	5.4%	250-499
●	372225429840803	803	153	2	3.3%	250-499
●	372225429860400	400	150	6	3.2%	250-499
●	372219622151048	1048	154	6	2.9%	250-499
●	372225429810528	528	151	5	2.9%	200-249
●	372225429820495	495	134	5	2.6%	200-249
●	IE121352440914	914	162	7	1.9%	100-199
●	372225429820677	677	156	3	1.9%	100-199
●	372225429880690	690	163	3	1.6%	100-199

Note: The remaining 101 cows have an individual DNA contribution less than 1.6%

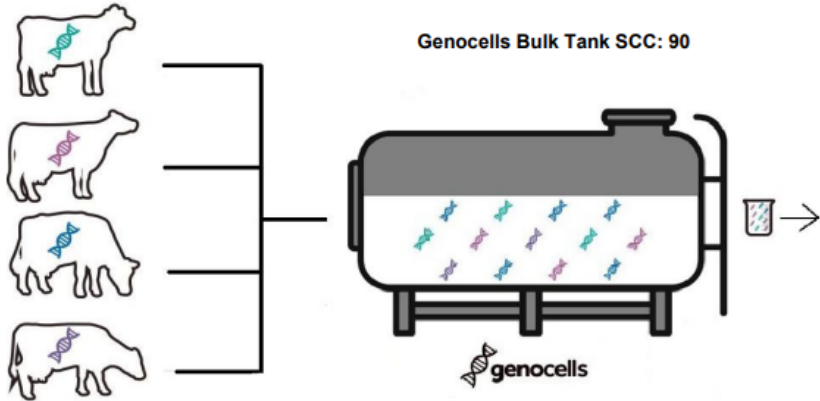
Colour Coding ● : There is a strong probability that cows highlighted in red have an SCC over 200,000
 Colour Coding ● : There is a strong probability that cows highlighted in green have an SCC under 200,000

Produced in conjunction with icbf

Sample Details

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Focus on SCC Management



Jumbo	% Bulk Tank SCC Cellular Contribution
706	12.8%
512	11.5%
973	5.4%
803	3.3%
400	3.2%
1048	2.9%
528	2.9%
495	2.6%
914	1.9%
677	1.9%

- Top 10 cows with the highest % cellular contribution to the bulk tank SCC

Highest cows contributing to overall SCC expressed as a % responsibility

	Cow ID	Jumbo	Days In Milk	Lactation	% Contribution	Genocells SCC Band
●	372225429860706	706	154	3	12.8%	1000+
●	372225429820512	512	96	5	11.5%	1000+
●	IE121352460973	973	101	7	5.4%	250-499
●	372225429840803	803	153	2	3.3%	250-499
●	372225429860400	400	150	6	3.2%	250-499
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●	372225429820677	677	156	3	1.9%	100-199
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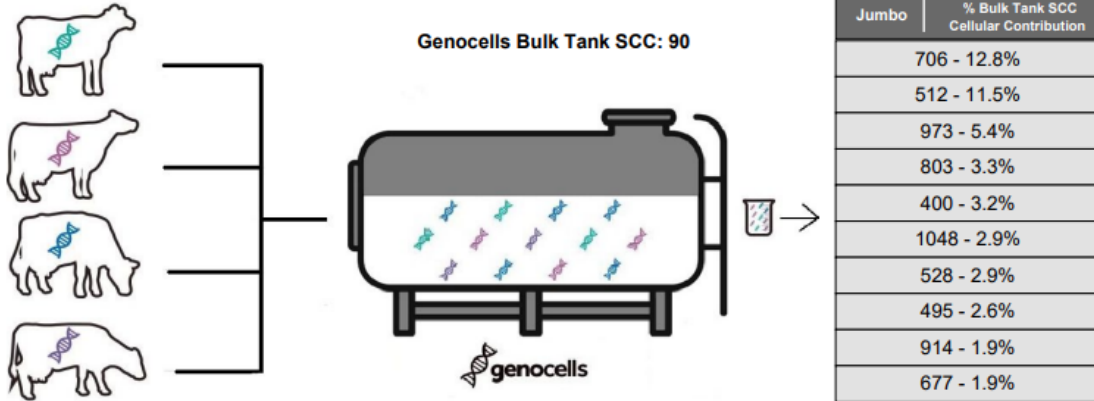
Colour Coding ● :	There is a strong probability that cows highlighted in red have an SCC over 200,000
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Focus on SCC Management



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●	372225429840803	803	153	2	3.3%	250-499
●	372225429860400	400	150	6	3.2%	250-499
●	372219622151048	1048	154	6	2.9%	250-499
●	372225429810528	528	151	5	2.9%	200-249
●	372225429820495	495	134	5	2.6%	200-249
●	IE121352440914	914	162	7	1.9%	100-199
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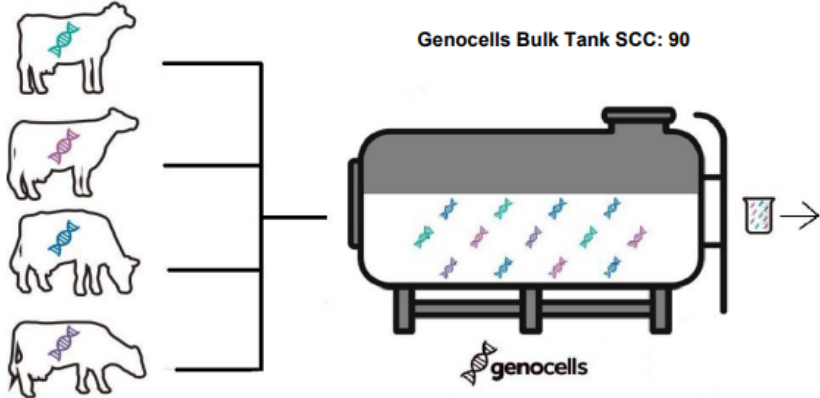
Produced in conjunction with

The report contains results for 10% of the herd.
 With a minimum of 10 Cows and a maximum of 20 cows being displayed on the report.

Sample Details

Number of cows marked in the bulk tank sample: 112
 Number of cows marked **not** in the bulk tank sample: 1
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 Sample Number: GPG10031

Focus on SCC Management



Jumbo	% Bulk Tank SCC Cellular Contribution
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400	3.2%
1048	2.9%
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●	372225429820512	512	96	5	11.5%	1000+
●	IE121352460973	973	101	7	5.4%	250-499
●	372225429840803	803	153	2	3.3%	250-499
●	372225429860400	400	150	6	3.2%	250-499
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●	372225429820495	495	134	5	2.6%	200-249
●	IE121352440914	914	162	7	1.9%	100-199
●	372225429820677	677	156	3	1.9%	100-199
●	372225429880690	690	163	3	1.6%	100-199

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Colour Coding ● : There is a strong probability that cows highlighted in red have an SCC over 200,000

Colour Coding ● : There is a strong probability that cows highlighted in green have an SCC under 200,000

Produced in conjunction with

Milk Recording yields combined with % cellular responsibility are used to calculate Genocell SCC bands.

Herd Details

Herd Owner:
Herd Number:
Report Date: 03/12/2024
No. of Genocells tests completed: 3
No. of Milk Recording tests completed: 4
No. of Cows in report: 93



Only animals with 3 milk recording tests in their current lactation are included on this report.

SCC Test
Summary
Report



Must Complete At
Least 4 Milk
Recordings To
Generate Report

Summary										
Cow ID	Jumbo	Lact	Days In Milk	SCC Lact Status	15/10/2024 MILK RECORDING	19/08/2024 GENOCELLS	11/08/2024 GENOCELLS	01/08/2024 GENOCELLS	03/07/2024 MILK RECORDING	16/05/2024 MILK RECORDING
372219000331969	1969	4	280	Healthy	19	0-49	50-199	0-49	27	26
372219000332182	2182	3	295	Healthy	57	0-49	0-49	0-49	45	22
372219000332216	2216	3	297	Healthy	177	0-49	0-49	0-49	32	56
372219000332323	2323	2	274	Healthy	33	50-199	0-49	0-49	110	50
372219000332422	2422	1	DRY	Recently Cured	33	50-199	200-249	0-49	35	27
372219000341747	1747	5	DRY	Persistently Infected	407	1000+	1000+	200-249	190	110
372219000341920	1920	4	298	Recently Cured	194	50-199	500-999	0-49	292	48
372219000341945	1945	4	289	Healthy	102	0-49	0-49	0-49	12	20
372219000342233	2233	2	303	Healthy	52	0-49	0-49	0-49	24	24
372219000342332	2332	1	DRY	Recently Cured	57	200-249	50-199	50-199	53	132
372219000342340	2340	1	DRY	Recently Cured	55	50-199	0-49	0-49	89	107
372219000342381	2381	1	DRY	Recently Cured	144	250-499	250-499	250-499	63	82
372219000352192	2192	3	270	Healthy	51	0-49	0-49	50-199	46	15
372219000352234	2234	2	296	Recently Infected	1019	50-199	50-199	250-499	1123	731
372219000352242	2242	2	295	Healthy	42	0-49	0-49	0-49	38	80
372219000352309	2309	2	268	Healthy	19	0-49	50-199	0-49		35
372219000352424	2424	1	DRY	Healthy	103	50-199	0-49	0-49	31	30
372219000361708	1708	6	301	Recently Cured	37	1000+	500-999	250-499	132	390
372219000361757	1757	5	288	Healthy	34	0-49	50-199	0-49	23	29
372219000361971	1971	4	295	Healthy	115	0-49	0-49	0-49	26	22

SCC Lact Status Colour Coding: ■ Healthy ■ Recently Cured ■ Recently Infected ■ Persistently Infected

* The presence of non-genotyped cows in this bulk sample will affect accuracy of the results of other cows.
** The Genocells sample was unable to be tested for SCC therefore somatic cell count banding cannot be determined for this test.

Herd Details
 Herd Owner:
 Herd Number:
 Report Date: 03/12/2024
 No. of Genocells tests completed: 3
 No. of Milk Recording tests completed: 4
 No. of Cows in report: 93

Only animals with 3 milk recording tests in their current lactation are included on this report.

Summary										
Cow ID	Lump	Lact	Days In Milk	SCC Lact Status	15/10/2024 MILK RECORDING	19/08/2024 GENOCELLS	11/08/2024 GENOCELLS	01/08/2024 GENOCELLS	03/07/2024 MILK RECORDING	16/05/2024 MILK RECORDING
372219000331969	1969	4	280	Healthy	19	0-49	50-199	0-49	27	26
372219000332182	2182	3	295	Healthy	57	0-49	0-49	0-49	45	22
372219000332216	2216	3	297	Healthy	177	0-49	0-49	0-49	32	56
372219000332323	2323	2	274	Healthy	33	50-199	0-49	0-49	110	50
372219000332422	2422	1	DRY	Recently Cured	33	50-199	200-249	0-49	35	27
372219000341747	1747	5	DRY	Persistently Infected	407	1000+	1000+	200-249	190	110
372219000341920	1920	4	298	Recently Cured	194	50-199	500-999	0-49	292	48
372219000341945	1945	4	289	Healthy	102	0-49	0-49	0-49	12	20
372219000342233	2233	2	303	Healthy	52	0-49	0-49	0-49	24	24
372219000342332	2332	1	DRY	Recently Cured	57	200-249	50-199	50-199	53	132
372219000342340	2340	1	DRY	Recently Cured	55	50-199	0-49	0-49	89	107
372219000342381	2381	1	DRY	Recently Cured	144	250-499	250-499	250-499	63	82
372219000352192	2192	3	270	Healthy	51	0-49	0-49	50-199	46	15
372219000352234	2234	2	296	Recently Infected	1019	50-199	50-199	250-499	1123	731
372219000352242	2242	2	295	Healthy	42	0-49	0-49	0-49	38	80
372219000352309	2309	2	268	Healthy	19	0-49	50-199	0-49		35
372219000352424	2424	1	DRY	Healthy	103	50-199	0-49	0-49	31	30
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372219000361971	1971	4	295	Healthy	115	0-49	0-49	0-49	26	22

SCC Lactation Status

SCC Lact Status Colour Coding: ■ Healthy ■ Recently Cured ■ Recently Infected ■ Persistently Infected

* The presence of non-genotyped cows in this bulk sample will affect accuracy of the results of other cows.
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					Summary					
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372219000331969	1969	4	280	Healthy	19	0-49	50-199	0-49	27	26
372219000332182	2182	3	295	Healthy	57	0-49	0-49	0-49	45	22
				Healthy	177	0-49	0-49	0-49	32	56
				Healthy	33	50-199	0-49	0-49	110	50
				Recently Cured	33	50-199	200-249	0-49	35	27
372219000341747	1747	5	DRY	Persistently Infected	407	1000+	1000+	200-249	190	110
372219000341920	1920	4	298	Recently Cured	194	50-199	500-999	0-49	292	48
372219000341945	1945	4	289	Healthy	102	0-49	0-49	0-49	12	20
372219000342233	2233	2	303	Healthy	52	0-49	0-49	0-49	24	24
372219000342332	2332	1	DRY	Recently Cured	57	200-249	50-199	50-199	53	132
372219000342340	2340	1	DRY	Recently Cured	55	50-199	0-49	0-49	89	107
372219000342381	2381	1	DRY	Recently Cured	144	250-499	250-499	250-499	63	82
372219000352192	2192	3	270	Healthy	51	0-49	0-49	50-199	46	15
372219000352234	2234	2	296	Recently Infected	1019	50-199	50-199	250-499	1123	731
372219000352242	2242	2	295	Healthy	42	0-49	0-49	0-49	38	80
372219000352309	2309	2	268	Healthy	19	0-49	50-199	0-49		35
372219000352424	2424	1	DRY	Healthy	103	50-199	0-49	0-49	31	30
372219000361708	1708	6	301	Recently Cured	37	1000+	500-999	250-499	132	390
372219000361757	1757	5	288	Healthy	34	0-49	50-199	0-49	23	29
372219000361971	1971	4	295	Healthy	115	0-49	0-49	0-49	26	22

Test Summary:

- Tests shown in order of date

SCC Lact Status Colour Coding: ■ Healthy ■ Recently Cured ■ Recently Infected ■ Persistently Infected

* The presence of non-genotyped cows in this bulk sample will affect accuracy of the results of other cows.
** The Genocells sample was unable to be tested for SCC therefore somatic cell count banding cannot be determined for this test.

1. Genocells is a **SCC management tool** which complements regular milk recording for monitoring SCC levels in your genotyped herd.
2. Only a **single bulk tank sample** is required for up to date SCC information.
3. Faster identification of subclinical mastitis infection for **targeted treatment** and **preventative care**.
4. Better SCC management will lead to **improved milk quality, reduced antibiotic use** and a **reduction in costs** associated with mastitis infections.



genocells - Key Messages

- Genocells enables farmers to identify individual SCC contributions from cows through a single bulk tank milk sample.
- SCC management tool which complements routine milk recordings
 - ❑ Only available to herds signed up to milk record at least 4 times a year.
- All cows contributing to bulk sample must be genotyped.
- Bulk sample must be collected after one milking following an empty tank.
- Details on the cost & logistics will be available from your MRO's in the new year.

Our Farmer & Government Representation



An Roinn Talmhaíochta,
Bia agus Mara
Department of Agriculture,
Food and the Marine



Our AI & Milk Recording Organisations



Our Herdbooks



Acknowledging Our Members