

Innovativ monitorering af luftvejssundhed



SoundTalks®
lytter døgnet rundt

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Boehringer Ingelheim Animal Health Swine, Nordics



Hvad bruger vi SoundTalks til?

- ✓ At opdage hoste tidligere
- ✓ At dokumentere at der ikke er hoste
- ✓ At udtagte prøver til diagnostik på det mest optimale tidspunkt.
 - ✓ **De rigtige dyr i de rigtige sektioner**
- ✓ Målrette behandling
 - ✓ **Behandle når det er nødvendigt**
 - ✓ **Undlade behandling når grisene er sunde**
 - ✓ **Behandle mod de relevante sygdomme**
- ✓ Intervenere på grundlag af fakta



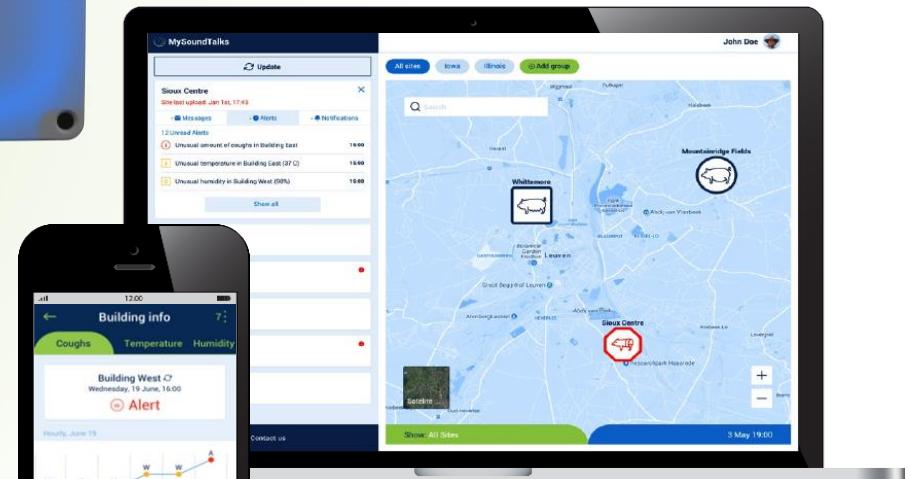
SoundTalks®
lytter døgnet
rundt

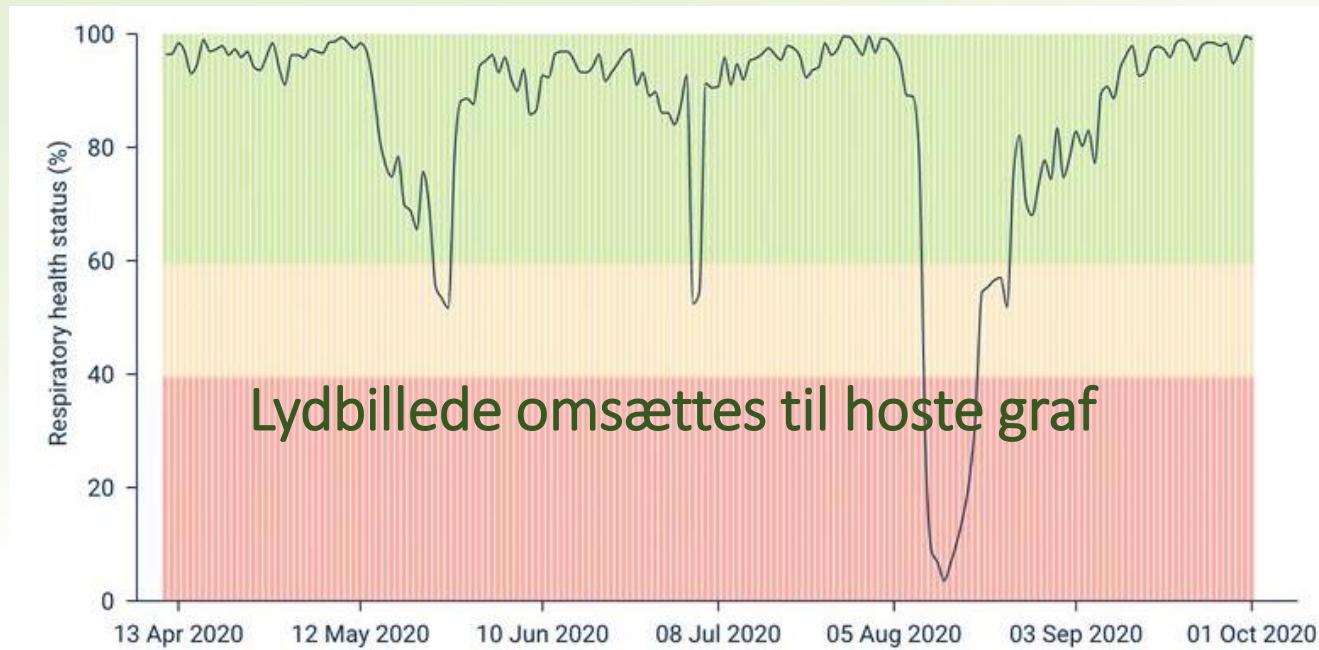


- Systemet består af monitor, gateway og software
- Plug and play system
- Objektiv og kontinuerlig monitorering
- Monitorerne behandler lydinformationen og leverer det til "skyen" via en gateway
- Luftvejs-sundhedsgrafen kan aflæses på PC eller mobil



Hvad er SoundTalks?





Farvekodet skala 100 - 0
- 100 – 60 grøn = Sunde lunger
- 60 – 40 gul = Begyndende hoste
- 40 – 0 rød = Forøget hoste

Led lys på monitoren i stalden viser status i hostegrafen og den tilhørende App





Så let er det at komme igang



SoundTalks® monteres
let i stalden



SoundTalks® begynder
straks at optage lyde



SoundTalks® sender
data trådløst via
gateway til "skyen"



SoundTalks® præsenterer
ReHS grafer der viser hvor
sunde grisene er



Diagnostik & behandling
kan foretages når grisene
faktisk er syge

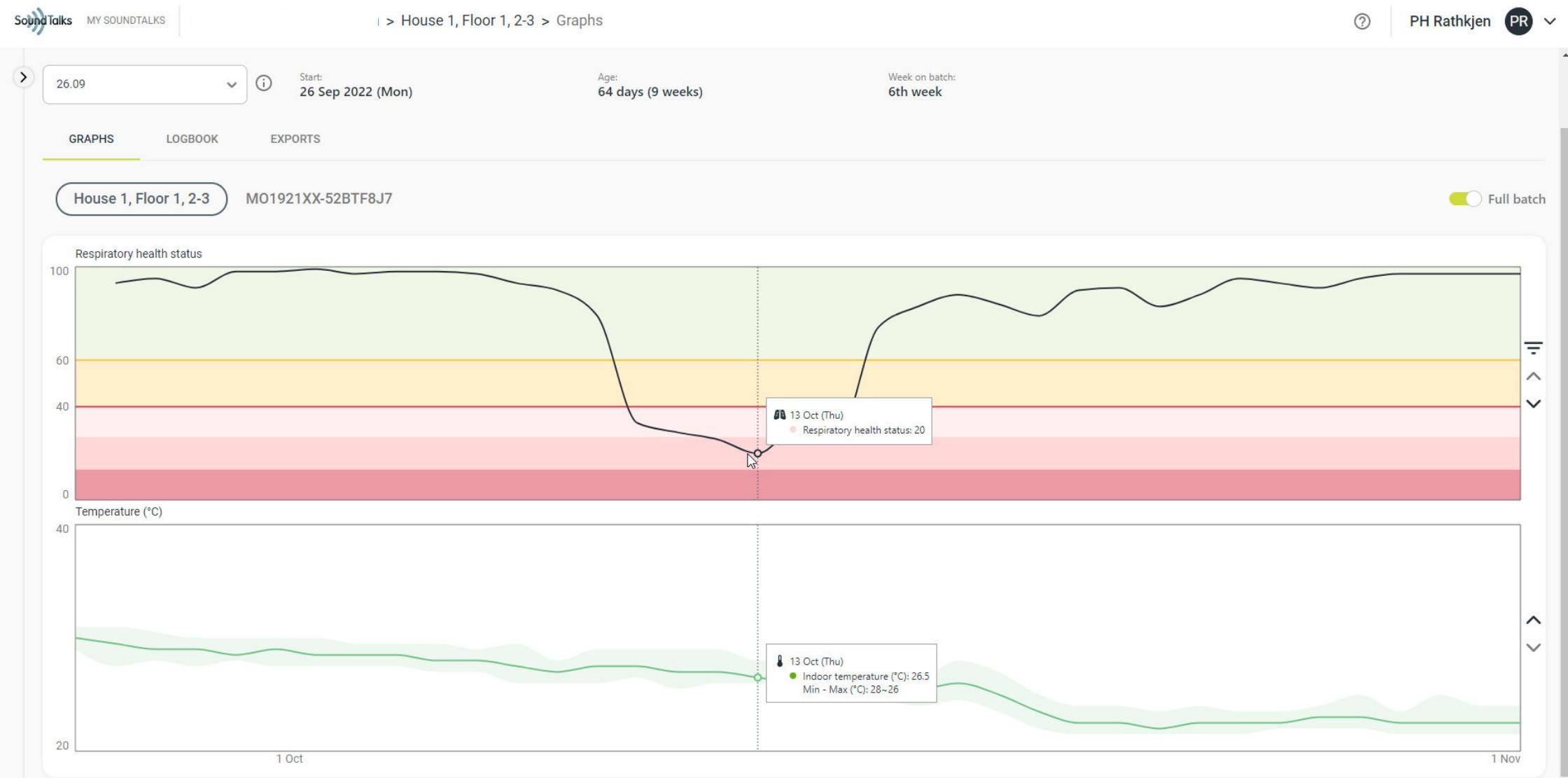
Adgang til Dashboards fra PC'en

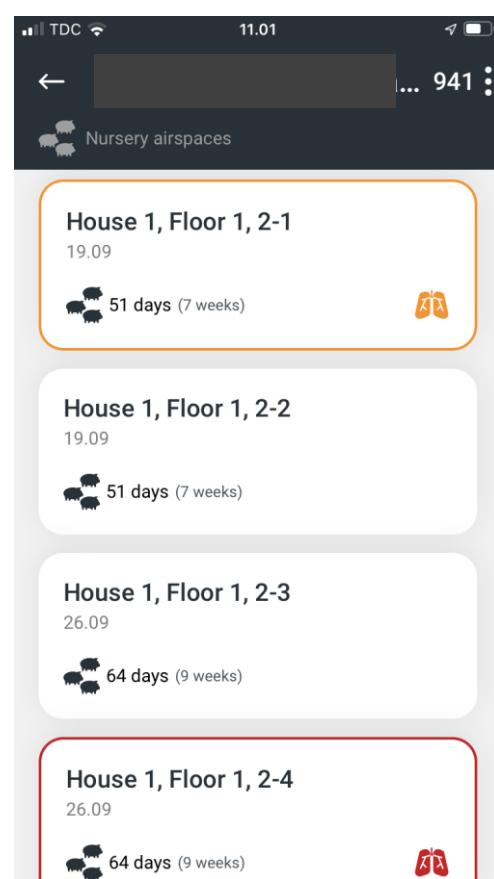
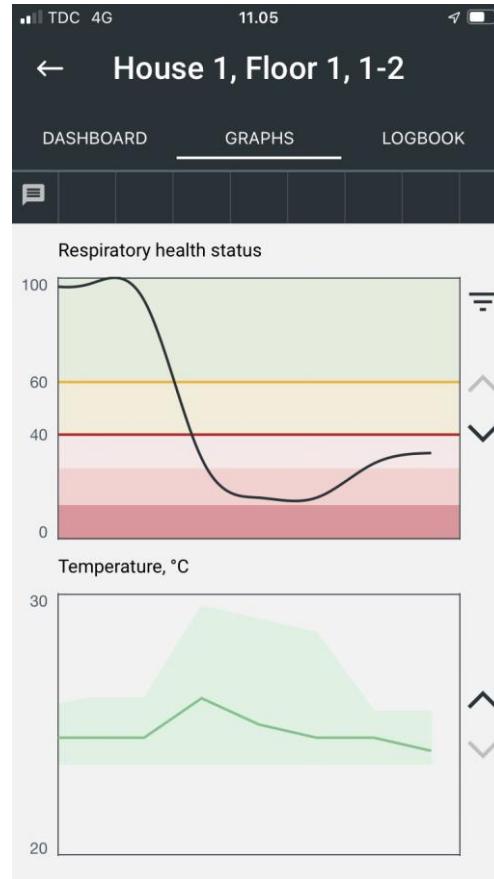
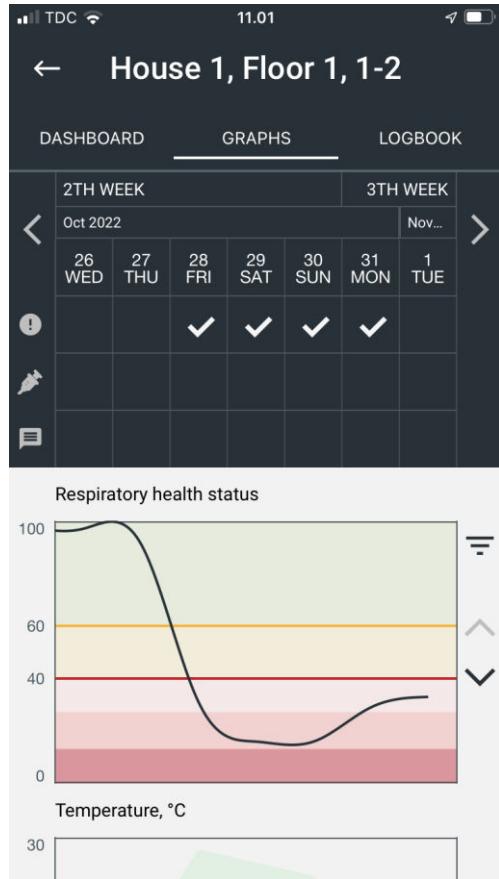
The screenshot shows the SoundTalks dashboard interface. At the top, there's a header with 'SoundTalks' and 'MY SOUNDTALKS' on the left, and a user profile 'PH Rathjen PR' on the right. Below the header, the title 'Nursery airspaces' is displayed, with an 'EDIT' button next to it. The main content area is divided into several sections:

- Environment information:** A card showing the date (Tuesday, 01 Nov, 11:12), temperature (15°C), wind speed (↑ 13 km/h), and humidity (87%). It also includes an 'AccuWeather' logo.
- Airspace:** A section titled 'Airspace' with filters for 'Sort: Name' and 'Episodes: All'. It lists 'House 1' airspaces categorized by floor and number:
 - House 1, Floor 1, 1-1 (43 days, 6 weeks)
 - House 1, Floor 1, 1-2 (43 days, 6 weeks)
 - House 1, Floor 1, 1-3 (36 days, 5 weeks)
 - House 1, Floor 1, 1-4 (36 days, 5 weeks)
 - House 1, Floor 1, 1-5 (START BATCH, No active batch)
 - House 1, Floor 1, 2-1 (51 days, 7 weeks)
 - House 1, Floor 1, 2-2 (51 days, 7 weeks)
 - House 1, Floor 1, 2-3 (64 days, 9 weeks)
 - House 1, Floor 1, 2-4 (64 days, 9 weeks)
 - House 1, Floor 1, 2-5 (57 days, 8 weeks)
 - House 1, Floor 1, 2-6 (57 days, 8 weeks)
 - House 1, Floor 1, 2-7 (50 days, 7 weeks)
 - House 1, Floor 1, 2-8 (50 days, 7 weeks)

At the bottom left, there's a URL: <https://www.soundtalksweb.com/app/sites/54/airspaces/155>.

Overblik over ReHS og temperatur





Afgang til Dashboards fra mobilen

**Soundtalks er bedre
til at lytte**




vaccines



Article

Efficacy of a Modified Live Porcine Reproductive and Respiratory Syndrome Virus 1 (PRRSV-1) Vaccine against Experimental Infection with PRRSV AUT15-33 in Weaned Piglets

Sophie Duerlinger ^{1,*}, Christian Knecht ¹, Spencer Sawyer ¹, Gyula Balka ² , Marianne Zaruba ³, Till Rümenapf ³, Christian Kraft ⁴, Poul Henning Rathkjen ⁵  and Andrea Ladinig ¹


veterinary sciences



Article

In Situ Hybridization of PRRSV-1 Combined with Digital Image Analysis in Lung Tissues of Pigs Challenged with PRRSV-1

Lilla Dénes ^{1,†} , Dávid G. Horváth ^{1,†}, Oliver Duran ², Poul H. Rathkjen ², Christian Kraft ², Balazs Acs ^{3,4} , Attila M. Szász ⁵, Till Rümenapf ⁶, Marton Papp ⁷ , Andrea Ladinig ⁸ and Gyula Balka ^{1,*} 



Group	Room	No. of animals	Treatment (D0)	Challenge (D28) dose
1 (vacc high)	A	16	Vaccination	10^5 TCID ₅₀ /dose
2 (vacc low)	A	16	Vaccination	10^3 TCID ₅₀ /dose
3 (non vacc high)	B	16	Sham treatment	10^5 TCID ₅₀ /dose
4 (non vacc low)	B	16	Sham treatment	10^3 TCID ₅₀ /dose
5 (vacc ctrl)	C	10	Vaccination	Sham inoculation

LUNG LESIONS AND VIRAL LOAD IN LUNG TISSUE IN VACCINATED AND NON-VACCINATED PIGLETS AFTER EXPERIMENTAL INFECTION WITH PRRSV AUT15-33 (“ACRO” PRRSV)

vetmeduni vienna 

Dürlinger S.¹, Balka G.², Rathkjen PH.³, Kraft C.⁴, Morgenstern R.⁵, Knecht C.¹, Zaruba M.⁶, Rümenapf T.⁶, Ladinig A.¹

Soundtalks monitoring

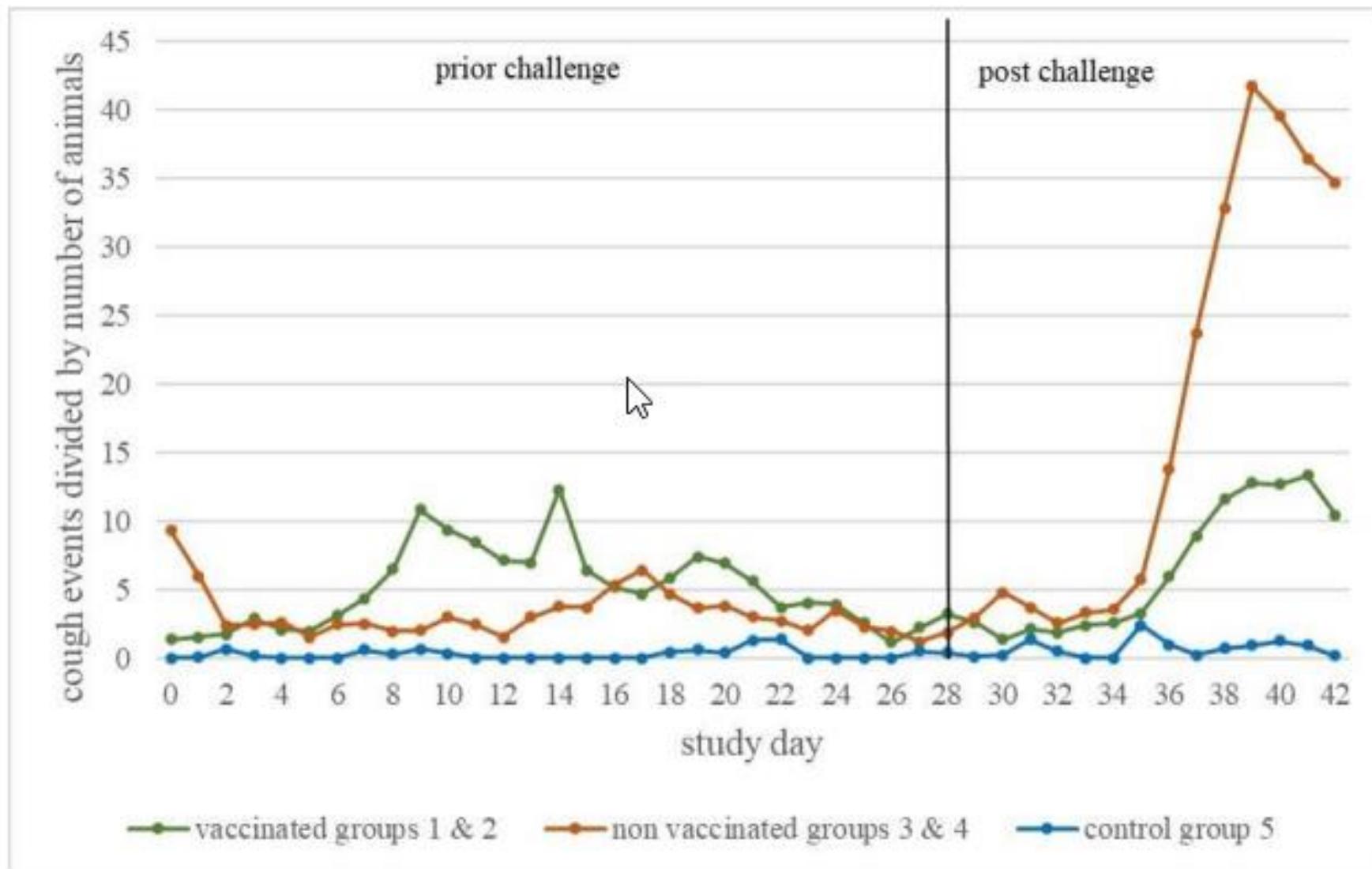


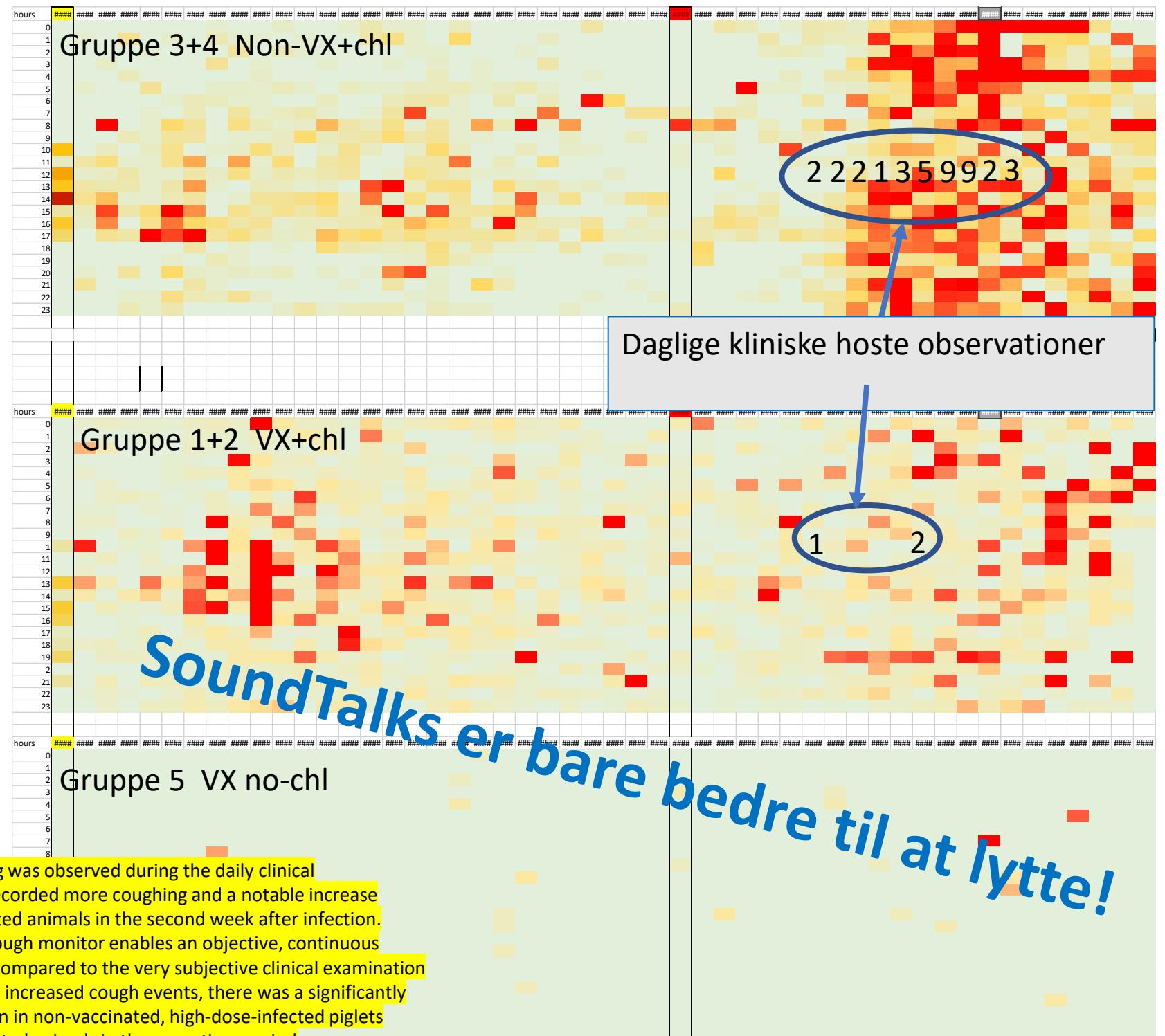
Figure 3. Cough monitor results. Cough events divided by the number of animals in each room (vaccinated, infected (groups 1 and 2), non-vaccinated, infected (groups 3 and 4), and vaccinated control (group 5) animals) per study day from study day 0 to study day 42.

A	B	C	D	E	F	G	H	I	J	K	L
70	IS-06/2018 Group number (csoport): 4 Animal ID (állat azonosító): 51										
Date (dátum)	Day (nap)	Study day (Vizsgálat napja)	Rectal Temp. (°C) (Rektális hőmérséklet °C)	Behaviour (viselkedés)	Appetite (érvágó)	Dyspnoea (legzési zavarok)	Cough (kohogás)	Nasal Discharge (orrlyukás)	Eye Discharge (szem valadékozás)	Weight (kg) (testtömeg)	Comments (egyéb)
73	04-04-2018	D0								6.3	
74	10-04-2018	Mon	D26	39.7	0	0	0	0	0	-	
75	01-05-2018	Tue	D27	40.0	0	0	0	0	0	-	
76	02-05-2018	Wed	D28	39.1	0	0	0	0	0	19.0	-
77	03-05-2018	Thu	D29	40.3	0	0	0	0	0	-	
78	04-05-2018	Fri	D30	39.8	0	0	0	0	0	-	
79	05-05-2018	Sat	D31	40.7	0	0	0	0	0	-	
80	06-05-2018	Sun	D32	41.3	0	0	0	0	0	-	
81	07-05-2018	Mon	D33	41.0	0	0	0	0	0	-	
82	08-05-2018	Tue	D34	41.2	1	0	0	0	0	-	
83	09-05-2018	Wed	D35	39.7	0	0	0	0	0	20.7	-
84	10-05-2018	Thu	D36	40.8	0	0	0	0	0	-	
85	11-05-2018	Fri	D37	40.4	0	0	0	0	0	-	
86	12-05-2018	Sat	D38	40.6	0	0	0	0	0	-	
87	13-05-2018	Sun	D39	40.2	0	0	0	0	0	-	
88	14-05-2018	Mon	D40	39.7	0	0	0	0	0	-	
89	15-05-2018	Tue	D41	40.6	0	0	1	0	0	22.6	-
90	16-05-2018	Wed	D42	40.9	0	0	0	1	0	-	
91	IS-06/2018 Group number (csoport): 4 Animal ID (állat azonosító): 52										
Date (dátum)	Day (nap)	Study day (Vizsgálat napja)	Rectal Temp. (°C) (Rektális hőmérséklet °C)	Behaviour (viselkedés)	Appetite (érvágó)	Dyspnoea (legzési zavarok)	Cough (kohogás)	Nasal Discharge (orrlyukás)	Eye Discharge (szem valadékozás)	Weight (kg) (testtömeg)	Comments (egyéb)
93	04-04-2018	D0								6.0	
94	10-04-2018	Mon	D26	40.2	0	0	0	0	0	-	
95	01-05-2018	Tue	D27	40.3	0	0	0	0	0	-	
96	02-05-2018	Wed	D28	40.0	0	0	0	0	0	17.9	-
97	03-05-2018	Thu	D29	41.7	0	0	0	0	0	-	
98	04-05-2018	Fri	D30	41.1	0	0	0	0	0	-	
99	05-05-2018	Sat	D31	41.0	0	0	0	0	0	-	
100	06-05-2018	Sun	D32	41.3	0	0	0	0	0	-	
101	07-05-2018	Mon	D33	40.9	0	0	0	0	0	-	
102	08-05-2018	Tue	D34	41.4	1	0	0	0	0	-	
103	09-05-2018	Wednesday	D35	41.2	1	0	0	0	0	20.4	-
104	10-05-2018	Thu	D36	41.1	1	0	0	0	0	-	
105	11-05-2018	Fri	D37	41.3	1	0	0	0	0	-	
106	12-05-2018	Sat	D38	41.4	0	0	0	0	0	-	
107	13-05-2018	Sun	D39	41.3	0	0	0	0	0	-	
108	14-05-2018	Mon	D40	41.0	0	0	0	0	0	-	
109	15-05-2018	Tue	D41	40.4	0	0	0	1	0	21.3	-
110	16-05-2018	Wednesday	D42	45.0	0	0	0	0	0	-	
112	IS-06/2018 Group number (csoport): 4 Animal ID (állat azonosító): 53										
Date (dátum)	Day (nap)	Study day (Vizsgálat napja)	Rectal Temp. (°C) (Rektális hőmérséklet °C)	Behaviour (viselkedés)	Appetite (érvágó)	Dyspnoea (legzési zavarok)	Cough (kohogás)	Nasal Discharge (orrlyukás)	Eye Discharge (szem valadékozás)	Weight (kg) (testtömeg)	Comments (egyéb)
114	04-04-2018	D0								7.2	
115	10-04-2018	Mon	D26	40.4	0	0	0	0	0	-	
116	11-04-2018	Tue	D27	39.9	0	0	0	0	0	-	
117	12-04-2018	Wednesday	D28	40.1	0	0	0	0	0	10.9	-
118	13-05-2018	Thu	D29	40.2	0	0	0	0	0	-	
119	14-05-2018	Fri	D30	40.1	0	0	0	0	0	-	
120	15-05-2018	Sat	D31	40.5	0	0	0	0	0	-	
121	16-05-2018	Sun	D32	39.9	0	0	0	0	0	-	
122	17-05-2018	Monday	D33	40.3	0	0	0	0	0	-	
123	18-05-2018	Tuesday	D34	40.1	0	0	0	0	0	-	
124	19-05-2018	Wednesday	D35	40.7	0	0	0	0	0	-	
125	20-05-2018	Thursday	D36	40.8	0	0	0	0	0	24.8	-
126	21-05-2018	Friday	D37	41.4	0	0	0	0	0	-	
127	22-05-2018	Saturday	D38	43.5	0	0	0	0	0	-	
128	23-05-2018	Sunday	D39	41.1	0	0	0	1	0	-	
129	24-05-2018	Monday	D40	40.7	0	0	0	1	0	-	
130	25-05-2018	Tuesday	D41	41.4	0	0	0	1	0	4.0	-
131	26-05-2018	Wednesday	D42	40.8	0	0	0	1	0	-	
132	IS-06/2018 Group number (csoport): 4 Animal ID (állat azonosító): 54										
Date (dátum)	Day (nap)	Study day (Vizsgálat napja)	Rectal Temp. (°C) (Rektális hőmérséklet °C)	Behaviour (viselkedés)	Appetite (érvágó)	Dyspnoea (legzési zavarok)	Cough (kohogás)	Nasal Discharge (orrlyukás)	Eye Discharge (szem valadékozás)	Weight (kg) (testtömeg)	Comments (egyéb)
133	04-04-2018	D0								9.3	
134	10-04-2018	Mon	D26	40.3	0	0	0	0	0	-	
135	11-04-2018	Tue	D27	39.8	0	0	0	0	0	-	
136	12-04-2018	Wednesday	D28	39.6	0	0	0	0	0	24.6	-
137	13-05-2018	Thu	D29	40.5	0	0	0	0	0	-	
138	14-05-2018	Fri	D30	40.1	0	0	0	0	0	-	
139	15-05-2018	Sat	D31	39.8	0	0	0	0	0	-	
140	16-05-2018	Sun	D32	39.4	0	0	0	0	0	-	
141	17-05-2018	Monday	D33	39.6	0	0	0	0	0	-	
142	18-05-2018	Tuesday	D34	40.5	0	0	0	0	0	-	
143	19-05-2018	Wednesday	D35	39.4	0	0	0	0	0	-	
144	20-05-2018	Thursday	D36	39.6	0	0	0	0	0	-	
145	21-05-2018	Friday	D37	39.6	0	0	0	0	0	-	
146	22-05-2018	Saturday	D38	39.8	0	0	0	0	0	29.4	-
147	23-05-2018	Sunday	D39	39.8	0	0	0	0	0	-	
148	24-05-2018	Monday	D40	39.7	0	0	0	0	0	-	
149	25-05-2018	Tuesday	D41	39.8	0	0	0	1	0	-	
150	26-05-2018	Wednesday	D42	39.8	0	0	0	1	0	-	
151	27-05-2018	Thursday	D43	40.3	0	0	0	0	0	-	
152	28-05-2018	Friday	D44	40.4	0	0	0	0	0	33.3	-
153	29-05-2018	Saturday	D45	40.6	0	0	0	0	0	-	
154	30-05-2018	Sunday	D46	-	0	0	0	1	0	-	
155	31-05-2018	Monday	D47	-	0	0	0	0	0	-	
156	01-06-2018	Tuesday	D48	-	0	0	0	0	0	-	
157	02-06-2018	Wednesday	D49	-	0	0	0	0	0	37.4	-

Daglig observation af hoste på individniveau



24 timers heatmap over Soundtalks RDI (Respiratory Distress Index)





Hvad har vi lært af Soundtalks?



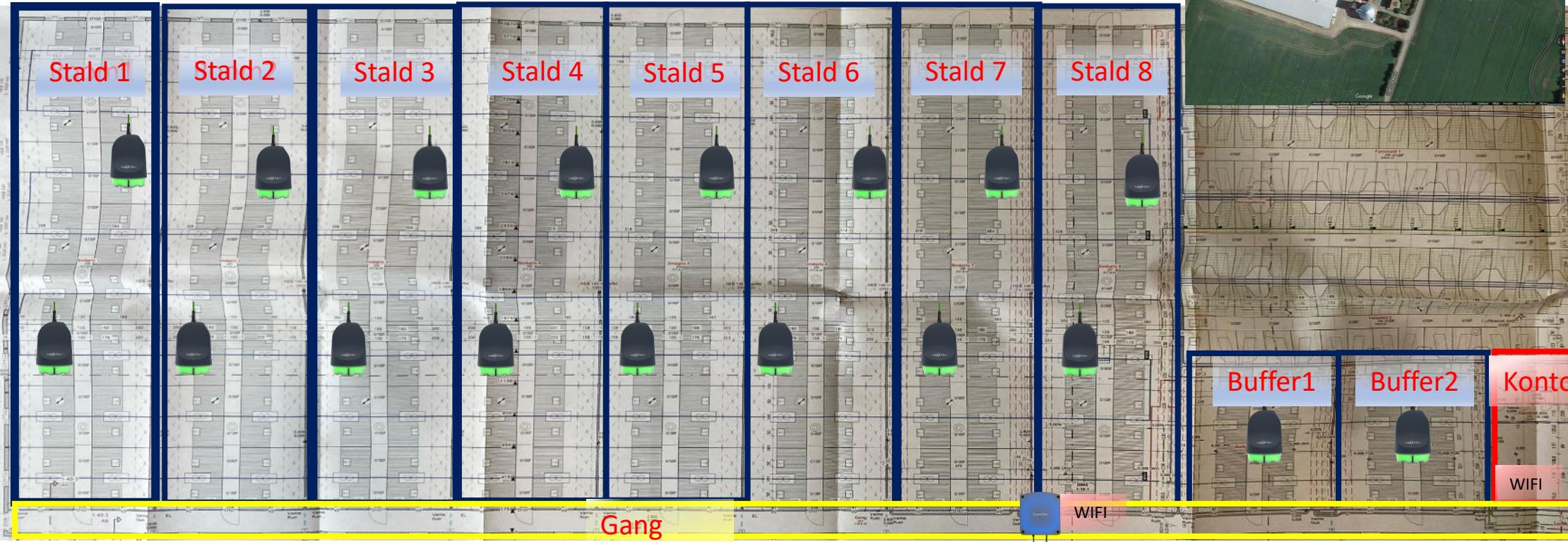
Staldpersonalet får hurtigt styr på ReHS graferne

- Færre behandlinger
- Mere anti-inflammatoryisk behandling
- Antibiotikavalg fra den aktuelle "suppe" af bakterier

Rutine behandlinger baseret på kalenderen stopper og beror udelukkende på alarmer

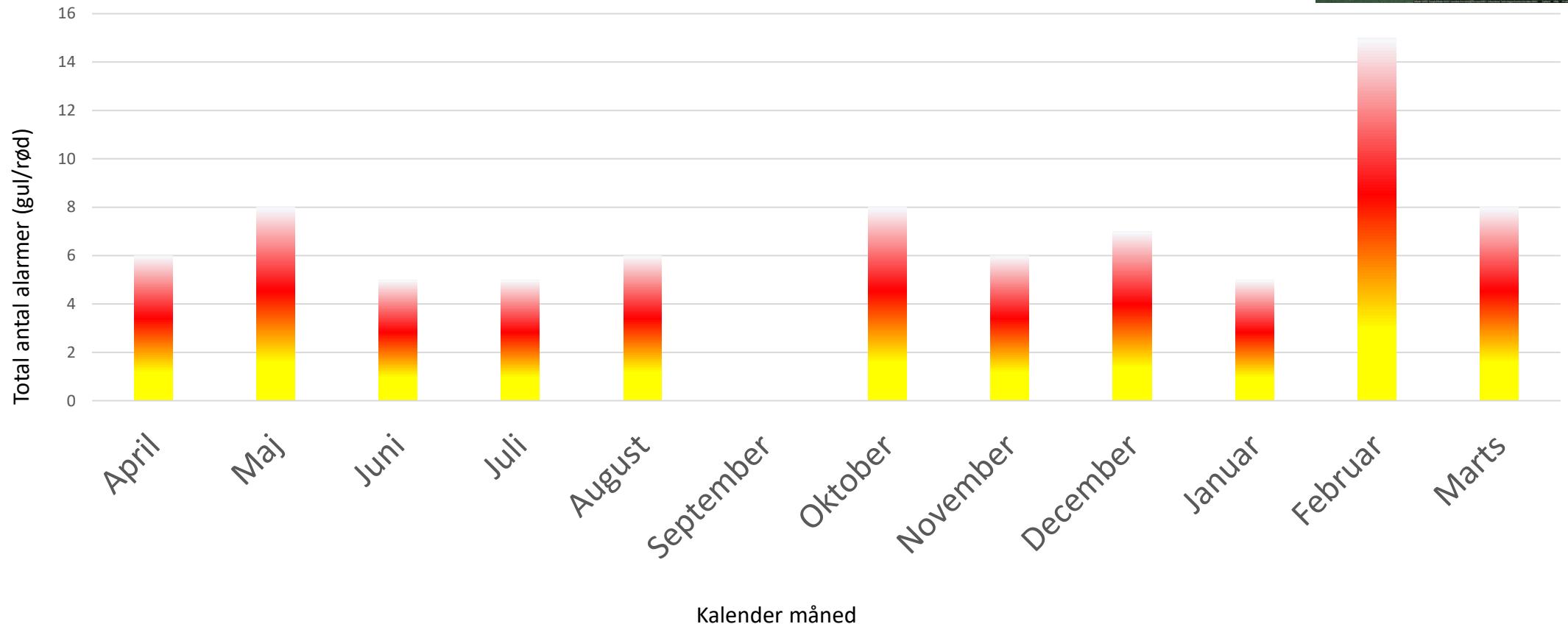
- Antibiotika bruges kun når det er nødvendigt
- Ingen frygt for, for sen behandling
- Præcis behandling på det tidspunkt, hvor infektionen er igang

SoundTalks Spøttrup!



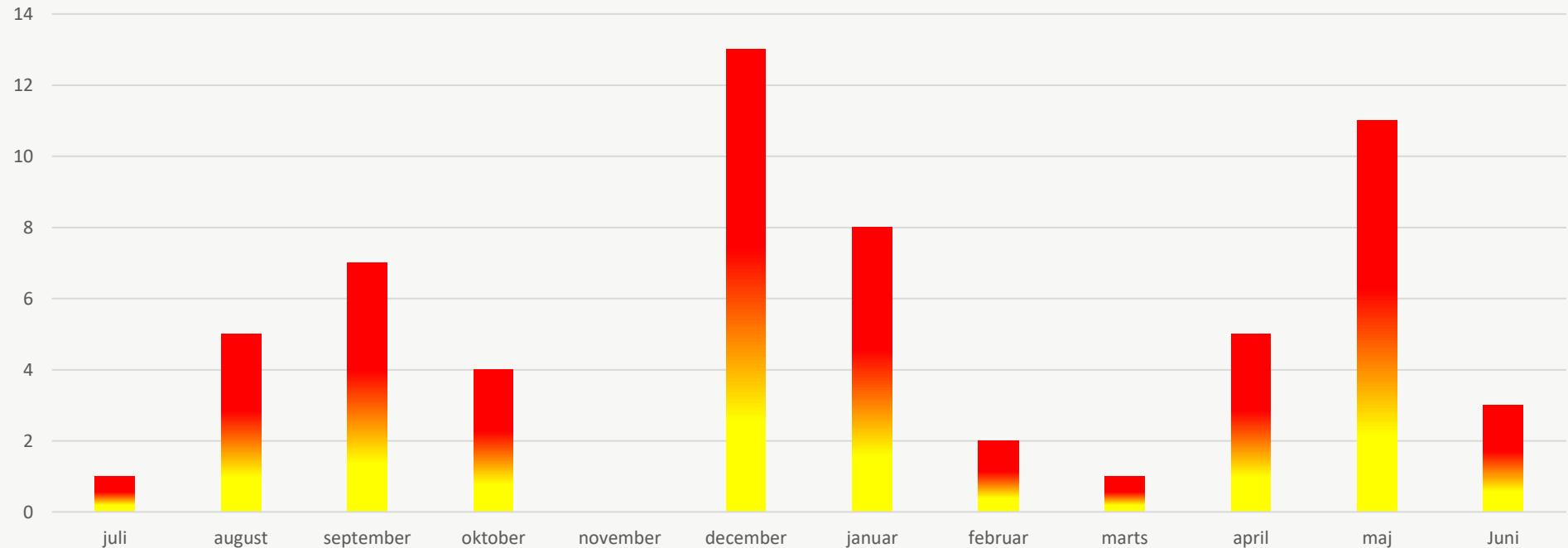
900 grise per stald

Grise hoster hele året!

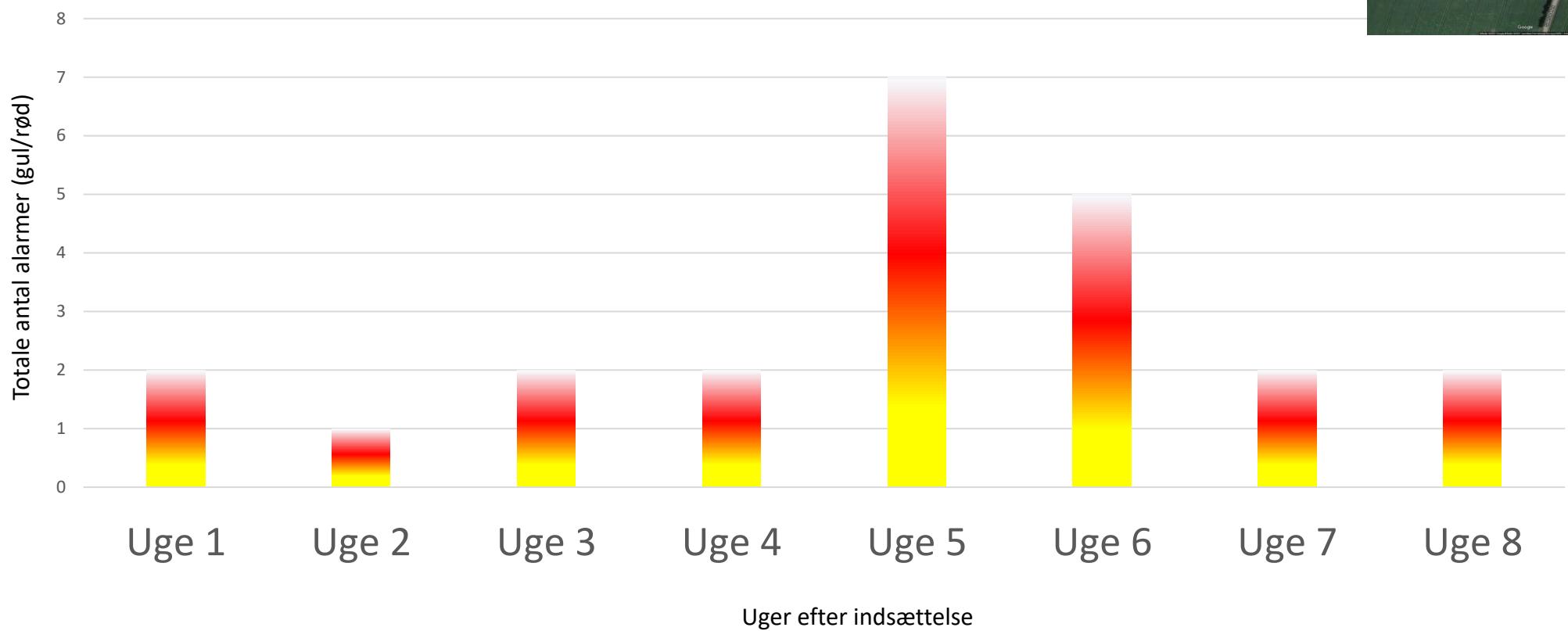


Tilsvarende billede i anden klimastald

alarmer per måned Juli 2021 - juni 2022



Grise hoster ikke efter en kalender





Hvad er årsag til hosten?

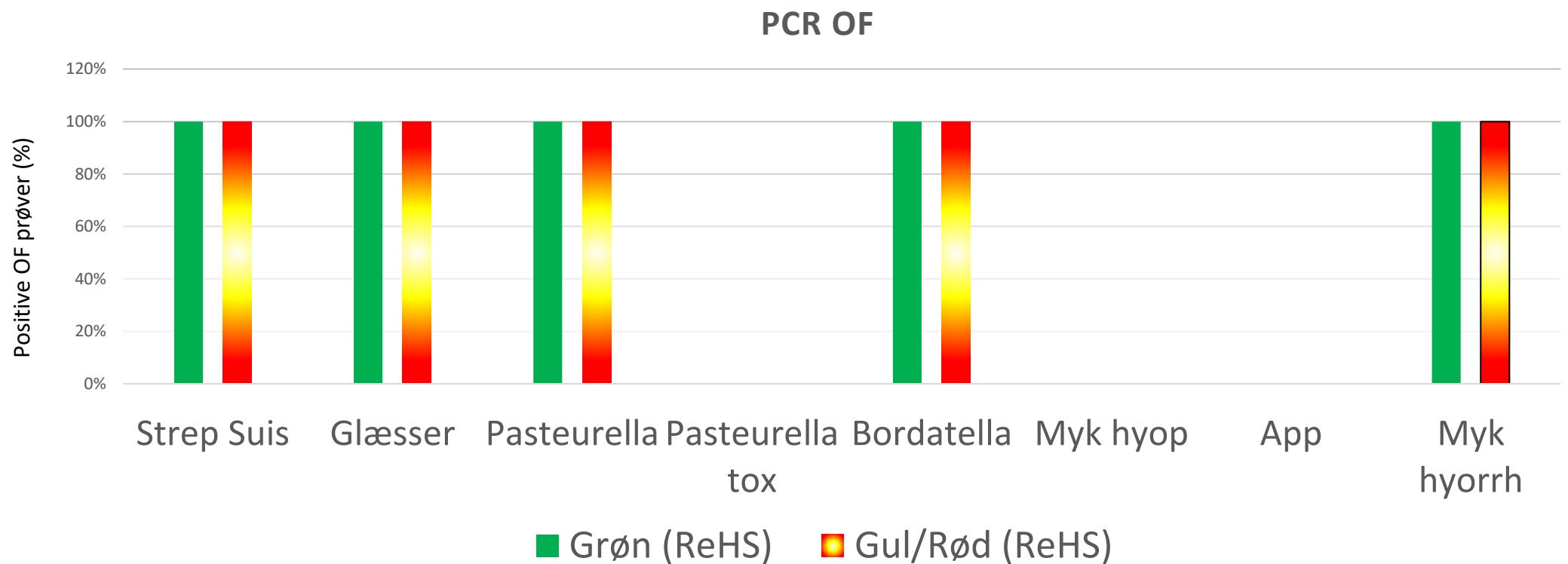
Spyt opsamling hver anden uge

- Glaesserella parasuis
- Myc. hypopneumonia
- Past. Multocida (+/- tox)
- Streptococcus suis
- IAV (Influenza A Virus)
- PCV2
- PRRS



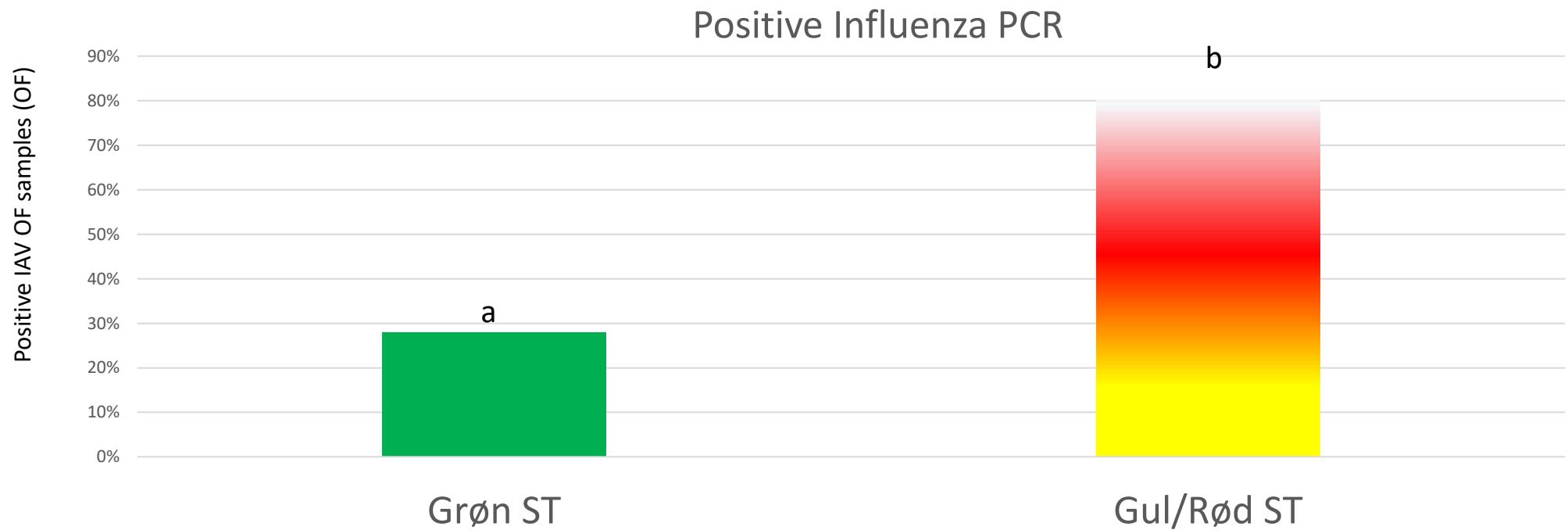


Konsistente resultater med hensyn til prevalens af bakterielle patogener





Gul/Rød ST alarmer er significant associerede med swIAV PCR-positive OFs

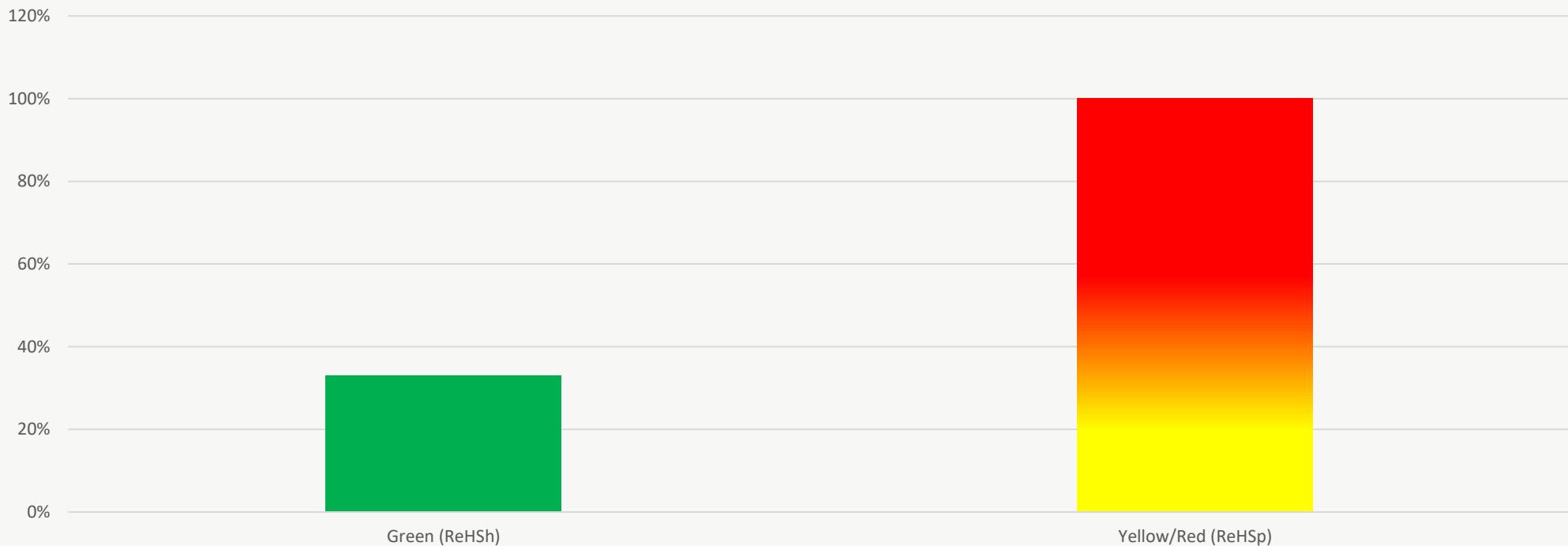


Samme erfaringer fra anden klimastald

Der bliver fundet Influenza virus i 100 % af stalde med rød/gul alarm



Positive IAV PCR





Ingen hoste - Ingen behandling

MySoundtalks^{admin} PH Rathjen PR Help

SITES / Spøttrup svineproduktion

Spøttrup svineproduktion 0 gateways 1 gateway 0 monitors 18 monitors

INFO NOTIFICATIONS & ALERTS DATA HEATMAPS EXPORT

01 Aug 2021 28 Oct 2021 Export table

Respiratory Health Temperature ok warning alarm error offline

Ingen flok behandling

Ingen flok behandling

Palliativ behandling

Palliativ behandling

House 1, Buffer 1
House 1, Buffer 2
House 1, Room 1
House 1, Room 2
House 1, Room 3
House 1, Room 4
House 1, Room 5
House 1, Room 6
House 1, Room 7
House 1, Room 8

06/09/2021 10/09/2021 14/09/2021 18/09/2021 22/09/2021 26/09/2021 30/09/2021 04/10/2021 08/10/2021 12/10/2021 16/10/2021 20/10/2021 24/10/2021 28/10/2021

Effektivitets rapport fravænnede



Klimastald

Periode: 5/1/21 - 1/31/22 (276 days)

status ved afslutning af perioden

	FØR ST	EFTER ST
Periode: 5/1/21 - 1/31/22 (276 days)	5/1/20 - 1/31/21 276 days	5/1/21 - 1/31/22 276 days
fravænnede i perioden [Nr]	6.872	6.982
døde fravænnede [Nr]	1.079	972

produktions effektivitet

Periode	5/1/20 - 1/31/21 276 days	5/1/21 - 1/31/22 276 days
gn. Vægt v. indgang [kg]	5,8	5,4
solgte fravænnede gns. væ	29,6	29,4
gns vægt døde [kg]	21,8	19,3
fravænnede foderdage per	55,4	53,9
døde fravænnede [%]	3,1	2,9
total tilvækst per gris [kg]	23,9	24,0

key performance indicators

Periode	5/1/20 - 1/31/21 276 days	5/1/21 - 1/31/22 276 days
fravænnede daglig tilvækst [g]	430,5	445,1
fravænnede foder forbrug [fu]	1,72	1,66
fravænnede foder optag/dag [fu]	0,74	0,74
fravænnings foder/produceret gris [fu]	41,0	39,9
dage som fravænnede [days]	55,4	53,9
alder ved salg. [dage]	83,4	81,9
alder ved 30 kg [dage]	84,0	82,8

Samtidig;

Ingen behandling i hold uden alarm:

- 38 % reduktion i antibiotika forbrug
- 395 % øgning af antipyretisk behandling

OBS

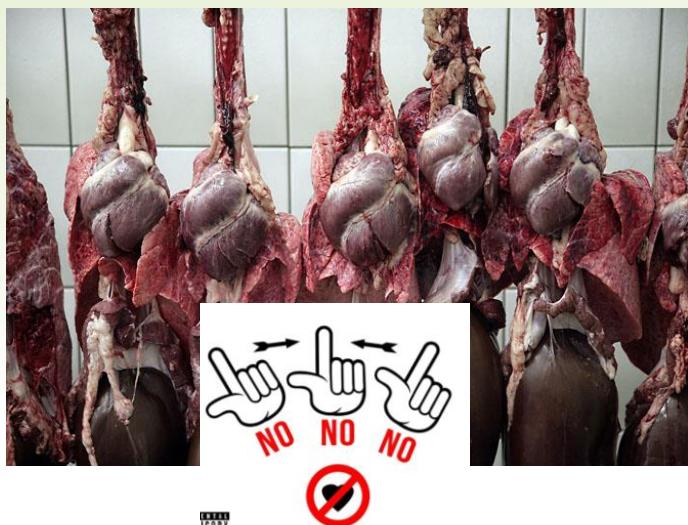
Besætningen gik fra PRRS ustabil - forekomst af PRRS positive hold i klimastalden (primært buffer) > PRRS stabilitet - PRRSV negative ved fødsel og fravænning



Målrettet diagnostik & præcise behandlinger



Reduceret antibiotikaforbrug



Igangværende SoundTalks diagnostisk projekt

Luftopsampling vs spyt
til undersøgelse for PRRS & IAV
(foreløbige resultater)

 INNOVAPREP
PREANALYTICAL TOOLS FOR MODERN MICROBIOLOGY

 AIRPREP
CUB
Cub Air Sampler Specifications





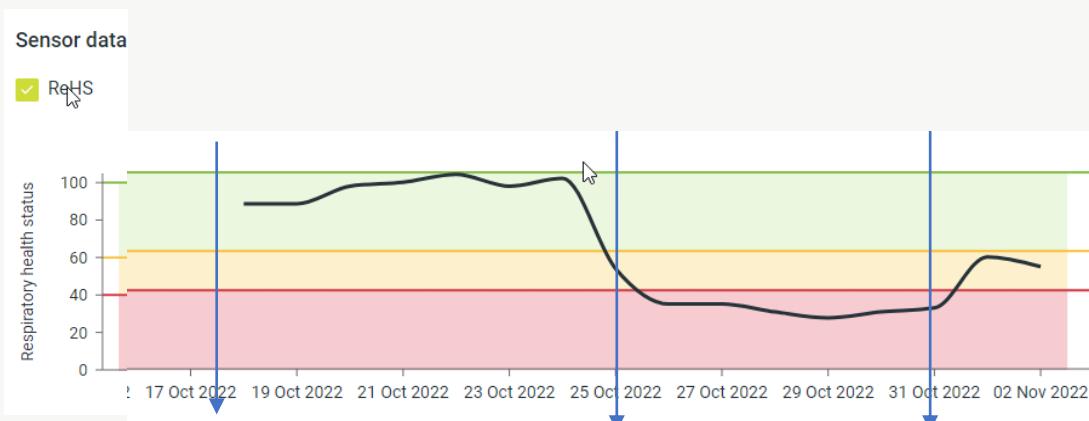
Soundtalks Nørskov diagnostics: airsampling vs OF for PRRS & IAV

Study design

Stald 1.1

Stald 1.2

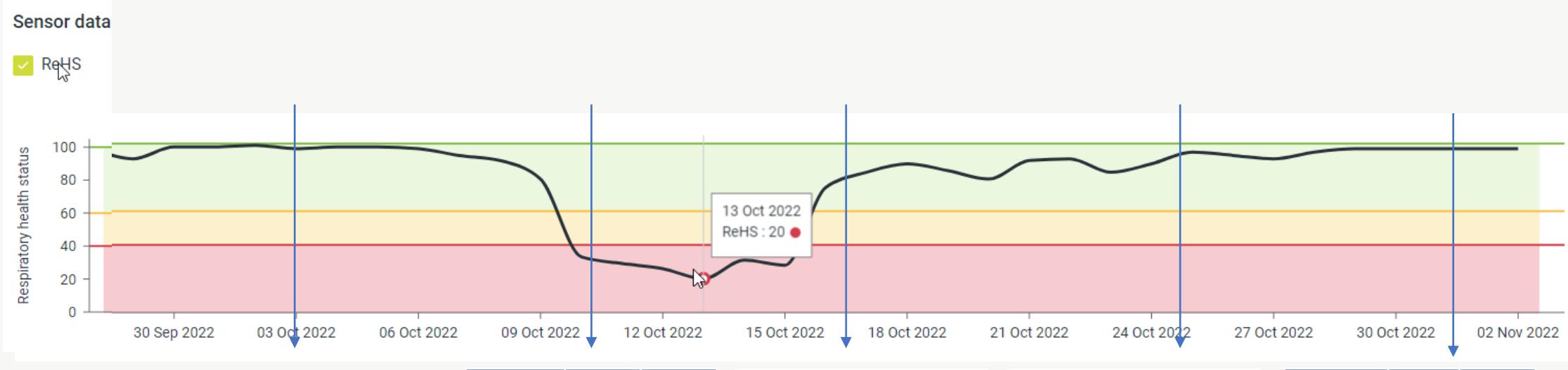
Indsættelse den 17.10.2022



	IAV	PRRS		IAV	PRRS		IAV	PRRS		IAV	PRRS		IAV	PRRS		IAV	PRRS
Spyt Ct	neg	neg	Spyt Ct	22,2	neg	Spyt Ct	28,1	Neg	Spyt Ct	neg	neg	Spyt Ct	26,5	neg	Spyt Ct	25,4	Neg
Luft Ct	neg	neg	Luft Ct	31,8	neg	Luft Ct	Neg	Neg	Luft Ct	neg	neg	Luft Ct	36,8	neg	Luft Ct	33,6	Neg

Stald 2.3

Indsættelse den 27.09.2022



	IAV	PRRS
Spyt Ct	neg	neg
Luft Ct	neg	neg

	IAV	PRRS
Spyt Ct	21,2	32,3
Luft Ct	27,1	neg

	IAV	PRRS
Spyt Ct	29,6	neg
Luft Ct	34,2	neg

	IAV	PRRS
Spyt Ct	neg	32,5
Luft Ct	neg	neg

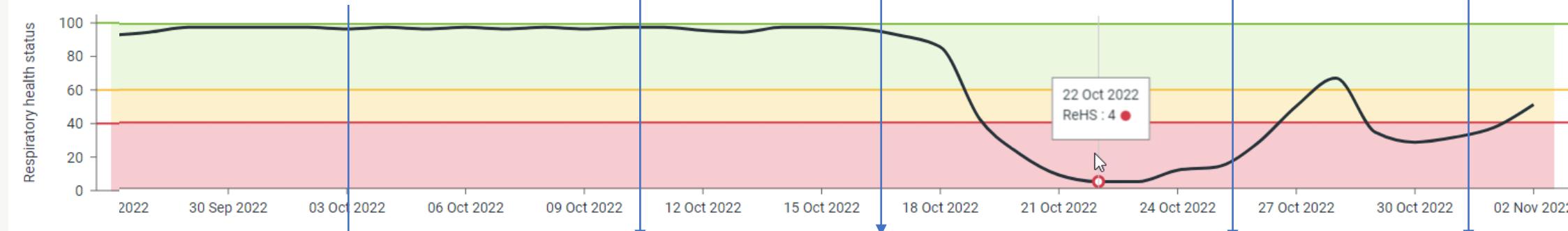
	IAV	PRRS
Spyt Ct	Neg	28,9
Luft Ct	Neg	Neg

Stald 2.4

Indsættelse den 27.09.2022

Sensor data

ReHS



	IAV	PRRS
Spyt Ct	neg	neg
Luft Ct	neg	neg

	IAV	PRRS
Spyt Ct	neg	34,8
Luft Ct	neg	neg

	IAV	PRRS
Spyt Ct	22,3	neg
Luft Ct	30,4	neg

	IAV	PRRS
Spyt Ct	32,3	neg
Luft Ct	34,6	36,4

	IAV	PRRS
Spyt Ct	Neg	29,5
Luft Ct	Neg	Neg

Alt tyder på fin korrelation mellem hoste opfanganet af Soundtalks og positiv IAV PCR



SoundTalks® skaber tryghed

Overvågning 24/7

- Opdag hoste tidligere
- Lav diagnostik på det mest optimale tidspunkt
- Test dyr i sektioner med sygdom
- Undgå at behandle sunde grise
- Intervenér på grundlag af fakta



Kontakt os

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