



## Responses to questions in the chat IAHA pre-conference September 2020.

Dr S K Kumar Ayurvedic understanding of herbal formulation for Mastitis

1 I understand that Ayurveda sees disease as disturbances of balance and health, and that is very logic in my view - how does Ayurveda then look at the possibility of keeping in balance for highly productive animals and/or animals which have been bred to become very specialized?

**Yes Ayurveda says balance of tridoshas ( 3 humours), Sapthdathus ( 7 tissues components) , Trimala ( 3 Excretory products). Contentment of Mind, Sense organs and Soul " is considered to be healthy.**

**" Samadosha Samagnishcha samadhatu mala kriyah Prasanna athma, indriya mana ithibideeyathe"**

**In highly productive animals it is considered as Dhatu vrudhi (means increase of tissue elements) so it is not considered as balance, it is considered as imbalance, therefore they are more prone to diseases.**

<https://www.jayumedsci.com/article/2018/3/2/105530jams2018315>

2 How do you Apply the Ayurveda mixture and for how long?

**The Ayurveda Mixture for Mastitis is to be applied externally by making paste of three ingredients, then add minimum quantity of water to make thin paste and apply externally after washing the udder, completely take out the milk and apply on the wet surface 8 to 10 times a day for 5 days. Before each application the udder should be washed thoroughly and completely milked.**

<https://www.rroij.com/open-access/ethnoveterinary-formulation-for-treatment-of-bovine-mastitis-.php?aid=85942>

3 Are the recipes open access?

**No, once we have mutual understanding we shall train the vets and farmers through training courses.**

[https://www.researchgate.net/publication/343879854\\_Management\\_of\\_common\\_ailments\\_of\\_dairy\\_animals\\_with\\_ethnoveterinary\\_herbal\\_preparations\\_in\\_Gujarat](https://www.researchgate.net/publication/343879854_Management_of_common_ailments_of_dairy_animals_with_ethnoveterinary_herbal_preparations_in_Gujarat)

4 Did you also try it as a treatment (not preventive)?

**Yes it is very much preventive during Dry Period**

<https://www.rroij.com/open-access/prevention-of-mastitis-in-cattle-during-dry-period-using-herbalformulation.php?aid=87024>

**Eva Salomon Ammonia emissions from outdoor fattening pigs on concrete pad – a farm case study**

1 Do you have an explanation for the differences in emissions between the two groups where the outdoor run was not scraped?

**We think we measured different micro climatic conditions for the toilet areas. The toilet sub-areas were just outside the pig house. Around a house there is turbulent wind conditions in combination with varying shadow effects during the day. This influence the temperature and air moisture differently for different sub-areas, which in turn influence ammonia emissions.**

2 Did you also make an estimation of the additional farmer work by daily removal and additional costs?

**No, we did not document the farm work but we asked the farmer. He assessed that he saved 50% work time with the installed automatic scrapers and scraping the toilet sub-area once every day. He compared with his work time before he made this investment. He said the frequent scraping of the toilet area outdoors made the pigs to keep cleaner indoors which saved work time for him as well as reduced costs for straw litter.**

3 How did you identify the wet sub-area, was it of similar sizes in the different groups?

**Wet sub-areas (rain water, urine, feces) on the concrete outdoor run. The wet sub-areas occurred more random on the concrete outdoor run and were a minor part of the total area.**

4 Can you list the most important factors which increase Ammonia emissions? Is Degree of roofing important?

**The temperature is the most important factor. With increased temperature the risk of ammonia emissions increases exponentially. So it is the summer period there is highest risk of ammonia emissions from excretions on the concrete outdoor run. In winter time there is hardly any ammonia emissions. However, we need to consider hygiene and cleanliness aspects all the year around.**

5 Did you also look into the effect of reduced ammonia emissions on pig or worker welfare? or pig growth?

**No**

6 Pigs are quick learners - would it be possible to create a pig toilet to kind of dispose of the manure?

**Yes! Would be a wonderful next project. I think the challenge is to design a pig toilet that is functional in a farm work perspective and have reasonable investment costs.**

7 Could your measuring technique also measure other Emission gases (e.g. N<sub>2</sub>O)?

**We have methods for measuring also methane and nitrous oxide emissions in manure management systems. We have also measured ammonia emissions from pig excretions on pasture.**

Tove Serup (poster) Does Phenol rich feed ingredients or seaweed reduce diarrhea in organic piglets?

1 What is the mechanism behind the potential effect of seaweed? What kind of active substance?

**Seaweeds are said to be rich in "bioactive compounds" The literature defines them as follows**

“Seaweeds are considered as a source of bioactive compounds as they are able to produce a great variety of secondary metabolites characterized by a broad spectrum of biological activities. They are an excellent source of vitamins such as A, B<sub>1</sub>, B<sub>12</sub>, C, D and E, riboflavin, niacin, pantothenic acid and folic acid as well as minerals such as Ca, P, Na, K

The red and the green species are rich in carbohydrates whereas the brown seaweeds are rich in soluble fibre and iodine”.

(ref Bioactive potential and possible health effects of edible brown seaweeds Shilpi Gupta and Nissreen Abu-Ghannam)

“Marine algae contain large amounts of polysaccharides, notably cell wall structural, but also mucopolysaccharides and storage polysaccharides”

(ref Bioactive compounds in seaweed: functional food applications and legislation Susan Løvstad Holdt & Stefan Kraan )

2 Is zinc itself a problem or is it the sourcing of zinc that is a problem?

**Zinc is brought out to the soil/environment by spreading manure. Because it is a heavy metal it does not disappear (evaporate or washed out) but remains building up in the environment which is then polluted. Newly weaned piglets have high doses of zinc and spreading their manure is restricted on the fields (in Denmark)**

3 Are the farmers accepting to use seaweed in their diets? Will they do this voluntarily?

**Some farmers ask for seaweed in the feed. Some do not notice that it is already in and some (few if any?) ask for feed without seaweed if it cost extra. Sometimes the feed company puts it in as a standard.**

Lisa Schanz Animal welfare on organic mixed livestock farms across 7 European countries

1 How did you define 'animal welfare' when communicating with farmers about their own perception of animal welfare of their animals? And did I understand you right that you asked the farmers whether they were satisfied with their animals' welfare? In case this is correct: how did you interpret if farmers were for example satisfied with 'a low welfare level' ('low' in your definition)?

**The farmers rated their satisfaction with their animals' welfare on a four-point scale. The survey was conducted in seven European countries with different interviewers and we did not define animal welfare for or with the farmers. If farmers asked what is meant by the term, we provided some examples of what is often included in such an assessment, however this was not the case for the farmers I interviewed myself. Mostly**

**farmers explained in detail why they perceived their animals' welfare as they did and often explaining plans to change aspects they were unhappy with.**

2 Does the Mix-Enable project include mixed farming systems with pigs? And if so, can you give some examples?

**Yes, we interviewed farmers with pigs in combination with beef cattle, dairy cattle, meat sheep and poultry. Most of the pig farmers had fattening pigs, but some were growing piglets for sale or a combination of both. Several farmers kept their pigs on pasture or with access to pasture all year.**

3 Are you going to compare mortality in poultry, comparing mixed Systems where the poultry is on pasture together with ruminants with those systems where they weren't on the same pasture at the same time?

**It is difficult to compare the mortality between poultry farms we interviewed, because we included farms with laying hens, broilers and turkeys. Some of the farms keep their poultry temporarily on the same pasture as a ruminant species, but our sample is too small and divers to compare two systems.**

**Kristin Sorheim** Extract of Norwegian spruce bark against Eimeria spp. in lambs

1 Have the control and untreated group been fake treated? to give all 3 groups the stress of treatment?

**All 3 groups had the same treatment, except one thing: We had to give the bark extract with a stomach tube, and we did not load a stomach tube to the control lambs and untreated lambs. However, this was very simple and the lambs did not seem to be affected of this handling**

2 Are the relevant agents found only in the bark or also in the needles/twigs of spruce? I'm thinking of self-medication by feeding branches, but probably intake wouldn't be high enough?

**We do find tannins in the needles also, but the lambs will not eat needles from these trees, and they should not do so because the needles damage the oesophagus and stomach. We have also thought of self-feeding, but the intake will not be high enough I think. For young lambs, which is the problem in Norway, they will not eat neither bark nor branches/needles in a sufficient amount.**

3 Why did you stomach tube the lambs instead of just drenching them?

**We used a soft stomach probe made for lambs to give lambs colostrum, to be sure to get the right dose of extract to each lamb, as they would not swallow it voluntary.**

4 Were the lambs kept with their mothers?

**No, all the lambs were taken from their mother at birth and divided in random groups.**

5. Did you use individual feeding or group feeding?

**The lambs got individual feeding of milk, and had free access to concentrate and hay.**

1 What about the additives? What will you look at?

**The application of additives (precisely effective microorganisms and mineral powder) in the pen was mentioned three times in the interviews/workshops. The mentioned advantages related to better animal health and less odour emissions. Since other measures identified in the workshops were mentioned more often, and studies on the additives would have to be more extensive than we are able to do in the project, no further tests on additives were considered.**

2 Is there evidence that improved outdoor runs reduce medication usage like antibiotics?

**As far as I know, this has not yet been investigated. Basically, it would be interesting to investigate medical treatments / the use of antibiotics in relation to access to open-air areas or pasture, which, however, requires an observation over a long period of time. I doubt, however, that a clear connection between the design of the outdoor run and the use of antibiotics can be shown, since the presumably minor effect is likely to be overlaid by other, more important influencing factors (such as management).**

3 Will part of the investigation be looking into if the showers will cause more ammonia emissions and leaching of other nutrients?

**Unfortunately, we cannot measure ammonia emissions directly in the on-farm experiments, as the effort to measure it - outdoors and directly in the animal area - is very high. However, we will assess the degree of pen fouling (based on the area covered with manure) for different areas in the pen. We hope to get an impression of whether showers affect pen fouling and thus the potentially ammonia-emitting surface.**

4 Regarding the concrete outdoor runs, the concrete itself is a problem. Are there any discussions about alternatives?

**In terms of animal welfare, concrete floors may actually be questioned. Husbandry systems based on natural soil, at best pasture, is definitely to be preferred. In the interviews/workshops, additional (temporary) access to pasture was suggested twice as an improvement measure. However, a significantly larger area is required for systems with natural soil/pasture in order to take into account negative environmental influences, in particular nutrient leaching. In the COREorganic project ProPIG, various organic husbandry systems (indoor with concrete outdoor run, outdoor and combinations) were examined for their advantages and disadvantages with regard to animal welfare and environmental impact**

**(see <https://orgprints.org/36352/> and <https://orgprints.org/34749/>).**

5. Could you please tell something more about the transdisciplinary in outdoor runs. Which disciplines were involved and why consortium decided to use this method?

**The scientific disciplines that come together in this project are in the areas of animal welfare/animal husbandry, assessment of environmental impact (e.g. life-cycle-assessment) and economic farm evaluation. In addition, transdisciplinarity refers to the involvement of non-academic people (farmers, experts in the area of interest), as in this**

**project in the development of research questions or investigation together with farmers on commercial farms. On the one hand, this approach takes into account the value of practical knowledge and lived experience. In addition, we hope to use this method to ensure the relevance of the research for agricultural practice and to find solutions for farmers that are acceptable and appreciated in practice.**

**Madeline Koczura Is dairy calves grazing behaviour influenced by cow calf contact experience?**

1 Are more experiments planned in the future related to the findings?

**At the INRAE experimental farm in Marcenat, we started a “system experimentation”, which will take place in the long term and in which dairy calves will be reared with their mothers.**

2 You measured learning from the dam but do you think that the short term difference in behaviour could be from the mixed and control calves learning from the dam calves i.e. peer learning?

**That would be impossible, as we separated the 3 groups of calves and they were far enough not to see each other.**

3 Did the experiment include female calves only / did you notice differences between gender of calves?

**In this experiment, we tried to manage the dairy system as close as what would be observed in an actual farm. Therefore, we kept female calves in priority. In order to balance the groups, we had to keep a few male calves, but they were a minority. Therefore, we did not test a gender difference.**

4 What did you mean when differentiating between "resting" and "lying (isolated)" in the two Groups "dam" and "Control". Did the dam-calves Always rest together with other dam-calves?

**“Resting” was defined as the calf not moving, not ingesting, not ruminating, just observing or sleeping and could occur when lying or standing. This was actually a “calm” moment. This is different from lying, which was just defined as the contrary to standing. It means that overall, control calves spent more time lying than standing (while doing their activities, and also more time isolated. These are 2 separate statements.**

**Maria Josep Broncano Atencia EU project Life Polyfarming**

1 Which fruit trees were in the Experiments?

**In the pasture with the cows there are walnut trees. In the pasture of chickens and rabbits there are fruit shrublands of red berries**

2 How many of those farms are existing/ you are working with? in which countries/regions

**We are working in the Project Polyfarming in only one farm, Planeses (Sant Ferriol, Girona, Spain), although we advise other owners who want to start similar projects in other parts of Catalonia**

3I think that involving rabbits is really interesting - how do they work with the other animals and the crops and trees?

**In all cases with animals, they are moving daily from one plot to a new plot with fresh grass, which in part they consume intensively. But the cows move in plots of 1000 m<sup>2</sup>, while the rabbits and chickens move in plots of 160m<sup>2</sup>, which are sufficient for their size and feeding requirements.**

4.Would it work with other trees - why only walnuts?

**Yes, of course it can work with many other fruit trees. In the case of the pasture with cows, it is necessary that the trees be high enough to avoid being damaged by these large animals. In the case of chicken and rabbit pastures there are currently bushes but there may also be large fruit trees.**

**Marion Johnson** Rongoa pastures, native species for health, conservation and culture

1.Can you plant them if they are not there?

**Yes, in theory. For larger plantings (especially of native grasses) sourcing seed at this point is a challenge, it will be a case sowing as much as possible and encouraging natural spread. The herbs can be seeded or grown and planted and then we would expect them to spread slowly. Species such as nau /Cooks scurvy grass can be established in nursery plots and then spread. It isn't going to be a fast process. In the tussock country farmers can stop over sowing with exotic grasses, but use grazing management to encourage a biodiverse landscape.**

2.How can we stop over exploitation?

**Decreasing stock numbers and/or carefully managed grazing would help overgrazing. A realisation of the health benefits to consumers when animals have been pastured on diverse forages and a market for extensively produced meat, dairy and wool that paid farmers a fair price for a sustainably produced healthy product would also help.**

3.Can they thrive in 'good' soils with high nutrients?

**Different species different have different nutrient requirements so you would have to choose your plantings according to fertility. Prior to the introduction of bag fertiliser the native grasses out competed the introduced ones and in many areas this might once again be the case- after some time.**

4.Is there a huge Problem with overgrazing in NZ? or why don't you find those plants anymore?

**Yes, there is a big problem with overgrazing particularly in the hill country. On the lower intensive farms most pastures are rye grass and clover with a little plantain or chicory perhaps, very little diversity. Unfortunately, many agronomists and farmers still believe it is impossible for mixed species pastures to persist. For many years the dogma has been any species that is not a high performing 'bred' pasture species is a weed and is of no value.**

Alessandra Nicolao Which compromise between milk production and cow-calf contact in dairy systems?

1 What do you mean with gradual weaning?

**By gradual weaning I mean a 2-steps weaning, were the suppression of milk in the diet is not simultaneous with the separation from their dam and/or from their companions.**

2 How many calves where involved and which breed?

**42 calves were involved, breeds were Holstein and Montbéliarde and groups were balanced for breed.**

3 Was the cost of milk replacement taken into account when calculating costs of milk losses?

**Calves separated from their dam were fed with bulk milk and not milk replacer. We have not yet analyzed the costs of milk losses, we only calculated the quantity of milk not produced.**

4 If calves do not drink from their mother, then they still have to drink milk. so is it that they drink less milk when separated or is it then the same loss economically?

**Calves separated from their dam were fed bulk milk with automatic milk feeder and they had access to limited amounts of milk per day (milk: 6 to 9 kg/d from wk1 to wk3; 10 kg/d from wk4 to wk6; 9 to 3 kg/d from wk7 to wk10); while calves reared with their dam had free access to mother's milk during the day.**

**We have not yet analyzed economic losses, but we calculated the quantity of milk ingested by calves, and suckling calves drank more milk than automatic feeder's calves.**

5 Do you think that the higher growth could allow heifers to calve at a 2 year old?

**Yes, but we did not studied the consequence of cow-calf contact in the long term, however other studies in literature have found advantages on increased weight gain of heifers in reducing age at first calving.**

6 What type of cow-calf weaning systems would you like to investigate in the future?

**A 2-steps weaning, were calves are prevented to suckle or to drink milk before being separated from their dam and/or their companions.**

7 Is there any information available about the future production of heifers that have been raised with their dams compared to those that haven't?

**No, not in this study.**

8 How would you explain the long time span the cows of the Mixed Group needed to get used to milking only after separation from their calf?

**It was not the case, all the cows were milked twice a day from calving even if they suckled their calves, so there was not a time of adaptation after the separation from their calf. On the other hand, an adaptation period of 2/3 days was necessary for Mixed-calves to get used to the automatic milk feeder after the separation from their dam.**

9 You measured the stress and vocalization after weaning - did you assess the stress or welfare during their stay together, and how?

**No, we did not measure the stress when cows and calves stayed together.**



10 Do you know if there were influences on the animal Health of calf and/or cows ?  
**We have data on cows and calves health but we have not yet analyzed them.**

11 Have you assessed the health of the calves?  
**Yes, results will be shown in the future scientific article.**

Caroline Constancis Performance and health status of dairy calves reared with nurse cows, a 2-year study involving 3 cohorts

1. Do you know which species of GIN you may have had?

**We have studied *Ostertagia ostertagi*, the most frequent and most pathogenic. It is a global monitoring of the GIN infection that we carried out, so we are not able to report exactly which GIN species are involved at each sample point. Indeed, it is not possible to diagnose species from the eggs observed by coproscopy, and the specificity of the *Ostertagia* ELISA used is poor (the level of antibodies measured with this ELISA corresponds more to a global level of GIN antibodies, whatever the species). However, the pepsinogen level measured in the serum of each calf is a good reflection of the damages of the abomasal mucosa which are mainly caused by *Ostertagia* in grazing calves, this worm being the most frequent and pathogenic in cattle with access to pasture.**

2 Could your outcome be different with most pathogenic species?

**In fact, *Ostertagia* is the most pathogenic species and was actually present as shown by the increase of pepsinogen levels. Anyway, whatever the dominant species, we think that this management of calves with nurse cows can be protective thanks to the dilution effect. The ingestion of milk by calves during the grazing period could have an adverse effect on parasite infection as it has been demonstrated in lambs with *O. circumcincta*. And on the other hand, by ingesting a lot of larvae and excreting few eggs, nurse cows should probably reduce the level of infection of the pastures. In addition, the calves have a long first grazing season, which could allow the calves to become immune as soon as the first grazing season ends.**

3 How much time did the animals spend on each Paddock before they were rotated and was there further Treatment (mowing, mulching) of the pasture?

**The animals stayed about one week in each paddock with possible returns on the paddocks during the grazing season. Mowing operations could be carried out on the paddocks grazed by calves and nurse cows, and sometimes sheep and other cows could also graze on these plots. In 2018 and 2019, the calves with the nurse cows were supplemented from August until housing in the barn (but the majority of the ration was still made up of grazed grass).**

Marc Morraine Pathways of sustainability in organic mixed live-stock farms are based on local embeddedness: case studies in France and Belgium

1 I would like you to reflect a bit on the 'rationalization after hyper-diversification' - what makes a diversification 'hyper'? And what are the aims of 'rationalization' more exactly? And does the diversification process take place while the project is going on?

**Hyper-diversification refers to systems which are much more diverse than the average or frequent alternative systems even organic, e.g. producing more than 8-10 different crop species plus 3 or more animal species, on a farm of average size.**

**Rationalization means that management decisions are made to facilitate the work of the farmer, making the system easier to conduct and reducing the sources of uncertainty.**

**In Mix Enable the trajectories of farms were already "achieved", we studied farms having some years of existence.**

2 Did your farms have forestry and agroforestry in the mix? And if so what can we learn from this?

**Some farms have a part of forest or agroforestry but that was never an important part of the system.**

3 How was "work organization and farmer satisfaction" assessed/by which variables/questions?

**Work organization: the repartition of work among people on the farm, the number of weeks of work peaks during the year.**

**Farmer satisfaction: open questions on the quality of life, the satisfaction with the current farm system, the possibility to have rest or holidays during the year and how the farmer is happy or not with this.**

4 Which method was used to assess the sustainability of the farms?  
**Please look at the article where indicators are presented.**

5 You said that mixed systems need a lot of skills; that's true. How can we promote education of young farmers?

**I have no expertise in this but I guess that producing accessible knowledge, proof of concept based on real examples of farms, and contribute in hybrid networks for knowledge sharing is a good starting point. In France we have a national network on crop-livestock integration called SPICEE, which gathers researchers, technical experts, advisors and teachers from various agricultural high schools or professional training in agriculture.**