

ARIENTI



Improving livestock welfare and performance



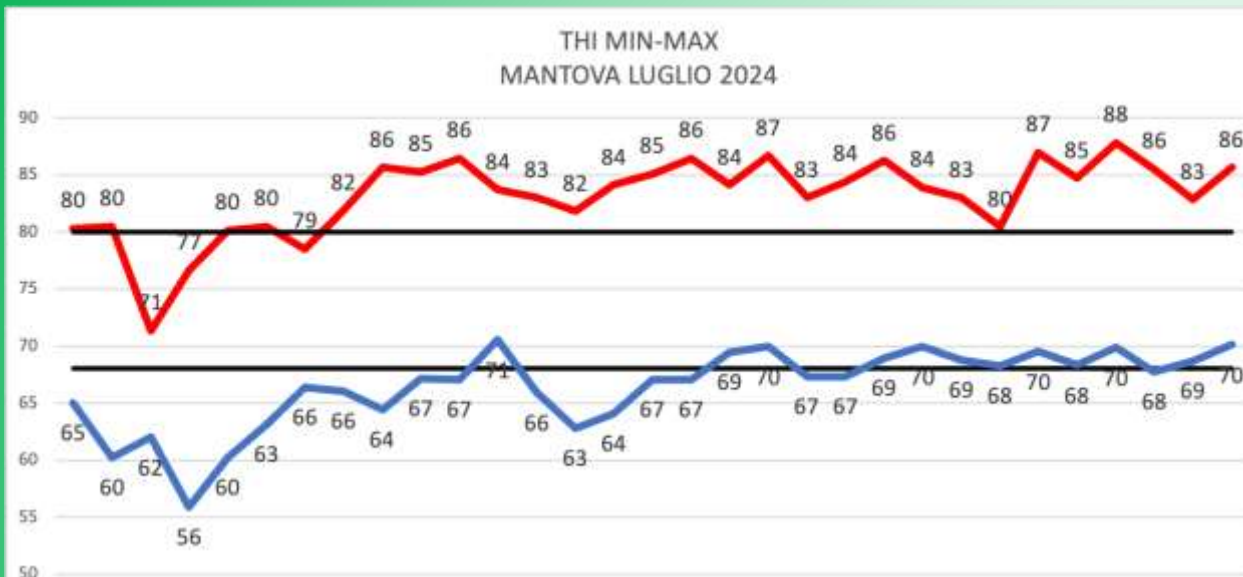
Programma
ELEMENTS

Perchè Programma Elements?

**Perchè solo il sistema di ventilazione non è sufficiente,
è necessario utilizzare un insieme di elementi diversi
per avere la certezza dei risultati**

Lo stress da caldo nella vacca da latte è la prima causa di Perdita economica nel settore lattiero caseario *(IDF, 2023)*

Negli ultimi 3 anni le condizioni di stress termico si sono continuamente aggravate, nel 2023 c'è stato un aumento di 30 giorni del periodo “estivo”



I risultati vanno valutati considerando le condizioni climatiche della stalla geolocalizzata

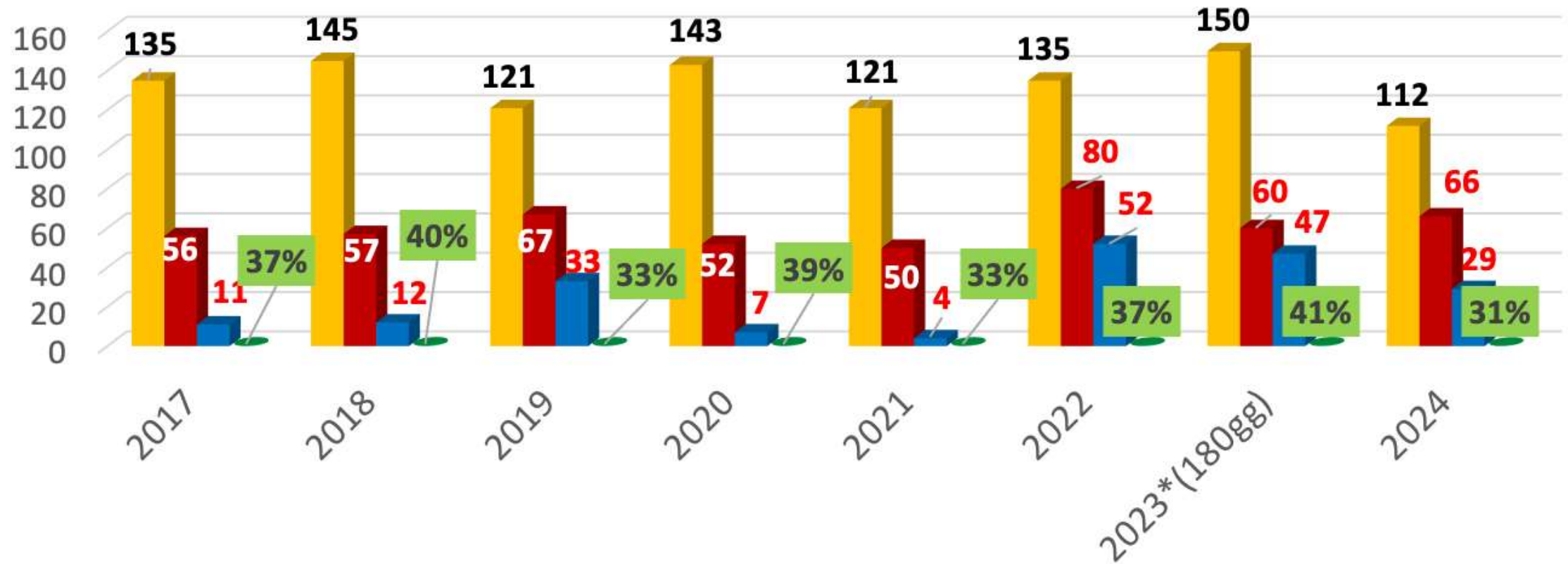
Soglia sup. >80 THI

Soglia inf. > 68 THI

2017-2024 - CREMONA

GG CON HEAT STRESS (THI min > 68)

GG con HW-HEATWAVES (THI max > 80)



■ GG con Heat Stress

■ GG con HW

■ Notti con HW

■ % gg/anno Heat Stress

- Praticamente tutti gli allevamenti sono dotati di qualche forma di ventilazione.
- Quello che dobbiamo verificare sono le condizioni della stalla e della mandria, secondo i nostri criteri

Come si valuta la gestione di una stalla per contrastare lo stress da caldo?

1. Verifica degli impianti esistenti
2. Dati oggettivi delle performances di produzione e fertilità

Per una valutazione efficace servono i dati oggettivi
delle performances produttive e di fertilità.

Sono disponibili diversi programmi gestionali:

- SiAlleva (Indice S/W)
- Dairycomp 305
- Afimilk e altri programmi aziendali

Tabella annuale

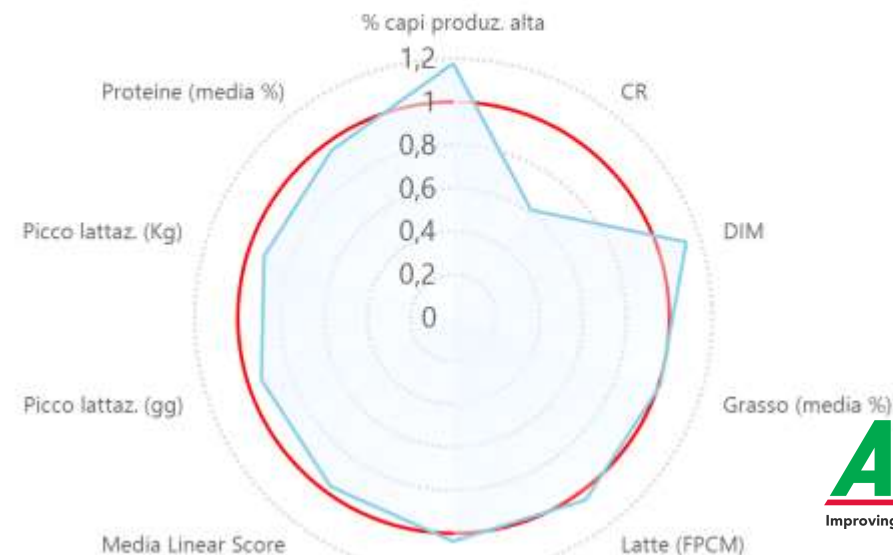
2023

Parametro	Tutte le vacche				Primipare				Pluripare			
	Anno	Estate	Inverno	S:W	Anno	Estate	Inverno	S:W	Anno	Estate	Inverno	S:W
Latte (FCPM)	35.3	35.9	34.4	1.043	31.9	32.0	32.0	0.998	37.7	38.8	36.2	1.072
Latte (Kg)	36.1	36.7	35.3	1.039	32.8	33.0	32.7	1.011	38.5	39.3	37.1	1.058
Picco Lattazioni (gg)	51.5	57.0	60.8	0.938	54.0	55.6	67.7	0.822	49.9	57.7	55.7	1.037
Picco Lattazioni (Kg)	43.5	42.8	46.4	0.924	36.6	33.9	40.9	0.828	48.0	47.6	50.4	0.945
% capi produz. alta	32.0	33.0	28.0	1.179	15.0	14.0	12.0	1.167	44.0	46.0	39.0	1.179
Grasso (media %)	3.8	3.8	3.8	1.010	3.8	3.7	3.8	0.979	3.9	3.9	3.8	1.032
Proteine (media %)	3.5	3.4	3.5	0.959	3.5	3.4	3.5	0.966	3.5	3.4	3.6	0.955
Media linear score	2.4	2.5	2.5	0.970	2.1	2.1	2.2	0.963	2.6	2.7	2.8	0.973
CR	31.8	24.6	40.1	0.615	35.5	22.9	40.8	0.563	29.4	25.9	39.6	0.655

Tabella mensile

	Latte FCPM	Latte Kg	% capi prod. alta	Grs %	Prt %	Linear score	CR	DIM
gen	34.0	32.7	17.0	4.2	3.7	2.9	38.5	158.7
feb	35.4	37.1	35.0	3.6	3.5	2.2	39.5	157.0
mar	34.0	35.9	31.0	3.6	3.5	2.5	41.9	163.3
apr	37.4	40.1	48.0	3.4	3.4	2.2	41.2	168.4
mag	35.2	37.2	38.0	3.6	3.4	2.7	41.4	167.7
giu	36.8	39.9	49.0	3.4	3.4	2.1	28.1	173.6
lug	34.3	36.1	29.0	3.7	3.4	2.6	5.3	173.0
ago							16.4	
set	37.6	37.3	37.0	4.0	3.4	2.3	47.1	190.0
ott	30.2	30.2	12.0	4.0	3.6	2.5	41.1	176.5
nov	38.7	37.1	34.0	4.3	3.5	2.1	16.5	173.9
dic	34.5	33.3	21.0	4.2	3.6	2.5	0.0	163.7

Tutte le vacche



Indici S/W di alcune aziende che hanno adottato un programma di cooling efficace

ALL. GUERRINA	2017 no cooling	2018 no cooling	2019	2020	2021	2022	2023
S/W	0,88	0,94	0,99	1,02	1,02	0,98	1,04
PRODUZIONE MEDIA ESTATE/INVERNO	27,4 - 31,2	30,9 - 32,7	32,5 - 33,2	36,5 - 35,9	37,9 - 37,2	33,6 - 34,4	36,7 - 35,3

ARISI	2020	2021	2022	2023	
S/W	1,00	1,08	0,99	1,01	
PRODUZIONE MEDIA ESTATE/INVERNO	34,8 - 34,9	37,2 - 34,5	35,5 - 35,8	36,1 - 35,8	

AZ. BALESTRERI L&M	2020 (no cooling)	2021	2022	2023	
S/W	0,92	1,01	1,00	1,01	
PRODUZIONE MEDIA ESTATE/INVERNO	37,3 - 40,7	37,7 - 37,2	40,3 - 40,1	39,8 - 39,6	

AZ. MARTELLI	2020	2021	2022	2023	
S/W	0,97	0,93	0,98	1,02	
PRODUZIONE MEDIA ESTATE/INVERNO	36,2 - 37,6	40,3 - 43,5	40,9 - 41,7	43,8 - 42,9	

AZ. GALLI	2020 no cooling	2021 no cooling	2022 no cooling	2023	
S/W	0,93	0,83	0,86	0,96	
PRODUZIONE MEDIA ESTATE/INVERNO	34,4 - 37,1	33,4 - 38,3	32,8 - 38,3	35,8 - 37,3	

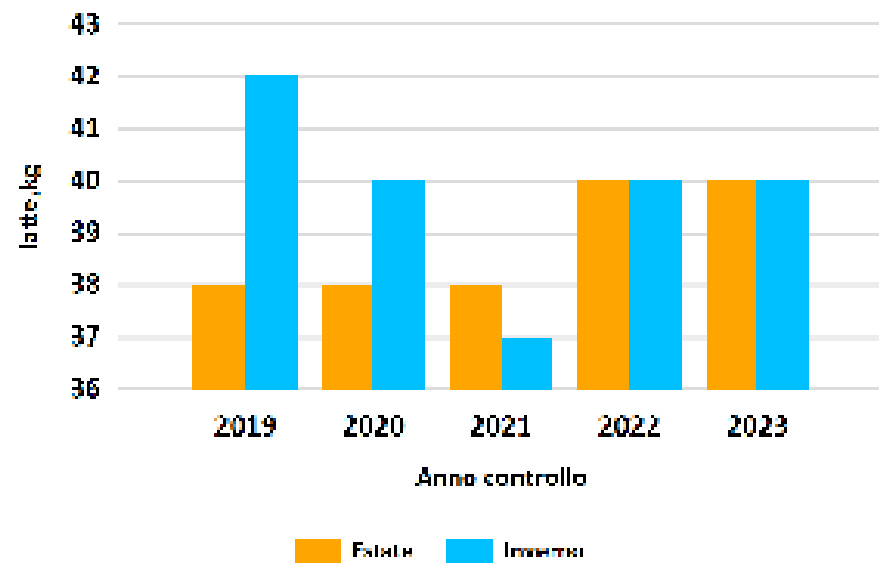
AZ. CORTE GABRIELE	2020	2021	2022	2023	
S/W		0,99	1,04		
PRODUZIONE MEDIA ESTATE/INVERNO		35,1 - 35,2	37,6 - 36		

AZ. MACCAGNOLA	2020	2021	2022	2023	
S/W	-	-	1,04		
PRODUZIONE MEDIA ESTATE/INVERNO			38,3 - 38,2		

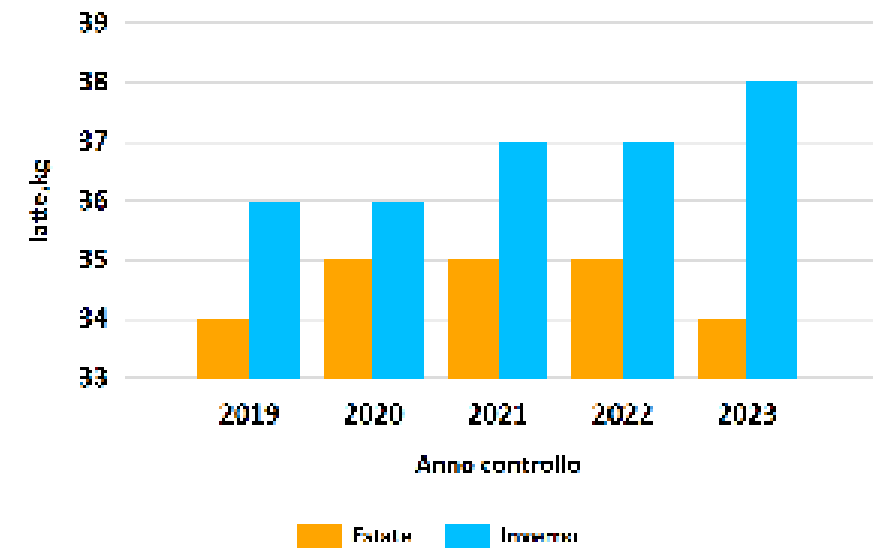
AZ. BENNATI	2020	2021	2022	2023	
S/W	1,06	1,00	0,92	0,94	
PRODUZIONE MEDIA ESTATE/INVERNO	35 - 33,2	36,9 - 36,9	34,7 - 37,5	35,2 - 37,5	

AZ. PIAZZOLA	2020	2021	2022	2023	
S/W					
PRODUZIONE MEDIA ESTATE/INVERNO					

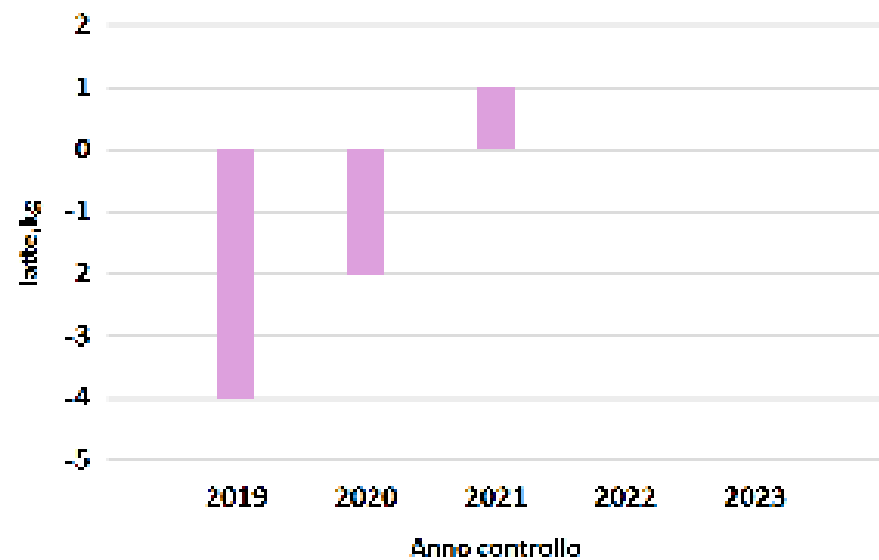
Confronto produzione di latte tra estate e inverno



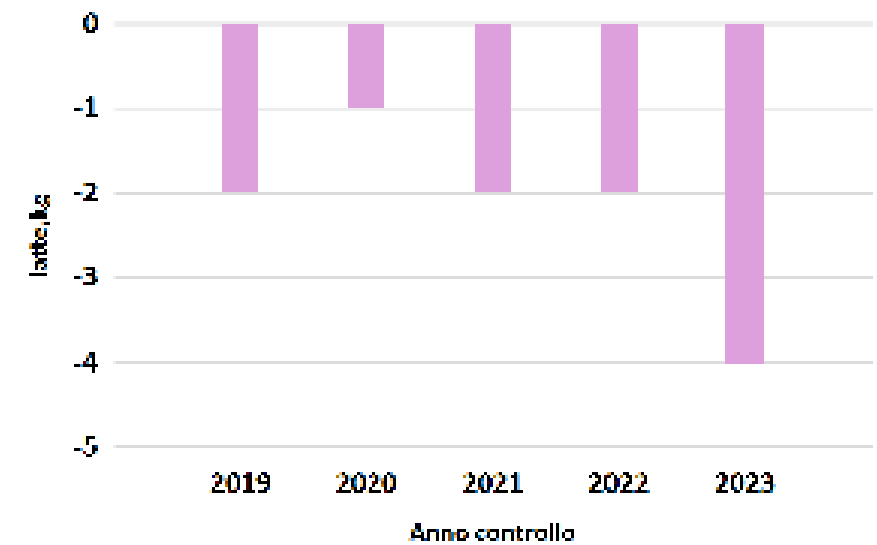
Confronto produzione di latte tra estate e inverno



Differenza di latte tra estate ed inverno



Differenza di latte tra estate ed inverno



- Per raggiungere i migliori risultati è necessario conoscere in tempo reale l'efficacia del sistema di raffrescamento.
- Il criterio più affidabile è il monitoraggio della temperatura corporea nelle bovine.
- L'obiettivo ideale è il mantenimento della normotermia (39.0-39.2 C° in estate)
- Finora si sono utilizzati dei datalogger statici (iButton-Thermocron-USA)

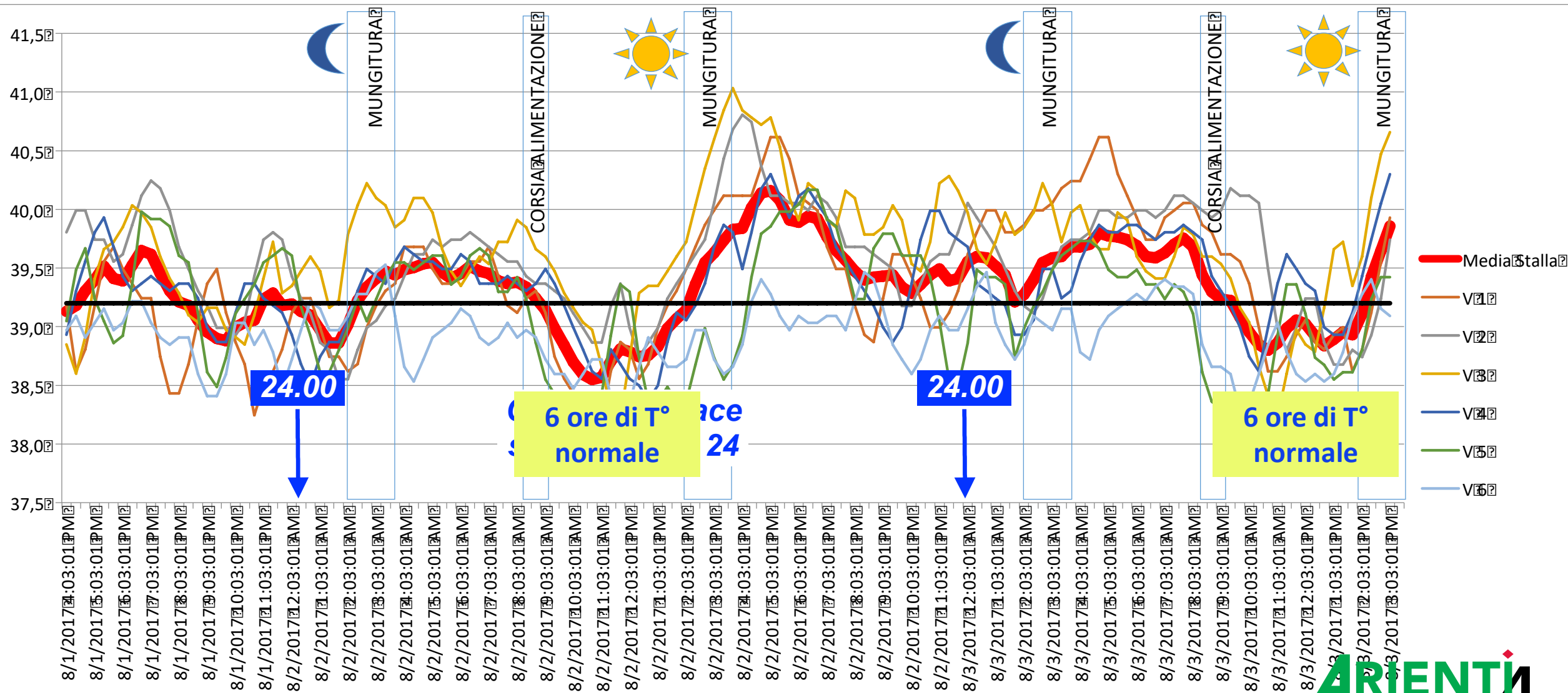


Dal 2017 oltre 2000 monitoraggi effettuati con i dataloggers tradizionali

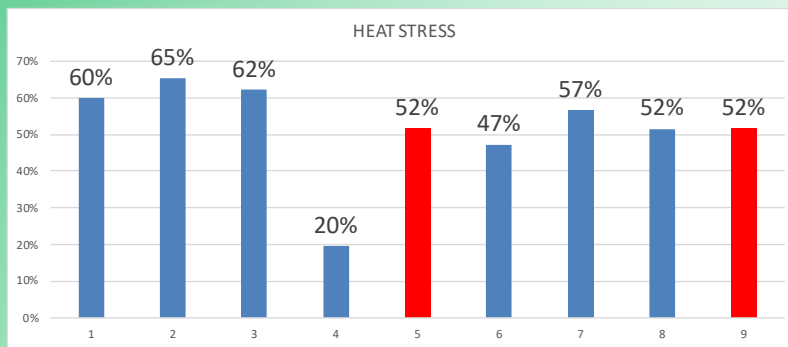
Questa nostra esperienza ci ha permesso di definire un programma di cooling personalizzato per ogni azienda

Il monitoraggio della temperatura delle vacche

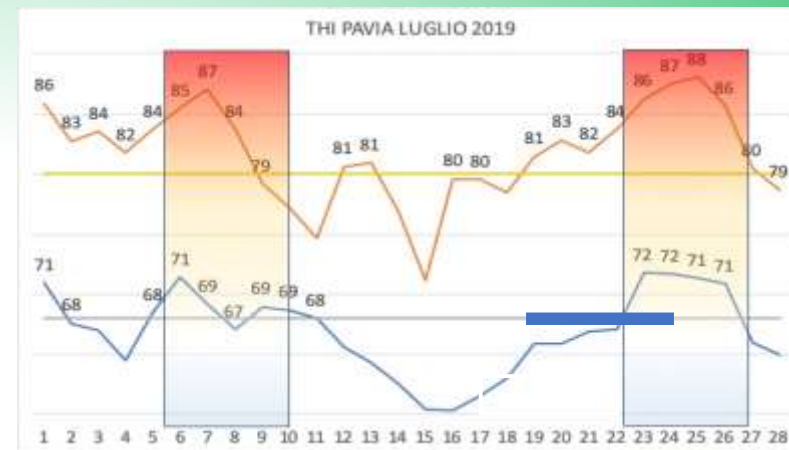
Ci permette di valutare la reale efficacia di una stalla con cooling incompleto



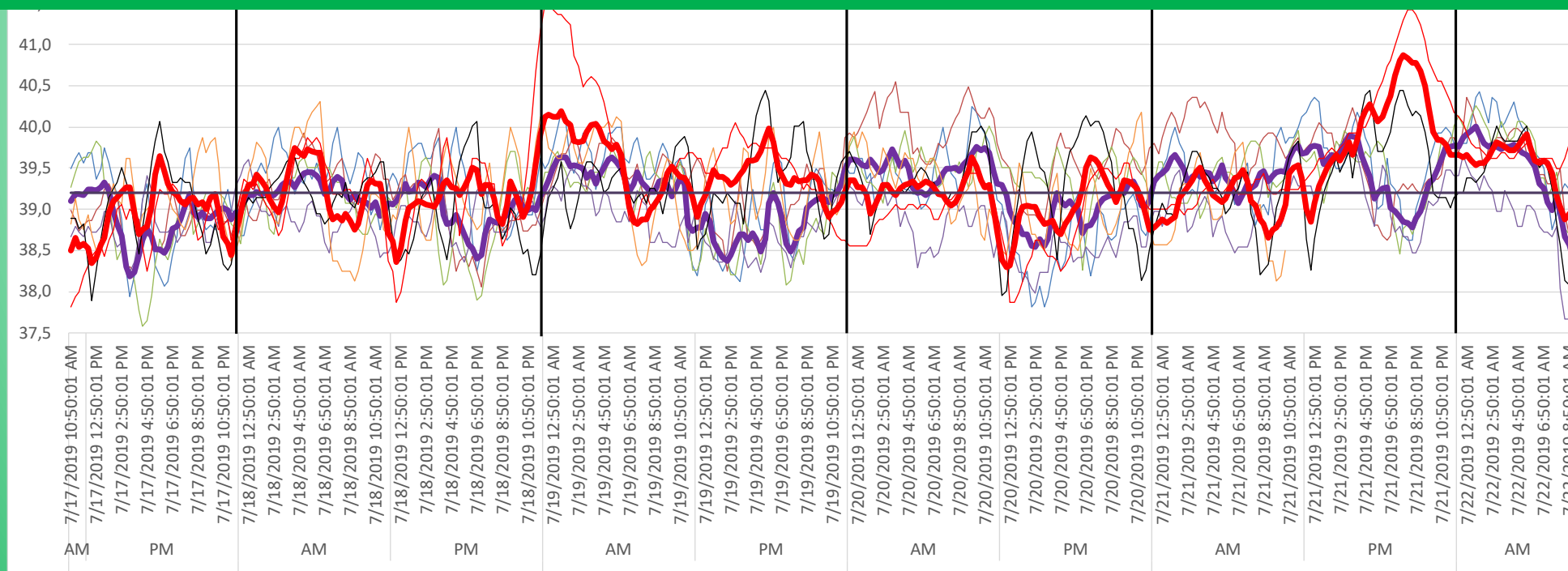
AZ.AGR. ----- 1-3 Agosto 2017



HEAT STRESS	60%	65%	62%	20%	52%	47%	57%	52%	52%
MEDIA TEMPERATURE	39,3	39,6	39,5	38,9	39,3	39,0	39,5	39,4	39,4

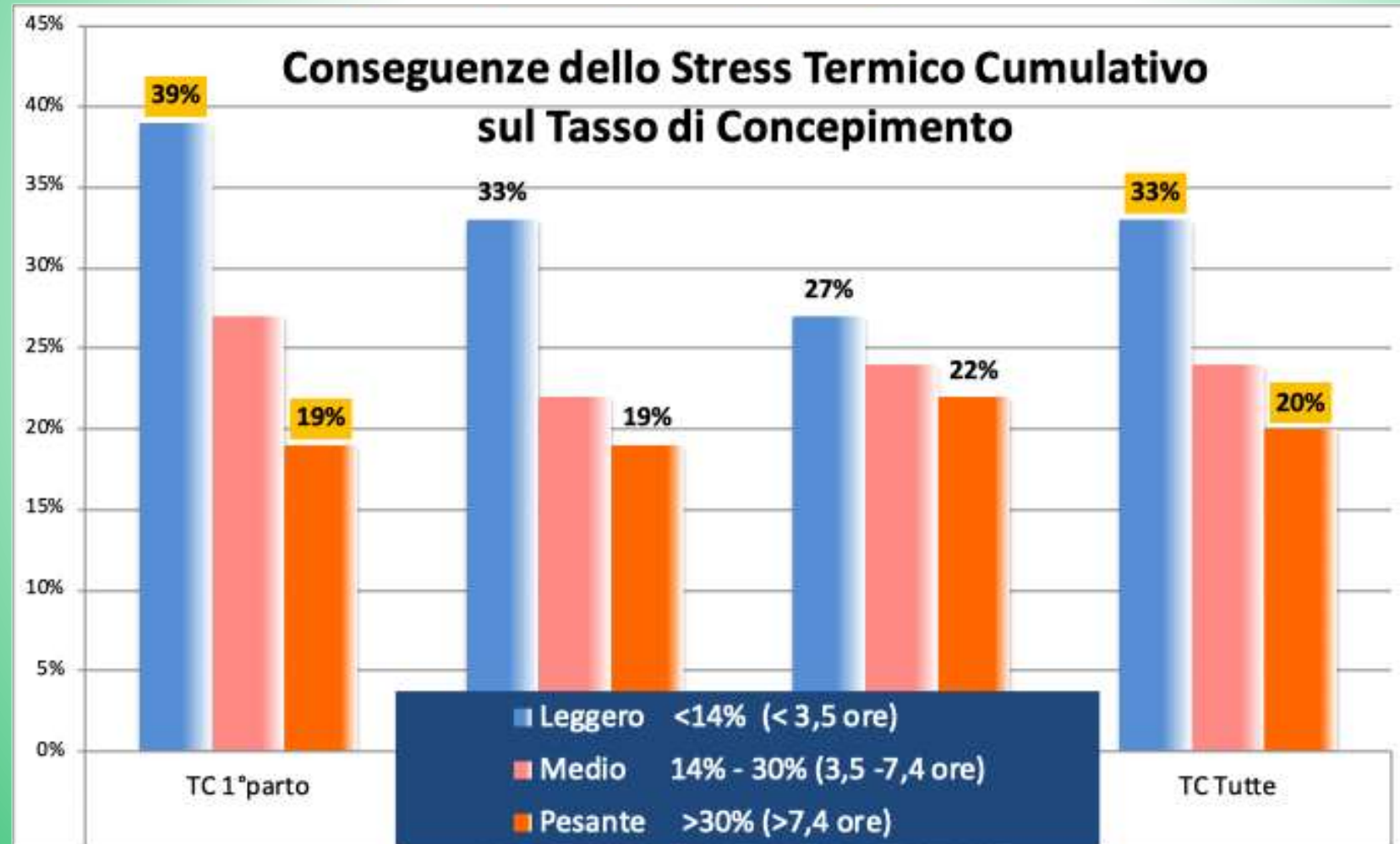


Il controllo della temperature permette di capire se ci sono momenti critici nel programma di raffreddamento impostato in ogni stalla

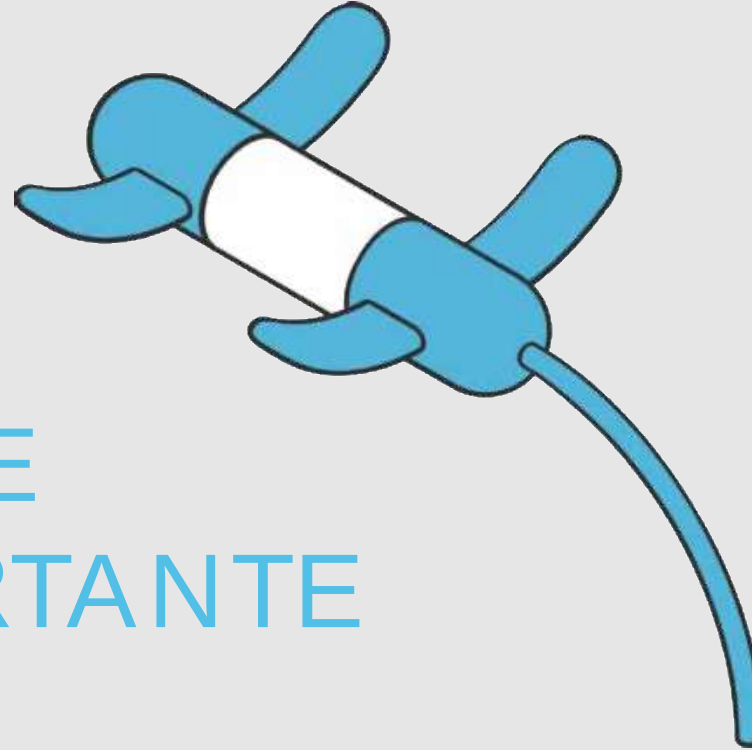


Perchè è fondamentale conoscere con precisione la dinamica delle temperature delle vacche

Stato Termico cumulativo	Tasso di Concepimento e Numero di lattazioni			
	TC 1°parto	TC 2p	TC 3+p	TC Tutte
Leggero <14% (< 3,5 ore)	39%	33%	27%	33%
Medio 14% - 30% (3,5 - 7,4 ore)	27%	22%	24%	24%
Pesante >30% (>7,4 ore)	19%	19%	22%	20%



Nel 2023 abbiamo introdotto una metodologia all'avanguardia, unica nel panorama internazionale

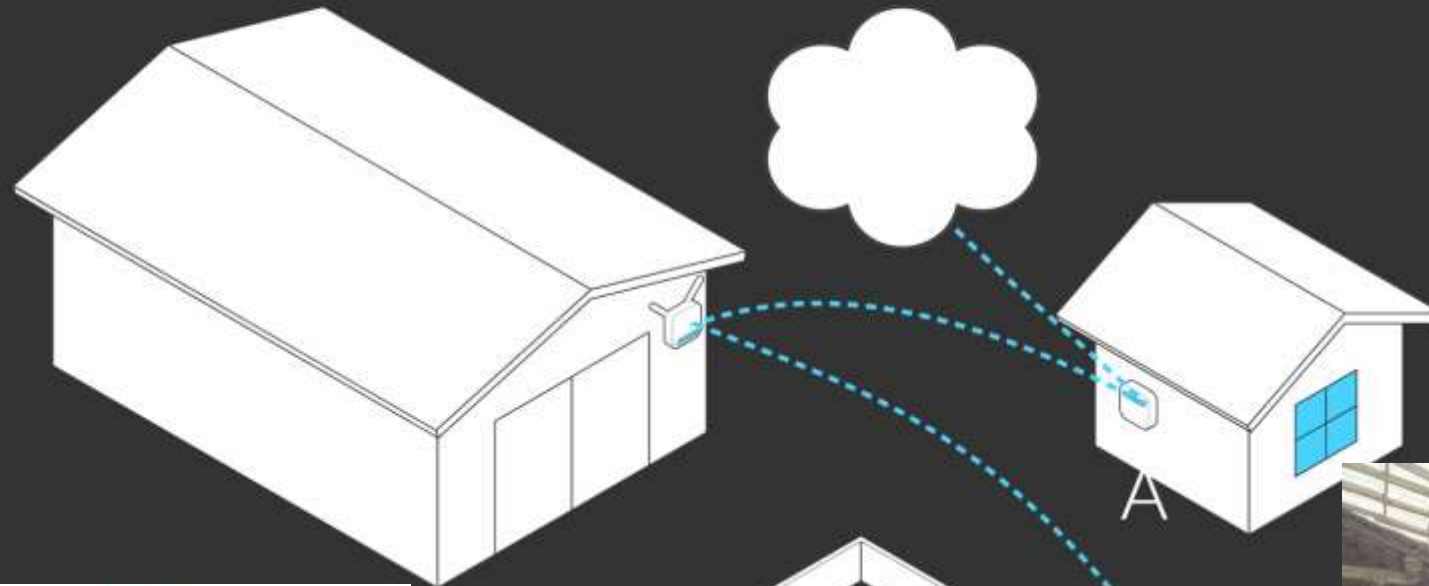


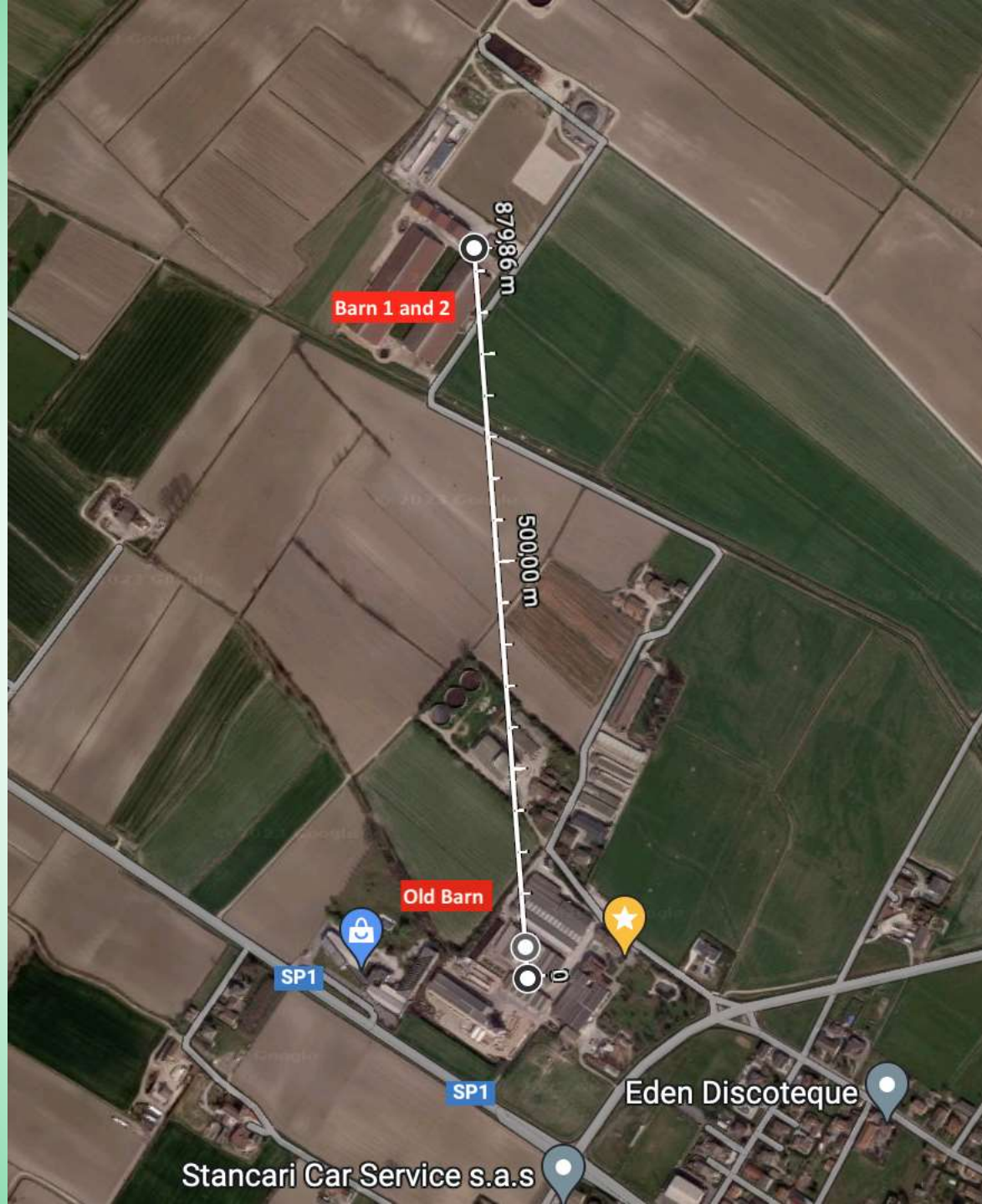
OGNI
SEGNALE
È IMPORTANTE

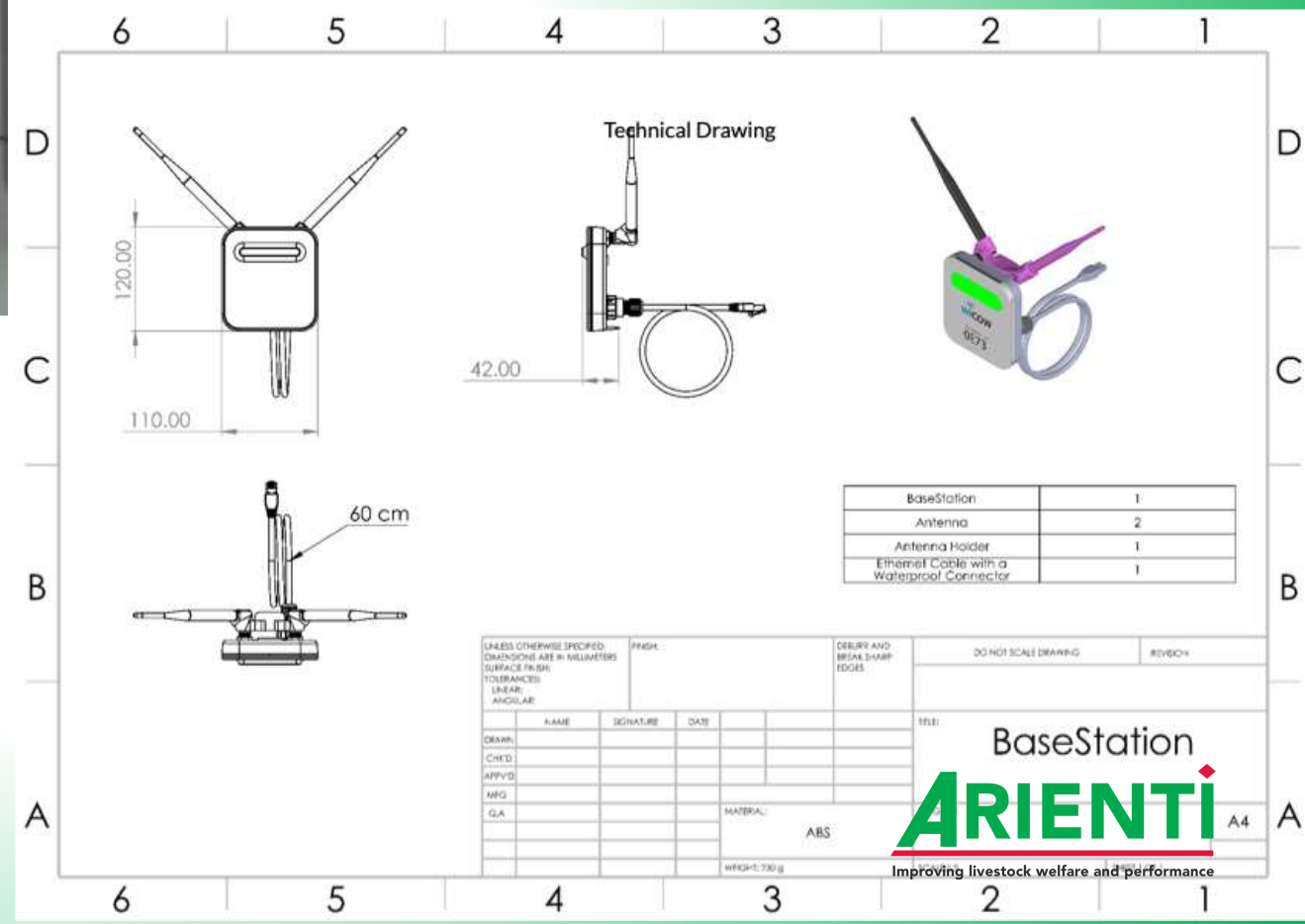


WICOW

è il nuovo sensore che misura la temperatura interna della bovina.
Aumenta l'efficienza, anticipa lo stress da caldo, riduce i tempi.



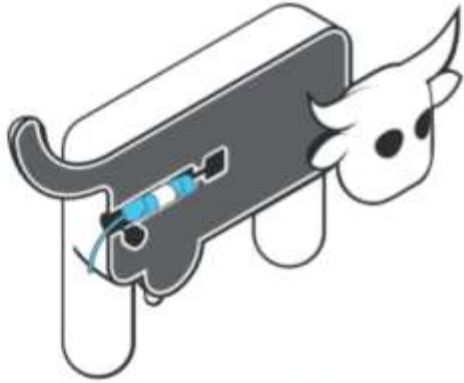




Tsense:

- Durata media della batteria – 4 anni
- Range di lettura della temperatura -40 : 85 C°
- Accuratezza: 0,1 C°
- Frequenza di campionamento dati: 4 minuti





Absolute Maximum Ratings

	MIN	MAX	UNIT
Battery Voltage	2.2	3.6	V
Storage Temperature (max recommended) ¹		30	°C
Operating Temperature	-40	85	°C
Battery Life	5	10	Year

Physical Characteristics

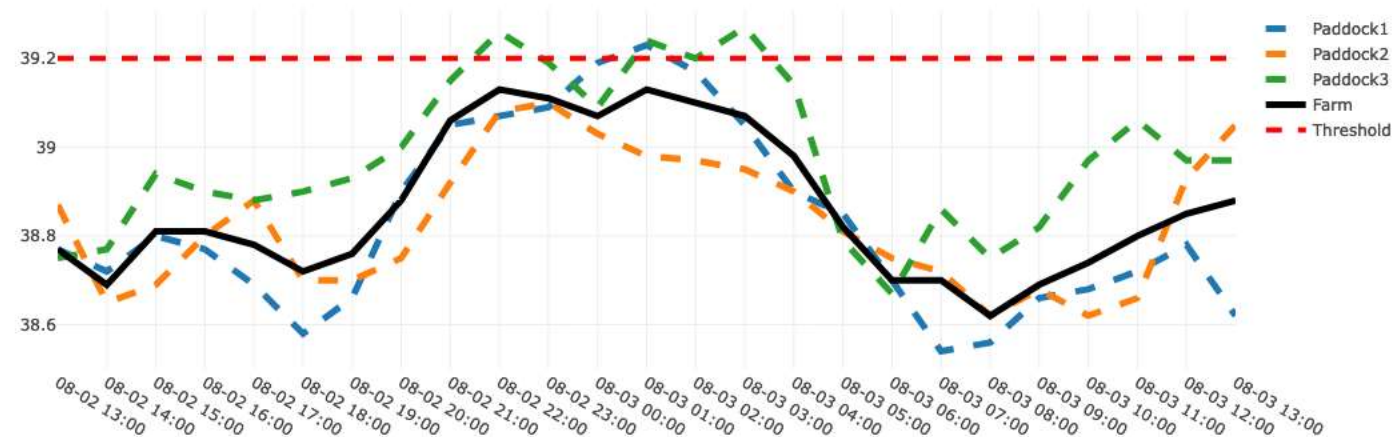
		UNIT
Diameter (max.)	25.2	mm
Height	127.5	mm
Typical weight	65	g
Content	PolyPropylene	
IP Rating	IP67	

Temperature Sensing Characteristics

	MIN	MAX	UNIT
Accuracy			
±0.1°C (maximum)	-20	50	°C
±0.15°C (maximum)	-40	70	°C
±0.2°C (maximum)	-40	100	°C
±0.25°C (maximum)	-55		
±0.3°C (maximum)	-55	150	°C



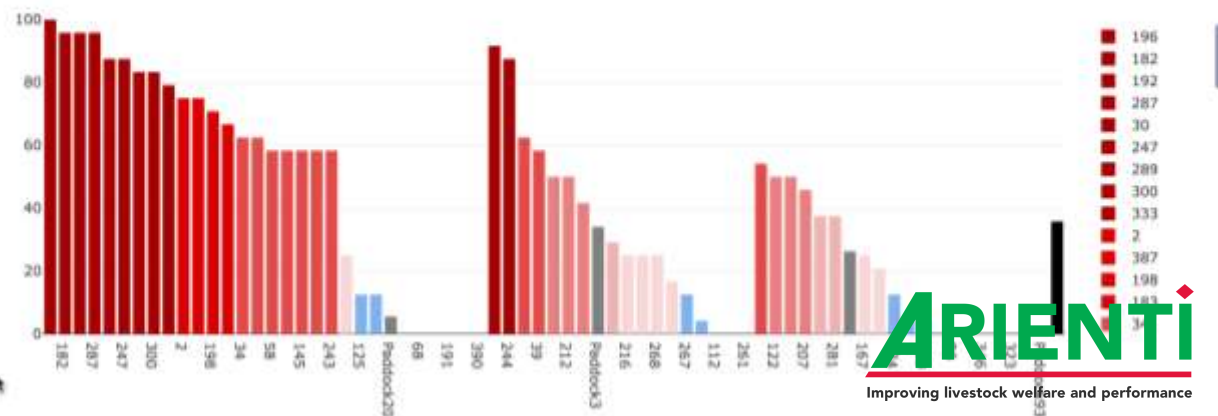
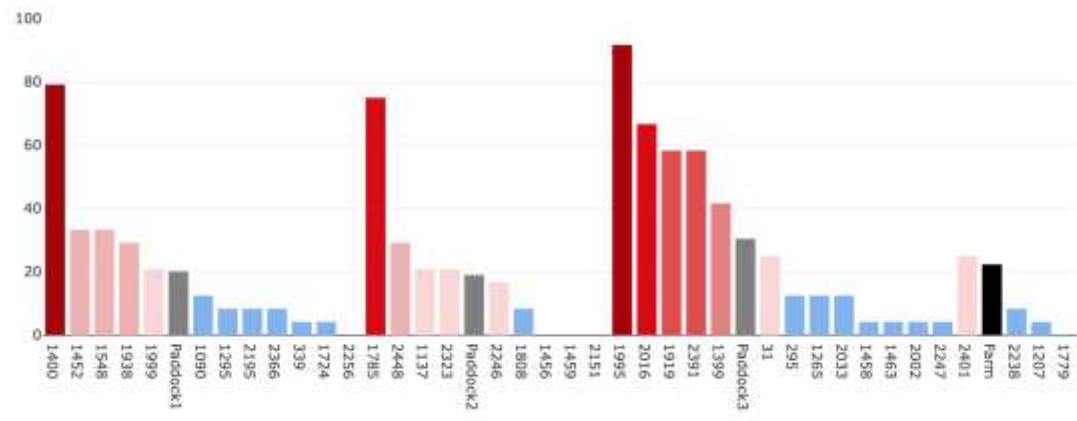
Media delle temperature individuali/Gruppo/ mandria



LineChart HeatStressLevel SelectAll

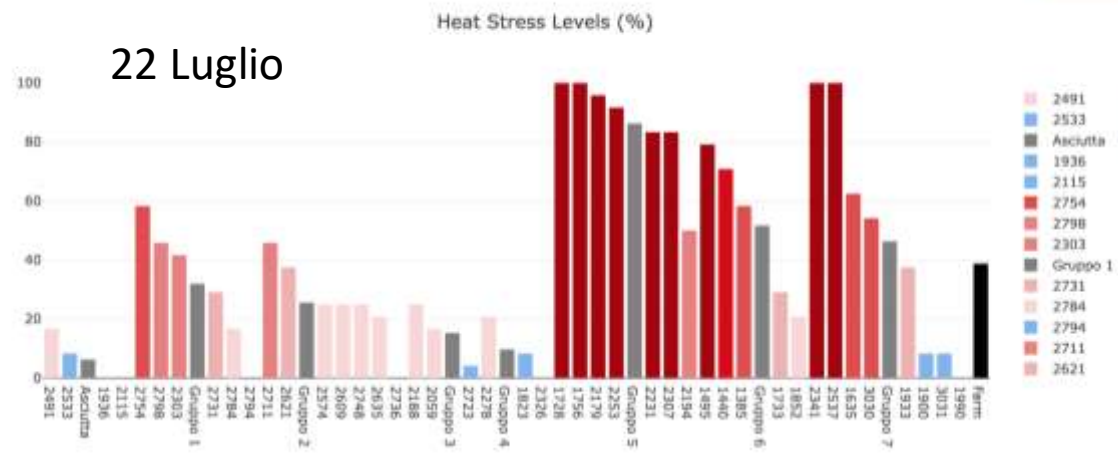
ExportReport

Indice di accumulo di calore individuale/Gruppo/mandria



[ExportReport](#)

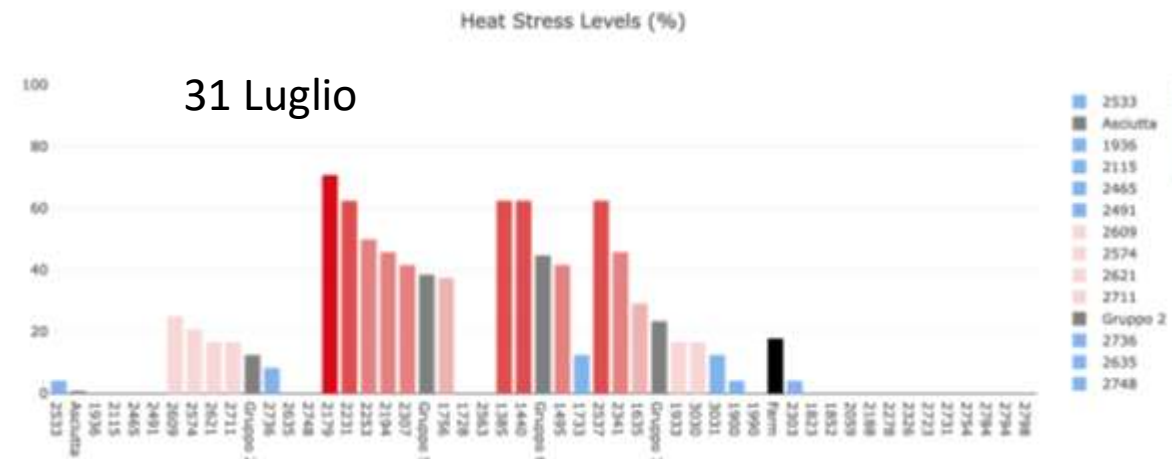
22 Luglio



LineChart HeatStressLevel ClearAll

[Export Report](#)

31 Luglio



Heat Stress Level %

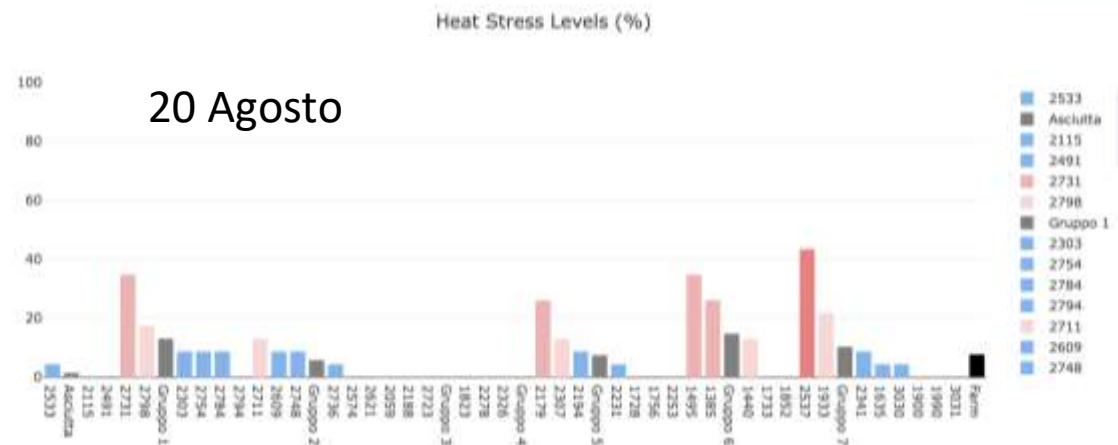
è la quantità relativa di tempo/24 ore con le bovine in ipertermia ($>39,2\text{ }^{\circ}\text{C}$)

Indirettamente è considerato quale indice di accumulo di calore non dissipato (AHLI)

LineChart HeatStressLevel ClearAll

ExportReport

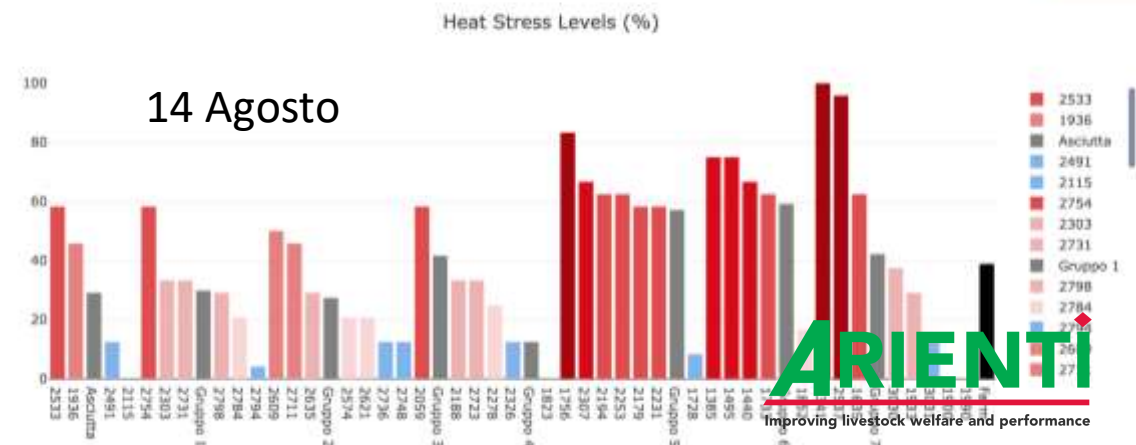
20 Agosto



LineChart HeatStressLevel ClearAll

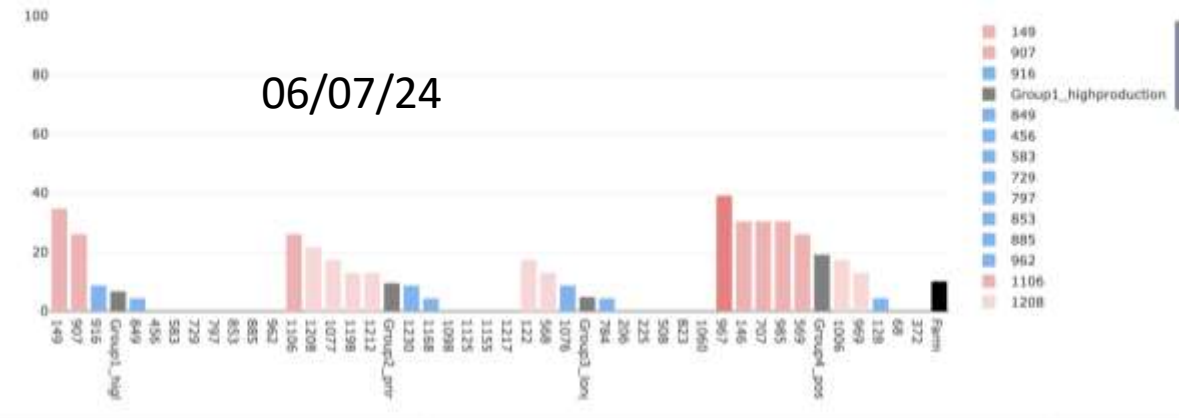
ExportReport

14 Agosto



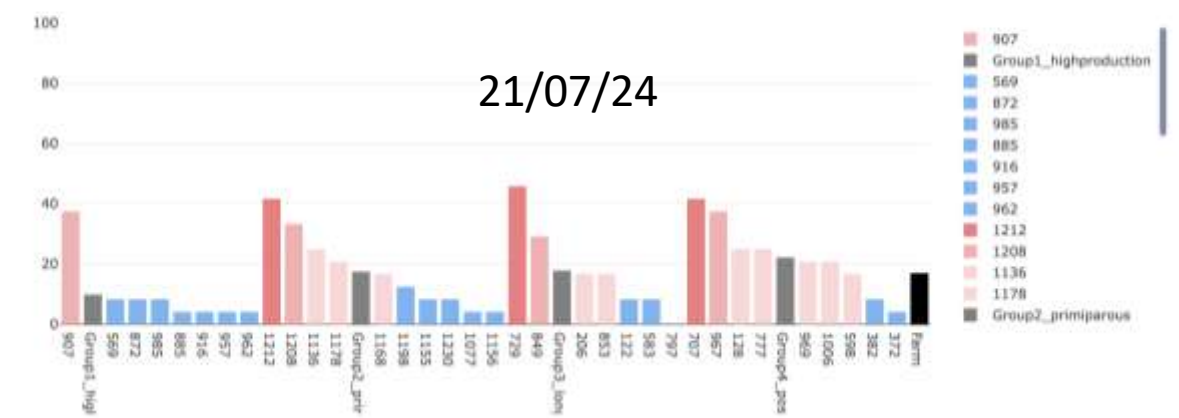
06/07/24

Heat Stress Levels (%)

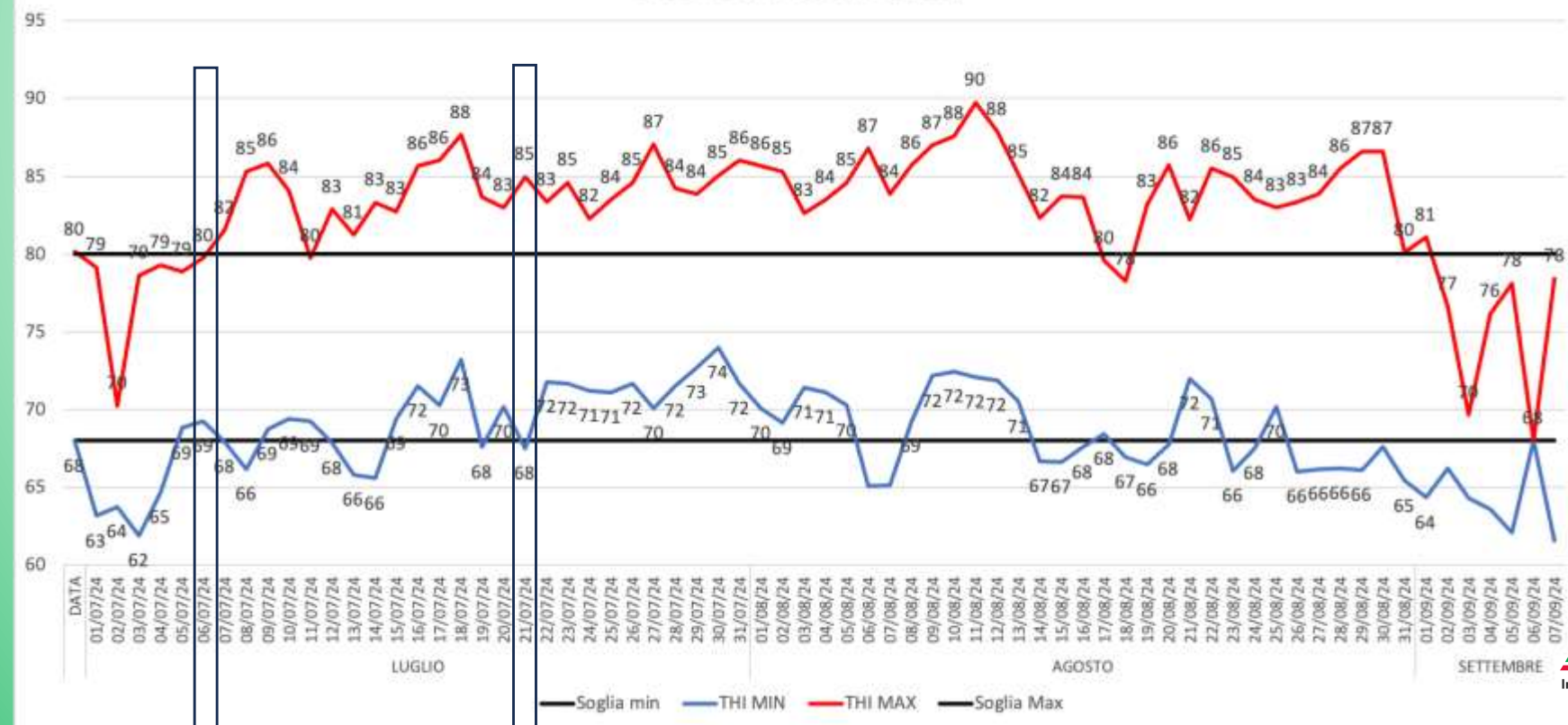


21/07/24

Heat Stress Levels (%)



LUGLIO-AGOSTO-SETTEMBRE 2024



Period	Date	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8	Group 9	Group 10	Group 11	Group 12	Group 13	Group 14	Group 15	Group 16	Group 17	Group 18	Group 19	Group 20	Group 21	Group 22	Group 23	Group 24	Group 25	Group 26	Group 27	Group 28	Group 29	Group 30	Group 31	Group 32	Group 33	Group 34	Group 35	Group 36	Group 37	Group 38	Group 39	Group 40	Group 41	Group 42	Group 43	Group 44	Group 45	Group 46	Group 47	Group 48	Group 49	Group 50	Group 51	Group 52	Group 53	Group 54	Group 55	Group 56	Group 57	Group 58	Group 59	Group 60	Group 61	Group 62	Group 63	Group 64	Group 65	Group 66	Group 67	Group 68	Group 69	Group 70	Group 71	Group 72	Group 73	Group 74	Group 75	Group 76	Group 77	Group 78	Group 79	Group 80	Group 81	Group 82	Group 83	Group 84	Group 85	Group 86	Group 87	Group 88	Group 89	Group 90	Group 91	Group 92	Group 93	Group 94	Group 95	Group 96	Group 97	Group 98	Group 99	Group 100	Group 101	Group 102	Group 103	Group 104	Group 105	Group 106	Group 107	Group 108	Group 109	Group 110	Group 111	Group 112	Group 113	Group 114	Group 115	Group 116	Group 117	Group 118	Group 119	Group 120	Group 121	Group 122	Group 123	Group 124	Group 125	Group 126	Group 127	Group 128	Group 129	Group 130	Group 131	Group 132	Group 133	Group 134	Group 135	Group 136	Group 137	Group 138	Group 139	Group 140	Group 141	Group 142	Group 143	Group 144	Group 145	Group 146	Group 147	Group 148	Group 149	Group 150	Group 151	Group 152	Group 153	Group 154	Group 155	Group 156	Group 157	Group 158	Group 159	Group 160	Group 161	Group 162	Group 163	Group 164	Group 165	Group 166	Group 167	Group 168	Group 169	Group 170	Group 171	Group 172	Group 173	Group 174	Group 175	Group 176	Group 177	Group 178	Group 179	Group 180	Group 181	Group 182	Group 183	Group 184	Group 185	Group 186	Group 187	Group 188	Group 189	Group 190	Group 191	Group 192	Group 193	Group 194	Group 195	Group 196	Group 197	Group 198	Group 199	Group 200	Group 201	Group 202	Group 203	Group 204	Group 205	Group 206	Group 207	Group 208	Group 209	Group 210	Group 211	Group 212	Group 213	Group 214	Group 215	Group 216	Group 217	Group 218	Group 219	Group 220	Group 221	Group 222	Group 223	Group 224	Group 225	Group 226	Group 227	Group 228	Group 229	Group 230	Group 231	Group 232	Group 233	Group 234	Group 235	Group 236	Group 237	Group 238	Group 239	Group 240	Group 241	Group 242	Group 243	Group 244	Group 245	Group 246	Group 247	Group 248	Group 249	Group 250	Group 251	Group 252	Group 253	Group 254	Group 255	Group 256	Group 257	Group 258	Group 259	Group 260	Group 261	Group 262	Group 263	Group 264	Group 265	Group 266	Group 267	Group 268	Group 269	Group 270	Group 271	Group 272	Group 273	Group 274	Group 275	Group 276	Group 277	Group 278	Group 279	Group 280	Group 281	Group 282	Group 283	Group 284	Group 285	Group 286	Group 287	Group 288	Group 289	Group 290	Group 291	Group 292	Group 293	Group 294	Group 295	Group 296	Group 297	Group 298	Group 299	Group 300	Group 301	Group 302	Group 303	Group 304	Group 305	Group 306	Group 307	Group 308	Group 309	Group 310	Group 311	Group 312	Group 313	Group 314	Group 315	Group 316	Group 317	Group 318	Group 319	Group 320	Group 321	Group 322	Group 323	Group 324	Group 325	Group 326	Group 327	Group 328	Group 329	Group 330	Group 331	Group 332	Group 333	Group 334	Group 335	Group 336	Group 337	Group 338	Group 339	Group 340	Group 341	Group 342	Group 343	Group 344	Group 345	Group 346	Group 347	Group 348	Group 349	Group 350	Group 351	Group 352	Group 353	Group 354	Group 355	Group 356	Group 357	Group 358	Group 359	Group 360	Group 361	Group 362	Group 363	Group 364	Group 365	Group 366	Group 367	Group 368	Group 369	Group 370	Group 371	Group 372	Group 373	Group 374	Group 375	Group 376	Group 377	Group 378	Group 379	Group 380	Group 381	Group 382	Group 383	Group 384	Group 385	Group 386	Group 387	Group 388	Group 389	Group 390	Group 391	Group 392	Group 393	Group 394	Group 395	Group 396	Group 397	Group 398	Group 399	Group 400	Group 401	Group 402	Group 403	Group 404	Group 405	Group 406	Group 407	Group 408	Group 409	Group 410	Group 411	Group 412	Group 413	Group 414	Group 415	Group 416	Group 417	Group 418	Group 419	Group 420	Group 421	Group 422	Group 423	Group 424	Group 425	Group 426	Group 427	Group 428	Group 429	Group 430	Group 431	Group 432	Group 433	Group 434	Group 435	Group 436	Group 437	Group 438	Group 439	Group 440	Group 441	Group 442	Group 443	Group 444	Group 445	Group 446	Group 447	Group 448	Group 449	Group 450	Group 451	Group 452	Group 453	Group 454	Group 455	Group 456	Group 457	Group 458	Group 459	Group 460	Group 461	Group 462	Group 463	Group 464	Group 465	Group 466	Group 467	Group 468	Group 469	Group 470	Group 471	Group 472	Group 473	Group 474	Group 475	Group 476	Group 477	Group 478	Group 479	Group 480	Group 481	Group 482	Group 483	Group 484	Group 485	Group 486	Group 487	Group 488	Group 489	Group 490	Group 491	Group 492	Group 493	Group 494	Group 495	Group 496	Group 497	Group 498	Group 499	Group 500	Group 501	Group 502	Group 503	Group 504	Group 505	Group 506	Group 507	Group 508	Group 509	Group 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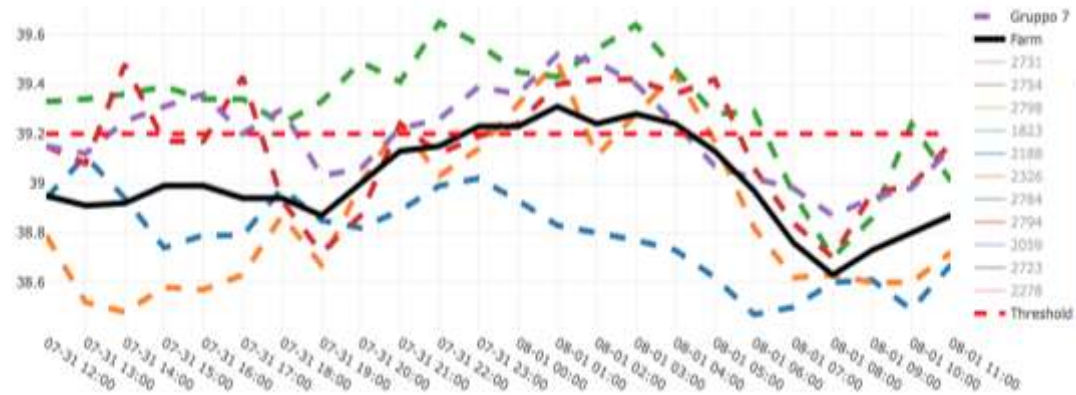
ARIENT

Improving livestock welfare and performance

LineChart HeatStressLevel ClearAll

ExportReport

31 Luglio



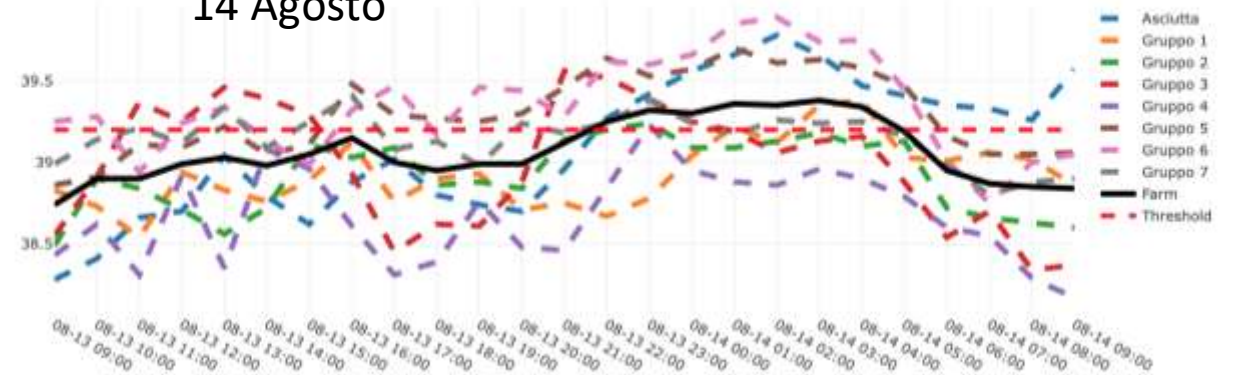
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HeatStressLevel

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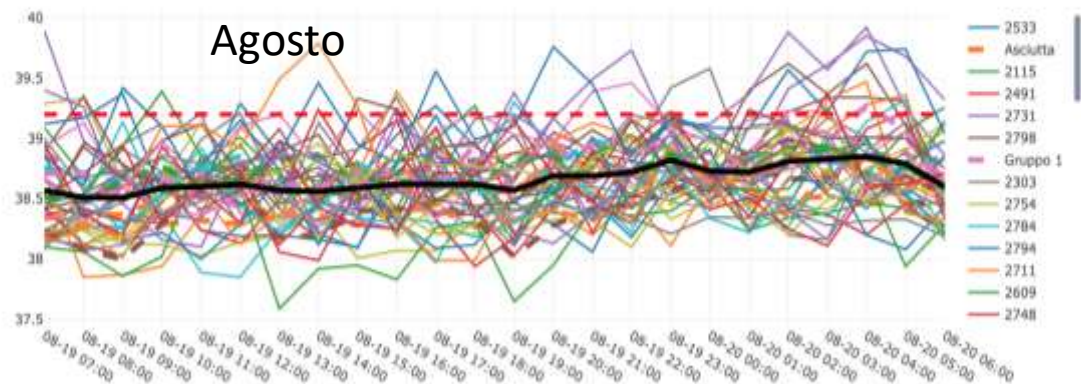
14 Agosto



LineChart HeatStressLevel ClearAll

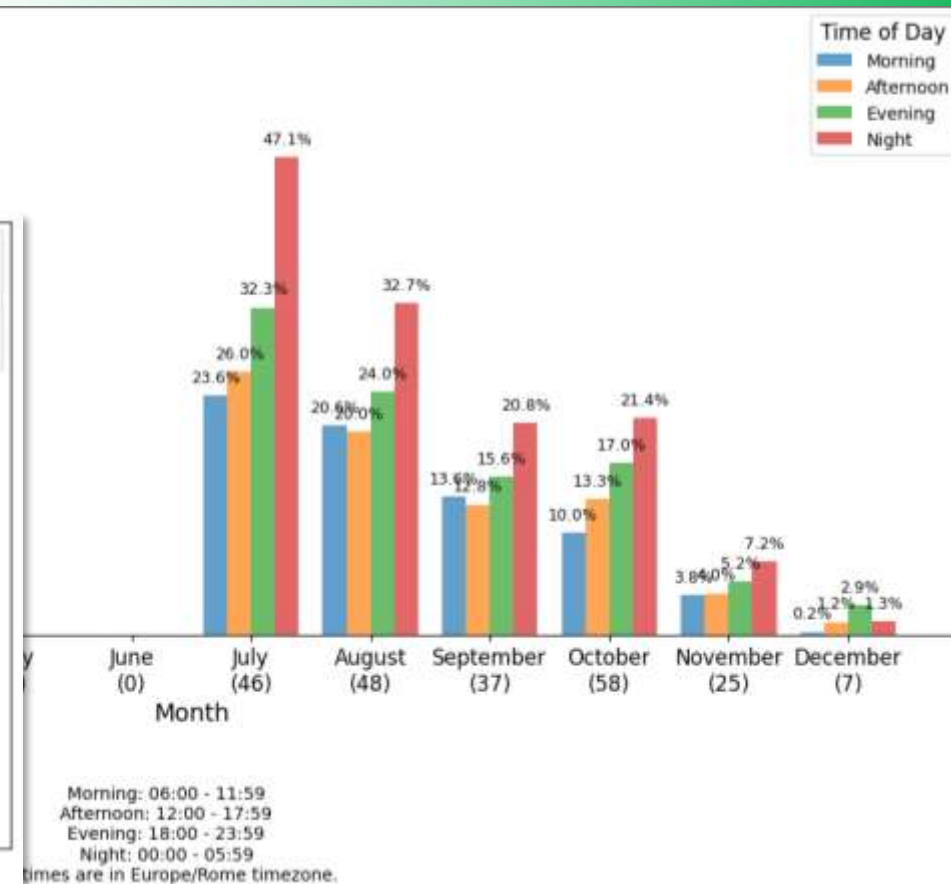
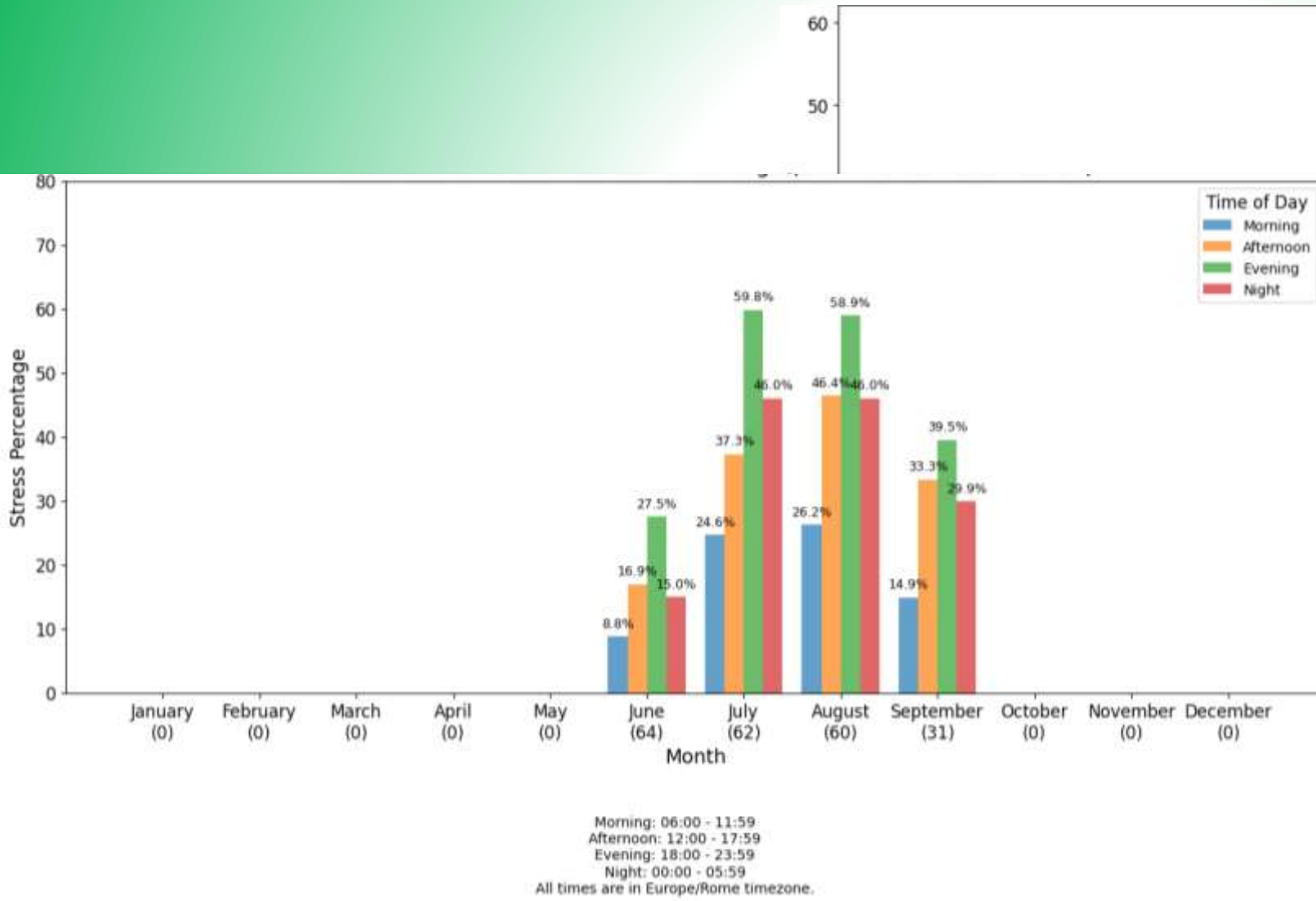
ExportReport

20 Agosto



Ogni azienda ha una specifica problematica nella gestione dello stress da caldo

Distribuzione dello stress termico nelle 24 ore nei diversi gruppi di bovine



Collaborazioni con:

ANAFIBJ

UNI SS

UNI MI

UNI TUSCIA

