Registration of health traits in Austria – Experience review

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Overview

➢ Background
➢ Methods and measures
➢ Results and discussion
  ▪ Participation
  ▪ Genetic evaluation
  ▪ Herd management
➢ Review of experience
➢ Conclusions

Background

➢ Improved animal health is gaining increasing importance worldwide, because of its effect on
  - farm economy
  - animal welfare
  - food security
➢ Health data so far only routinely collected and utilized by the Scandinavian Countries.
➢ *EU-Animal Health Strategie 2007-2013*: „Prevention is better than cure".
➢ In Austria recording of diagnostic data and treatments is obligatory by law since 2002. Before project start, those data were neither standardized nor routinely collected and utilizied.
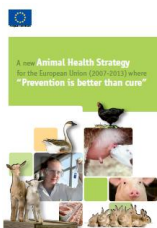
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Performance recording in Austria

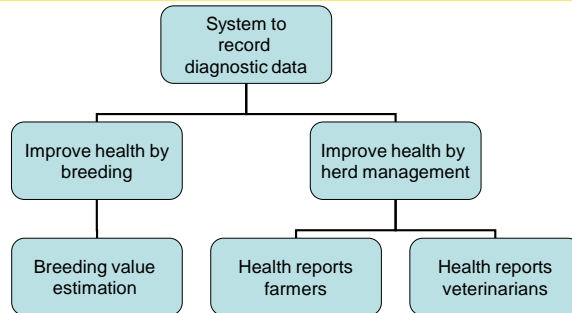**23,676 herds with 390,031 cows**
16.4 cows/herd

	Fleckvieh	Brown Swiss	Holstein
Cows (% of all HB-cows)	71	15	11
Milk kg - HB all lact.	6,710	6,874	8,328
Fat %	4.14	4.11	4.1
Protein %	3.41	3.41	3.25
Number of calvings	3.91	3.73	3.47
Calving interval (days)	392	416	415
Somatic cell count (in 1000)	194	237	272

Within the total merit index no direct health traits included so far!
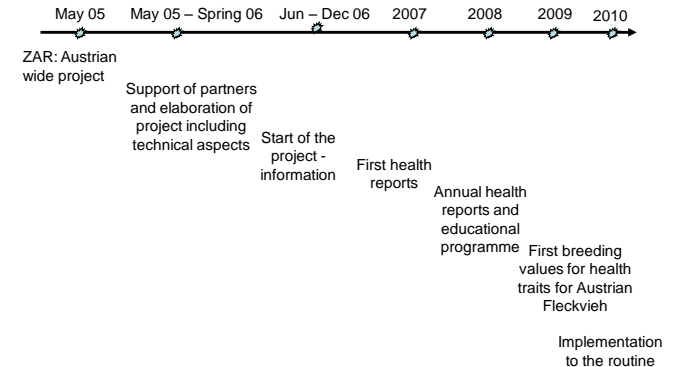
Project "Health monitoring cattle"
Main project aims

```
                System to
                 record
             diagnostic data
            ┌───────────┴───────────┐
   Improve health by         Improve health by
      breeding                herd management
         │                ┌────────┴────────┐
  Breeding value      Health reports    Health reports
   estimation           farmers          veterinarians
```

Target group:
farms with performance recording – voluntary participation!

Project history - milestones
From the idea to implementation

| May 05 | May 05 – Spring 06 | Jun – Dec 06 | 2007 | 2008 | 2009 | 2010 |

ZAR: Austrian wide project

Support of partners and elaboration of project including technical aspects

Start of the project - information

First health reports

Annual health reports and educational programme

First breeding values for health traits for Austrian Fleckvieh

Implementation to the routine

Project organisation

Project partners:
- Animal Health Organisations
- Chamber of Agriculture
- Chamber of Veterinarians
- Ministry of Agriculture, Forestry, Environment and Water management
- Ministry of Health
- University of Natural Resources and Applied Life Sciences
- University of Veterinary Sciences
- ZuchtData EDV-Dienstleistungen GmbH

Project executing organisation:
- Federation of Austrian Cattle Breeders (ZAR) with member organisations from breeding, performance recording and artificial insemination.

Project management:
- Committee with representatives of different groups.

New receipt for the application of drugs
Published by the Ministry of Health in April 2006

Recorded:
- Identity of the animal
- Identity of the farm
- Number of the veterinarian
- Diagnoses and date of diagnoses from first treatments only

Standardisation of diagnoses
Austrian wide key – published by the Ministry of Health in April 2006

Diagnoseschlüssel

Spezifische Kälberkrankheiten
11 Nabelentzündung
12 Nabelbruch
13 Sehnenkontraktur
14 Missbildungen
15 Ikterus haemolyticus neonatorum
16 Kälberdurchfall
17 andere Krankheiten des Kalbes
Erkrankungen des Verdauungstraktes
21 Durchfall
22 Tympanie
23 Pansenübersäuerung
24 Fremdkörpererkrankung
25 Labmagenverlagerung
26 Darmverschluss
27 andere Erkrankungen der Bauchhöhle
28 Erkrankungen der Maulhöhle
29 Erkrankungen der Speiseröhre
Stoffwechselkrankheiten
31 Gebärparese, Hypocalcämie
32 Tetanie
33 Azetonämie

Fruchtbarkeits-u. Abkalbest.
41 Gebärmutterentzündung
42 Stillbrunst, Azyklie
43 Ovarialzysten
44 Scheidenvorfall
45 Abortus und andere Störungen der Gravidität
46 Schwergeburt
47 Geburtsverletzungen
48 Nachgeburtsverhaltung
49 puerperale Erkrankungen
Eutererkrankungen
51 akute Euterentzündung
52 chronische Euterentzündung
53 Erkrankungen der Euter- und Zitzenhaut
54 Euterödem
55 Andere Eutererkrankungen
56 Prophylaktisches Trockenstellen
Klauen- und Gliedmaßenerkrank.
61 Panaritium, Mortellaro
62 Klauengeschwür, Krankheiten der Gelenke an den Klauen
63 Klauenrehe
64 Frakturen, Luxationen, andere

68 Festliegen infolge Erkrankung des Bewegungsapparates
69 Krankheiten des Schwanzes
Erkrankungen der Atemwege
71 Erkrankungen der oberen Luftwege
72 Lungenentzündung
73 andere Lungenerkrankungen
Herz-, Kreislauf- und Bluterkrank., Erkrankungen des Harntraktes
81 Herzerkrankungen
82 Septikämie, Anämie
83 Piroplasmose und andere Parasitosen des Blutes
84 Leukose
85 Erkrankungen der Gefäße und der Milz
86 Pyelonephritis
87 Erkrankungen der Harnblase
ZNS-Erkrankungen, Hauterkrankungen, Infektionen
91 ZNS-Erkrankungen
92 Erkrankungen der Sinnesorgane
93 Parasitosen und Infektionen der Haut
94 Erkrankung der Hörner
95 andere Hauterkrankungen
96 Allgemeininfektionen

Key only includes on-site findings by veterinarians but currently no laboratory results.

Recording of diagnostic data
from the receipt to the data base (performance recording data base)
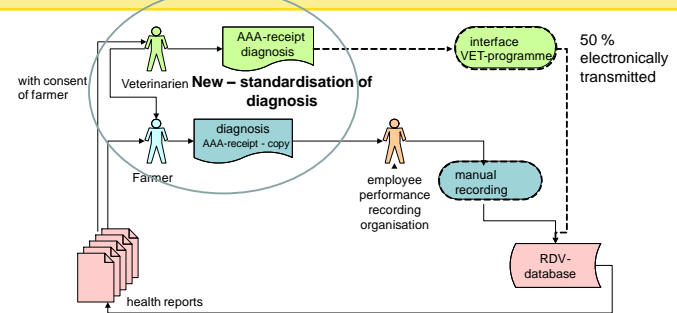
Promotional programme to increase electronic transmission introduced. Additional health information can be recorded directly by the farmer to the data base („observations").
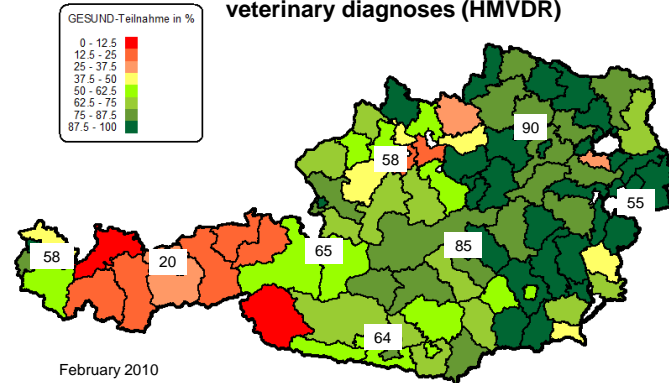

Participation in health monitoring in % (HM)
Total number of farms participating: 13,150 farms
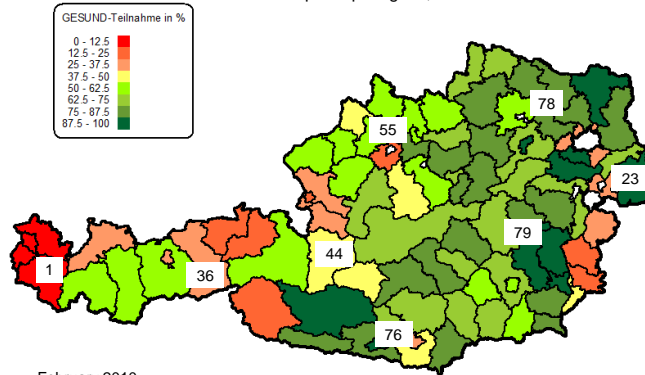
February 2010

Health monitoring farms with recording of veterinary diagnoses (HMVDR)

February 2010

Number of participating farms as well as number of farms with recording of diagnostic data is increasing.

Development of participation

Regions	Farms Feb.10	HM farms % Feb.10	HM farms % Feb.09	HM farms % Feb.08	HM farms % Feb.07	HMVDR farms % Feb.10	HMVDR farms % Feb.09	HMVDR farms % Feb.08	HMVDR farms % Feb.07
Burgenland	136	23	17	13	12	55	54	36	21
Carinthia	1,288	76	76	73	71	64	53	42	14
L. Austria	3,925	78	77	77	76	90	80	64	21
U. Austria	4,864	55	51	33	28	58	49	49	24
Salzburg	2,194	44	44	42	41	65	59	42	11
Styria	3,383	79	66	63	61	85	82	66	37
Tyrol	6,009	36	23	20	7	20	13	3	0
Vorarlberg	1,.479	1	1	0	0	58	50	0	0
Austria	**23,278**	**54**	**48**	**42**	**37**	**66**	**61**	**50**	**23**

Large regional differences – information and awareness is important!
Opinion leaders have a very big influence on success or failure !

Validation of data - precondition of reliable breeding values!

Differentiation:
Farms with low frequency and farms with incomplete health data recording.

Criteria:
➢continuous data recording (farm/veterinarian)
➢at least 0,1 first diagnosis per cow and year
➢definition of the time under observation

Austrian Fleckvieh (Simmental): presently about 120.000 cows within breeding value estimation

Genetic evaluation of health traits

➢ Research project in Austria:
  „**Development of a breeding value estimation for health traits**"

➢ **Aim**: Preparation of a routine genetic evaluation for health traits

➢ **Trait complexes**: Udder health, fertility, digestive diseases and feet and legs

➢ **Genetic improvement!**

Percentage of cows with at least one diagnosis
(Schwarzenbacher, 2009)
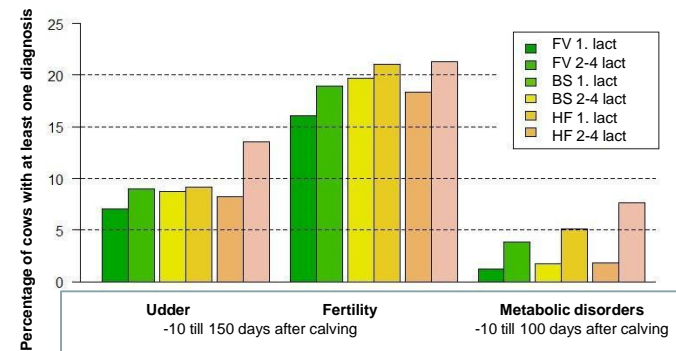
Breeding values fertility disorders

(to 150 days, metritis+cystic ovaries+retained placenta+puerperal diseases + culling for fertility reasons)

13,3%
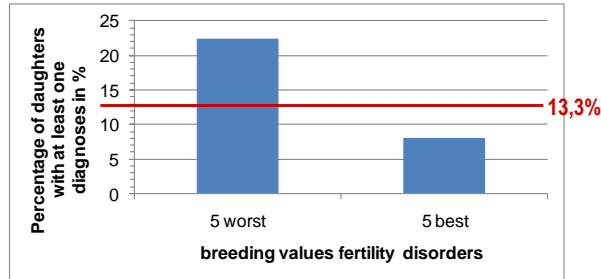
„First breeding values" for direct health traits were published in April 2009. Genetic differences existing.

Top-list fertility disorders
April 2010

			Gesundheitszuchtwerte			Mastitis		Fru.stör.		Milchfieber					
Rg	Name	Jahr	Mastitis	Fru.stör.	Mi.fieb.	n	F	n	F	n	F	n1	F1	n2	F2
1	GS HORST	1992	86 82	120 78	116 91	254	11,8	234	8,1	259	2,7			259	2,7
2	GS HATZ	1995	101 82	120 77	105 91	248	4,0	220	6,8	259	1,2	98	2,0	161	0,6
3	FLIPPER	1990	101 71	119 67	86 85	137	8,8	128	5,5	141	13,5	8	0,0	133	14,3
4	GS DINO	1993	105 81	117 78	102 91	236	4,7	226	8,0	242	4,5	7	0,0	235	4,7
5	MANDL	1997	107 96	116 95	91 98	1295	4,6	1175	9,1	1355	3,3	492	0,4	863	5,0
6	DUNST	1994	96 94	116 92	111 97	804	6,7	739	9,5	828	2,2	197	0,0	631	2,9
7	GS FERRARI	1998	107 89	116 85	99 95	441	3,4	365	7,1	474	0,6	405	0,0	69	4,3
8	GS EDWIN	1994	100 68	115 64	111 83	119	7,6	115	6,1	123	2,4	1	0,0	122	2,5
9	ROMEL (A)	1995	84 95	114 94	98 98	1140	7,7	983	8,2	1210	1,8	846	0,4	364	5,2
10	GS EREMIT	1997	103 79	114 75	104 89	203	5,4	188	7,4	212	1,9	115	0,9	97	3,1
11	POLDI	1996	103 98	113 97	110 99	2178	4,8	1949	9,8	2262	1,4	1156	0,5	1106	2,1
12	GS STAMM	1992	101 82	113 79	115 91	257	7,4	240	8,8	263	2,3	16	0,0	247	2,4
13	ROMOR	1995	104 82	113 78	110 91	253	5,9	230	9,1	261	2,7	9	0,0	252	2,8
14	GS HONDA	1996	103 97	112 96	95 99	1833	4,6	1643	10,0	1896	2,4	972	0,8	924	4,1
15	HAXZEUS	1992	102 96	112 95	115 98	1456	5,4	1290	9,5	1547	1,6	697	0,4	850	2,6
16	ENGADIN *TA	1997	93 87	112 82	111 94	385	5,5	296	6,8	417	0,2	364	0,3	53	0,0
17	GS HOF	1995	92 81	112 77	94 91	244	7,4	219	8,7	251	3,2	117	0,0	134	6,0
18	GS PAL	1994	101 74	112 69	97 87	161	6,8	143	9,8	166	6,6			166	6,6
19	PICKEL RED	1990	92 76	112 69	103 89	179	6,7	146	6,8	195	0,5	142	0,0	53	1,9
20	ROTRIEGO (A*	2002	85 70	112 64	100 84	130	8,5	116	6,9	137	0,7	113	0,9	24	0,0
21	GS ROMAF	1995	104 97	111 96	114 99	1958	5,6	1763	10,8	2051	2,0	573	0,0	1478	2,8

Presently mainly older bulls with breeding values for direct health traits in Austria!

Higher participation is required!

Breeding values for direct health traits: www.zar.at, www.fleckvieh.at

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Health reports for herd management

> Provision of health reports combining already existing data from performance recording with diagnostic data.
Veterinarians have access to reports with consent of farmers at no cost.

Daily reports after performance recording: e.g. action lists
Annual report: overview about health status of herd
Special reports: concerning Animal Health Programmes

> Further improvements in preparation:
graphical overview,…

> Future plan to include data from slaughtering houses, milk laboratories as well as hoof trimming.

**Health reports available since beginning of 2007.
Important to provide benefits already at an early stage.**

Annual health report – Udder health
since 2008

	Einheit	Anzahl	Betrieb aktuell	Betrieb Vorjahr	Bezirk	Land
Kühe weitere Laktationen						
Zellzahldurchschnitt	in 1000	145	249	206	257	219
Anteil Zellzahl über 200.000	%	47	32,4	25,4	31,9	27,1
Anteil Kühe mit mind. 3 Überschreitungen	%	6	37,2	26,6	42,9	35,8
Anteil mit mind. 2 aufeinanderfolg. Überschr.	%	7	43,4	33,2	48,6	42,2
Anteil Kühe mit Diagnose Euter	%	3	18,6	0,0		
Summe Diagnosen Euter	Anzahl		5	0		
0. - 100. Laktationstag	Anzahl		3	0		
101. - 200. Laktationstag	Anzahl		0	0		
> 200. Laktationstag	Anzahl		2	0		
Trockenperiode	Anzahl		0	0		
akute Euterentzündung	Anzahl		5	0		

Enabling the farmer to compare farm results to the previous year as well as to the average on district and province level.
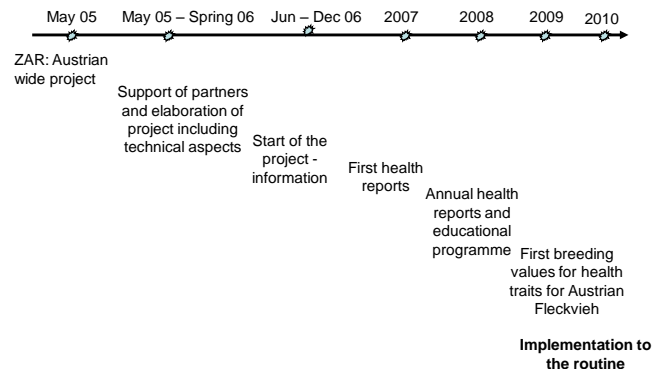
Web based tool with daily updated annual reports for veterinarians.

Education programme on health reports

➢ For the interpretation of the health reports a special training programme was set up.

➢ It was realized that too much information was provided where many farmers were lacking the knowledge to interpret and work with this data.

➢ In a participatory way each farmer elaborated his plan of action.

➢ 6,500 farmers participated.

Information and training is very important!

Linkage to Animal Health Organisations:

Information from Health monitoring and performance recording is used by the veterinarians for the evaluation of the health status of the farms within the Animal Health Programmes.

New: available information is indicated.
Development from „repair" to prevention!

Project history - milestones
From the idea to implementation

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Implementation to the routine

Implementation to the routine

Aim: partner organisations adopt project measures to the routine

Present situation:
➢**Animal Health Programme Health Monitoring** officially decided by the Ministry of Health in March 2010: Information based on performance recording and health monitoring will be included in evaluation and prevention.
➢**Breeding programme:** The Tyrolean Grey Association already decided in 2007 that registration of health traits is compulsory for its members. The Austrian Fleckvieh (Simmental) Federation adopted health traits to their breeding programme in April 2010.
➢ **Permanent working group** within the Federation of the Austrian Cattle Breeders (ZAR) with representatives of the different partner organisations will be established.
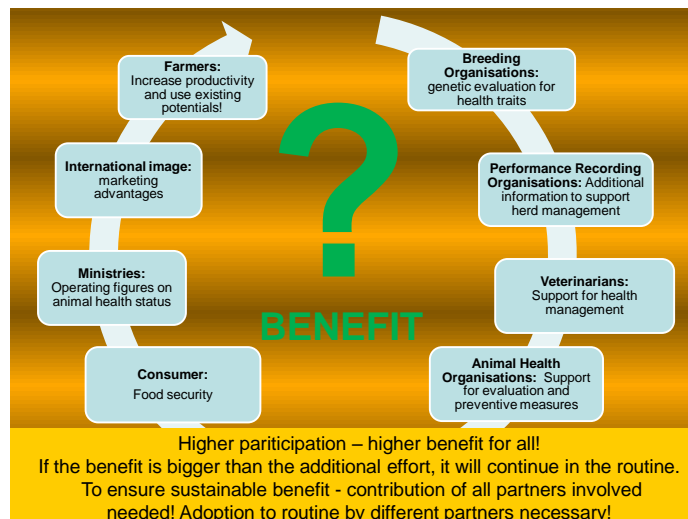
Important measures to our experience

➢**Participative approach:** set up and implementation of the project has to be carried out with partners involved – project organisation!

➢**Benefit for key players:** Motivation for support depends on expected benefits – working groups with e.g. vets to elaborate health reports.

➢**Technical implementation with secured data quality:** sensible data - data security and data quality main argument by opponents.

➢**Sustainable high quality data recording and validation:** establish trust in data quality – emphasis on validation.

➢**Continuous information and motivation:** essential, more challenge than technical aspects.

➢**Financing and economic aspects:** project participation has to be without additional costs for farmers and veterinarians. Effort comparable with recording of calving ease (0,7 first diagnoses/cow and year).

➢**Legal frameworks:** continuous recording of health data on a high level of participation is a big challenge- legal frameworks are very valuable.

Conclusions

➢13.150 farms participating in Austria (54%) – differences between 1-79%

➢Time is ready to start to collect and utilize health data (effect on farm economy, food security,…).

➢ Topic also in other countries (e.g. Southern Germany has started similiar project recently).

➢Consideration of health traits has the chance of success, but it is a difficult project as it needs the support of the farmers, veterinarians and their organisations and representatives.

➢Participatory approach and good cooperation precondition for success.

➢Information and awareness are a challenge.

➢Data security and data quality has to be a priority.

➢Sustainable benefit for all partners involved is essential.

Farmers: Increase productivity and use existing potentials!

Breeding Organisations: genetic evaluation for health traits

International image: marketing advantages

Performance Recording Organisations: Additional information to support herd management

Ministries: Operating figures on animal health status

?

BENEFIT

Veterinarians: Support for health management

Consumer: Food security

Animal Health Organisations: Support for evaluation and preventive measures

Higher pariticipation – higher benefit for all!
If the benefit is bigger than the additional effort, it will continue in the routine.
To ensure sustainable benefit - contribution of all partners involved needed! Adoption to routine by different partners necessary!

Thank you for your attention!