IAG section Feed Microscopy

Newsletter 2020

Dear colleagues and relations,

The year 2020 was unprecedented in the recent history of the world, ... and in the history of the IAG section Feed Microscopy. We could adopt the opinion to move forward as quick as possible to make the coming year better than the previous one. There are however, some issues from last year which have their impact on future planning. The annual meeting of our section was postponed, as were the proficiency tests on animal proteins and on composition of compound feeds. In the view of annual organisation of these events, postponing is automatically turned into cancellation. The seventh edition of the FEED conference, planned for June 2020 in Vienna, was postponed to 2021. This Newsletter contains the new announcements for these events and actions. Obviously, reports of our annual meeting and of the mentioned proficiency tests are lacking.
Visual examination is *par excellence* suited to support circular agriculture by monitoring physical undesired substances, e.g. packaging material or microplastic. It is supposedly no coincidence that several contributions in this Newsletter pay attention to this group of materials. **Please pay attention to the request for material to build a knowledge base for packaging material (page 9)**.

The board of IAG section Feed Microscopy wishes you a pleasant time reading this Newsletter.

Content

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Presidents address

Dear colleagues, IAG-members and Feed Microscopy specialists,

It is with great pleasure that I take the opportunity to address my wishes for 2021, even though it happens after a very special year!

But first, I hope this letter finds you all in good health and looking forward to something different in 2021.

Although COVID-19 has taken a very big part in all our concerns this year, we have a few subjects of satisfaction, and most of us still had a lot of work, and topics to discuss and handle. I will try to summarize 2020, perceived from my point of view, and considering our field of interest only.

Activity of the board / Activity of the association – Canceled Annual Meeting

Although neither the board, nor the associated members, could organise the foreseen meetings, and unfortunately part of our work was actually to cancel and postpone some scientific topics were treated, either as a board, or as part of expert groups. We also tried, as good as possible, to support our scientific officer, Leo van Raamsdonk, in the process of finalizing several reports, as well as this Newsletter, which I hope will be of great interest for you.

I take the opportunity to remind you that this Newsletter is open to all members for contributions, which would be warmly welcome. We would be ready to help you to finalize a text, if necessary, in order to make the Newsletter even more lively and diverse, and our work even more visible.

Animal protein topics

Concerning our traditional Ring Test on Animal Protein, please find bellow part of the message I received from Leo on 27th March: “After considering the options with our group and supervisor, we will propose to **cancel the spring part of the PT schedule**. We assume that most quality assurance systems of our participants allow a biannual participation in PTs. In the view of participation for 12 years (or more) on a row for quite a number of our participants, and considering the worldwide dramatic drawback of all activities, we consider this realistic and unavoidable.” We agreed on this, nevertheless having received the Report on the IAG PT on animal proteins 2019.

Several new developments in Legislation on animal proteins found their conclusion in the past year. These include a revision of Annex VI of 152/2009 presenting the **new protocol for microscopic examination** with a supporting Standard Operating Procedure (SOP), and a new amendment of Annex IV to Regulation (EC) No 999/2001 as regards prohibitions concerning animal feeding.

In our point of view, interesting changes in the microscopic protocol are the following:

- in case of a positive result confirming the declared content, no second determination is required,
- a maximum of two determinations is required,
- new reporting sentence in case of result given after only one determination (no mention of “average”),
- change in the reporting sentence in case of result below 5 particles (no mention of “false-positive”, introduction of the concept of “decision limit”).

Concerning microscopic examination a relevant chapter from the new amendment of **Regulation (EC) 999/2001 Annex IV** is: “Regular sampling and analysis of the processed animal protein derived from

porcine (resp. poultry) animals must be carried out to verify the absence of cross-contamination with ruminant or poultry (resp. porcine) processed animal protein using the methods of analysis for the determination of constituents of animal origin for the control of feed set out in Annex VI to Regulation (EC) No 152/2009." A separate section on these developments is included in this Newsletter.

Method of **detection of insect PAP**: a possible new revision of Annex VI has been proposed by EURL-AP. It is based on a double sedimentation (TCE/PE), and opens new perspectives. We hope to discuss the proposal with all IAG members, and subsequently deliver an opinion to the EURL-AP because our association and its many members builds an important network of expertise in the field of microscopy and feed composition.

Composition / Contaminations topics

With pleasure, we could finalize two proficiency test reports (-IAG PT on **composition 2019** and IAG PT on **detection of packaging material in bakery by-products 2019**) and IAG members participated in one PT on undesired substances. Despite the COVID-19 limitations, a test with two samples of cereals containing certain levels of **ergot sclerotia**, was organised in cooperation with the EURL myco- and plant toxins, hosted by WFSR. We are waiting for the evaluation of this PT..

Finalising the PT report on packaging material was a complex process, partly because the network still needs to improve in the area of packaging material, and partly because of the difficulty of analyzing the results when no standards exist for visual methods. Discrimination between mimicking material and the contaminant has to be trained and evaluated. A good choice of the matrix is necessary, and the presence of blank samples is required to evaluate the specificity of the method. Determination and quantification need to be performed in a harmonized way. This will be part of our **Proposals for the 2021 PTs**. Two sections in this Newsletter pay further attention to these issues: a summary report of the PT packaging material, and the start of the development of a **knowledge base for identification of packaging material**.

Other topics

This brings us to a topic, which was recurring in the last years, triggered by several of our members, and that we can thank Leo to have taken very seriously: **method validation**. Leo has been compiling a very complete background of theoretical literature and scientific reports, combining it with his own experience and knowledge, and finally sharing it with colleagues for comments and improvements. We hope the Quality Assurance of Visual Methods (Part 1 = Principles; Part 2 = Validation) will be ready for our benefit quite soon. The Editorial section will highlight this achievement.

In this Newsletter you will also find information on monitoring new hazards, **micro-plastics**, for example, and I believe we will hear more about such topics in a near future.

I would like to invite you to consider contributing to the reported Feed Conference: newly planned in Wien on 23-24.6.2021, where we will be present as an important association.

Finally, we have to hope that our planned activities will take place and that we will be able to meet again soon: IAG Annual Meeting on 7-9 September 2021 in Boxmeer, The Netherlands. Annual Meeting which will be held and completed with a half-day of practical workshop if the sanitary conditions allows it.

Yours sincerely

Geneviève Frick

Editorial: quality assurance

Safety is an intrinsic part of the production of feed and food. The different domains of the disciplines of monitoring and detection methods demands different principles for quality assurance and control. Although parameters and procedures for method validation have been borrowed from other domains, primarily from analytical chemistry, methods for visual or microscopic examination should be based on other assumptions. This has several reasons.

Inhomogeneity plays a different role because the units to be detected are large in the view of their logic visibility. The resulting minimum size of the detection unit is in principle larger than 1 µm, so many times larger than chemical molecules. The a-priori presumed consequence is a larger variation among replicates compared to chemical methods at the same levels of contamination. Counts or numbers are the principal result of all monitoring methods in the domain of visual or microscopical research. In those cases that particles can be handled physically, the selected materials can be weighted and a derived parameter in percentage (w/w) can be reported. In the micron range (microscopy) physical handling is not an option and the counts remain as only result. There is no device that provides the identity in the vast majority of cases. The detection and identification is performed by the microscopic technician based on knowledge and experience. Both aspects contribute to the quality of a visual method, but in their own way.

Starting from these principles, as announced in the previous Newsletter, Quality Guidelines for visual inspection methods (macroscopic and microscopic) have been drafted. These Guidelines provide the theoretical fundament and principles for our discipline (part A) and procedures for validation of methods and protocols (part B). During the year 2020 a group of European experts has worked to improve the initial texts. At the beginning of 2021 semi-final texts are available. Publication is foreseen for 2021.

New legislation on animal proteins

Besides the unfortunate situation of a missing the IAG proficiency test on animal proteins in compound feed for 2020, new developments in the legislation for both the examination and the application of animal proteins is published or announced.

New version of the microscopic method

The new Implementing Regulation (EU) 2020/1560 was published 26 October 2020, amending Regulation (EC) 152/2009 Annex VI, part 1. The major achievements are the new flow charts for the procedure combining the detection of vertebrate terrestrial animal and fish, but notifying the difference between the first and second determination, more precise reporting sentences and the inclusion of the declaration of authorised ingredients as criterion in the first determination. Especially the latter factor prevents to run the second determination when e.g. fish is legally part of the sample.

The modified microscopic protocol was included in a new consolidated version of Regulation (EC) 152/2009, published 16 November 2020. A new supporting SOP providing explanatory support to the correct use of the flow charts and a new version of the SOP on operational schemes for the combination of Microscopy and PCR were published by the EURL AP.

Links: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02009R0152-20201116&qid=1610466182121

http://eurl.craw.eu/img/page/sops/EURL-AP%20SOP%20observation%20flowchart%20V1.0.pdf

http://eurl.craw.eu/img/page/sops/EURL-AP%20SOP%20operational%20schemes%20V4.0_1.pdf

New relaxations for the use of animal proteins

During the meeting of the TSE working group in Brussels in October 2020 a draft Regulation (SANTE/07266/2020) was presented and discussed for amending Annex IV of Regulation (EC) 999/2001. The intended amendment includes four relaxations: (i) the use of gelatine from ruminant animals in feed for non-ruminant animals, (ii) processed animal proteins from porcine animals in feeds for poultry, (iii) processed animal proteins from poultry in feed for porcine animals, and (iv) the use of processed animal proteins from insects in feed for poultry or for porcine animals. The proposed relaxations are indicated by light green boxes in Figure 1.

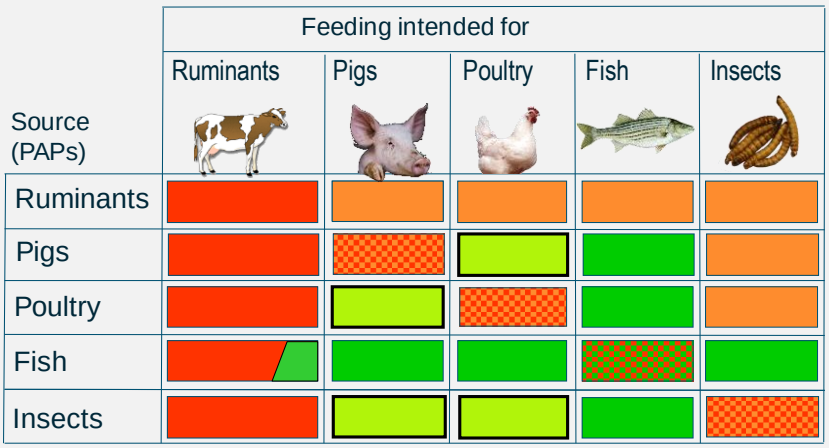


Figure 1: overview of the feed bans for animal proteins. Legend: red: permanent ruminant ban; orange: (temporarily) extended feed ban; green legalised use; dashed: species-to-species ban.

These relaxations have their consequences for microscopic inspections. It is not necessary to examine samples in which bone fragments or other animal particles can be found because of legal use. The implication is that samples of non-ruminant feed with a declaration of animal proteins will be directly examined by PCR. Consequently, all feeds *without* a declaration of animal material will stay as target for microscopic examinations, and material found of animal origin in these samples would not be legal. The inclusion of the label declaration in the flow charts of the new microscopic protocol will be valuable for the monitoring of these situations.

Proficiency test packaging material in bakery by-products

L.W.D. van Raamsdonk, C.P.A.F. Smits, B. Hedemann, 2019. *Proficiency test of detection of packaging material in bakery by-products 2019.* Wageningen, Wageningen Food Safety Research, WFSR report 2019.015. 12 pp.; 2 tab.; 9 ref.

A proficiency test (PT) was organised for the detection of packaging materials in bakery by-products intended to be used as feed ingredients. Two blind samples of a size of 250 grams at spike levels of 50 mg and 250 mg per sample were distributed to 29 participants. Four participants analysed only a part of the sample material, leaving 25 data points eligible for further evaluation. The evaluation of the results was carried out according to the principles of the Standard ISO 17043:2010 and the *Quality Guidelines for visual research*, in the framework of individual spiking of the samples. This specific procedure was chosen to avoid large inhomogeneity of a general batch as basis for the production of the PT samples, with the consequence that usual statistics such as Z-scores could not be applied or needed modified interpretations. Results of this PT have been compared with the first PT in 2016 (n=22 participants, same spike levels). Altogether this provided the presence of four datasets. Blanks were not included in both PTs.

The average recovery for the 50 mg level was 179%, and 105% for the 250 mg level in the 2019 PT. Symmetrical recovery intervals were chosen of 34%-166% for the 50 mg level and 66%-134% for the 250 mg level. A share of 80% of the results for the 250 mg sample was achieved within the limits of the recovery interval. A number of overestimations was reported for the 50 mg level (12 participants, 48%) in the 2019 PT. Notwithstanding the limitations of statistical parameters, a higher precision in 2019 compared to the 2016 datasets can be concluded from the smaller minimum-maximum interval of the results. In all cases the distributions were skewed to the right, shown by the underestimations in only one dataset, lack of outliers below the Lower Confidence Level and skewness values (much) higher than zero.

The number of overestimations was the major cause of the lack of compliance with the uncertainty intervals. This might be due to either insufficient removal of water and fat from the selected particles of packaging material, and/or the selection of other particles mimicking the packaging material (specificity issue). The precise background of the overestimations needs further evaluation. False negatives were not reported in both the 2016 nor the 2019 version of the PT. The methods are applicable in the framework of enforcing a zero tolerance prohibition when transferring the observations to a *qualitative* result in relation to a threshold. Enforcement of an action limit could be possible from a level of 0.1% or higher in the view that the number of underestimations is very limited.

Microplastic in composts and fertilizers

R. Weiss, AGES, Vienna

The question, where microplastic can be found, generates headlines from time to time. From the top of the highest mountain down to the deepest point of the sea, from the stomach of whales even in the feces of humans – wherever you are looking, you can find particles of plastic. While any particles of plastic in general are not allowed in feeding stuffs according to Regulation (EC) 767/2009, for compost and fertilizers different values of threshold exist in the different countries – also for Austria.

Definition of microplastic

The classical definition of microplastic are fragments (or even single particles) of plastic with a size ranging from >0 up to 5mm. This range can be subdivided into following categories:

- large microplastic: 1 mm – 5 mm
- small microplastic: 1 µm – 1 mm

(Literature: GESAMP, 2016; van Raamsdonk et al., 2020)

Especially the large microplastic particles - which can be detected easily with the help of classical light microscopy - are in the field of investigation according to national regulations for composts and fertilizers including culture media and liquid manures.

The following methods and pictures should demonstrate the applicability of the analysis for enforcing the relevant Regulations:

Regulations in Austria

- Feeding stuff: zero tolerance according to forbidden materials in regulation EG 767/2009
- Compost: Plastic >2 mm, max. 0,2% of DM; >20mm, max. 0,02% of DM
- Fertilizer (including culture media and liquid manures: Plastic >2 mm, max. 0,1% of DM
- Soil: since 2019 and only in Vorarlberg, own regulation with additional parameter of optical pollution degree (cm^2/m^2)

Method for compost and culture substrate

- Drying (40°C) and weighting (DM) of the sample
- Sieving (5 mm, 2 mm, 1 mm); Figure 2
- Selection of particles of plastic (also glass and metal) under the stereomicroscope (> 20 mm and > 2 mm); Figure 3
- Weighting of selected plasticparticles
- Calculation and fotodocumentation

Figure 2: Dried and sieved compost sample.

Figure 3. Microplastic > 20 mm (left) and 2 – 20 mm (right).

Method for liquid manures and digestates

- Determination of dry matter (DM)
- Weighting of sample
- Washing of the sample through different sieves: 2 mm (1 mm); Figure 4
- Transfer of the flotate in drying dishes and drying at 40°C
- Selection of particles of plastic > 2 mm (> 1 mm) under the stereomicroscope; Figures 5 and 6
- Weighting of selected plastic particles
- Calculation and photo documentation

Figure 4. Washing of liquid samples.

Figure 5. Selected particles of plastic.

Figure 6. Microplastic >2 mm.

Table 1. Overview of numbers of analysed samples and the results in Austria

Year	Compost	positive	Culture substrate	positive	Liquid manure or digestate	positive
2014	35	2	n.d.	-	n.d.	-
2015	26	6	n.d.	-	n.d.	-
2016	28	1	n.d.	-	n.d.	-
2017	26	1	n.d.	-	n.d.	-
2018	14	5	9	0	n.d.	-
2019	30	4	21	0	6	4
2020	20	1	23	1	11	7
Total	**179**	**20**	**53**	**1**	**17**	**11**

Conclusion

Since 2014 a total number of 249 samples was investigated (Table 1) and about 13% of the samples was positive for microplastic. This high number of positive samples shows the importance of the analysis on microplastics.

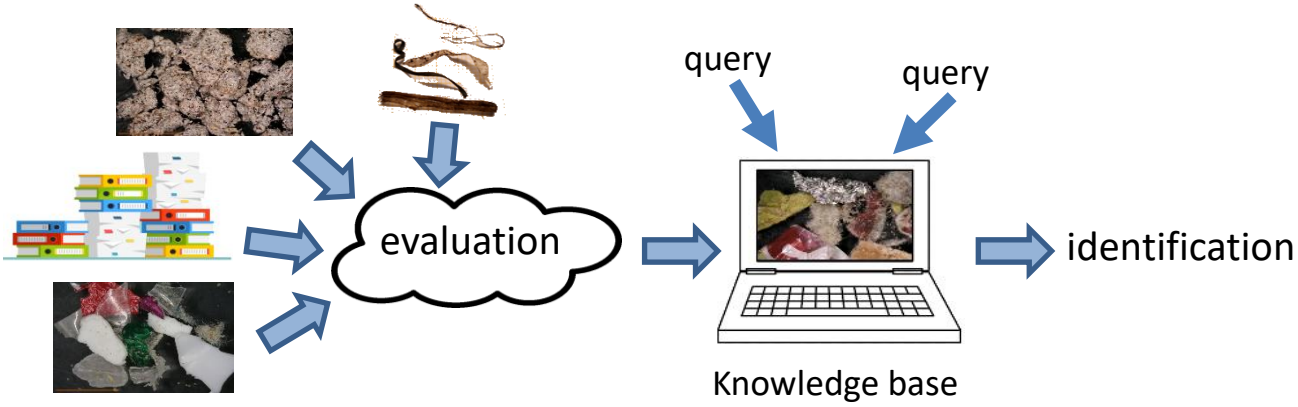
References

GESAMP, 2016. Sources, fate and effects of microplastics in the marine environment: part two of a global assessment; Kershaw, P. J., Rochman, C. M., eds.; IMO/FAO/UNESCO-IOC/UNIDO/WMO/IAEA/UN/ UNEP/UNDP Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection; Rep. Stud. GESAMP, 2016; Vol. 93, p 220.

Raamsdonk, L.W.D. van, M. van der Zande, A.A. Koelmans, L.A.P. Hoogenboom, R.J.B. Peters, M.J. Groot, A.A.C.M. Peijnenburg, Y.J.A. Weesepoel, 2020. Current Insights into Monitoring, Bioaccumulation, and Potential Health Effects of Microplastics Present in the Food Chain. Foods 9(1): 72-99. https://doi.org/10.3390/foods9010072

Knowledge base of packaging material

The results of the proficiency test on packaging material in bakery by-products (page 6 of this Newsletter) show that overestimations are the major share of the non-compliant results. Several causes can be identified. Besides insufficient defatting and dehydration, selection of particles mimicking packaging material could be one of the likely causes of overestimation. WFSR is planning to develop a knowledge base for types of packaging material and supporting documentation for proper identification of these materials.



Procedure

The start of the development of a documented knowledge base is to build a sample collection representing the European diversity of packaging materials from former food stuffs. These materials will be analysed for moisture and fat content, and evaluated for their background and composition. Images and supporting documentation will be included in the final knowledge base. A structure needs to be developed for representing the documentation in a useful way. The user interface should be transparent and intuitive.

REQUEST

All control laboratories are requested to submit a part of their collection of selected samples of packaging material. This material will be used as basis for the knowledge base. Documentation is necessary. Please mention the background information for every sample: date of examination, type of matrix material (bakery by-products, confectionary, candy syrup, plant roots, ready-made meals, restaurant waste, etc.), percentage of packaging material (contamination level in the examined sample), any other relevant documentation. This information allows us to document trends in time of type of material, geographic differences, and types of material related to the type of matrix.

Please send your material to L.W.D. van Raamsdonk, Wageningen Food Safety Research, P.O. box 230, 6700 AE Wageningen, the Netherlands.

E-mail for further correspondence: leo.vanraamsdonk@wur.nl

Density separation

L.W.D. van Raamsdonk, B. Hedemann, J. Vliege, C.P.A.F. Smits, T.W. Prins; WFSR.

The specific density is a common parameter in microscopic procedures for the separation of certain fractions from a sample. In the detection of animal by-products, the first procedural step is the separation of a sediment containing heavy particles in tetrachloroethylene (TCE, specific density D=1.62 g/cm^3), if present, after grinding a sample. Other examples of application of specific density is the concentration of muscle fibres (Bremer et al., 2012) and of insect parts (Veys and Baeten, 2018). Experiments have been carried out for establishing the specific density of feed ingredients as aid in identification of these ingredients.

WFSR conducted experiments for establishing the range of specific density of eight different feed ingredients, represented by 13 different samples. A range of several specific densities was distracted from the specific density of 100% of tetrachloroethylene (1.62 g/cm^3) diluted with n-Heptane (specific density 0.684 g/cm^3) in steps of 0.1 or 0.05 g/cm^3. The share of flotate in % was established by weighing the dried flotate and the dried sediment. The sum of the two fractions was expected to be close to the weight of the original sample (1 gram). Mixed samples consisting of two ingredients with equal shares were tested for the options to separate the ingredients, and the results were checked with microscopic confirmation of the content of the flotations and sediments.

Along the range of increased specific density of the solvent, from 1.22 g/cm^3 up to 1.52 g/cm^3, initially in four steps, the share of the flotate increased, in most cases from 0% to 100%. The span of the specific density for each ingredient was established from the extrapolated graphs. In some cases less than the original amount of material was recovered (90-95%). This could be caused by dilution of remaining oil in palm kernel meal and rape seed meal. The reason for the suboptimal recovery for corn distillers` grain and wheat middlings remains unknown. The materials used (Figure 7) appeared to show three different ranges of specific density: corn gluten (1.12 – 1.32 g/cm$^3$), corn distillers` grain,

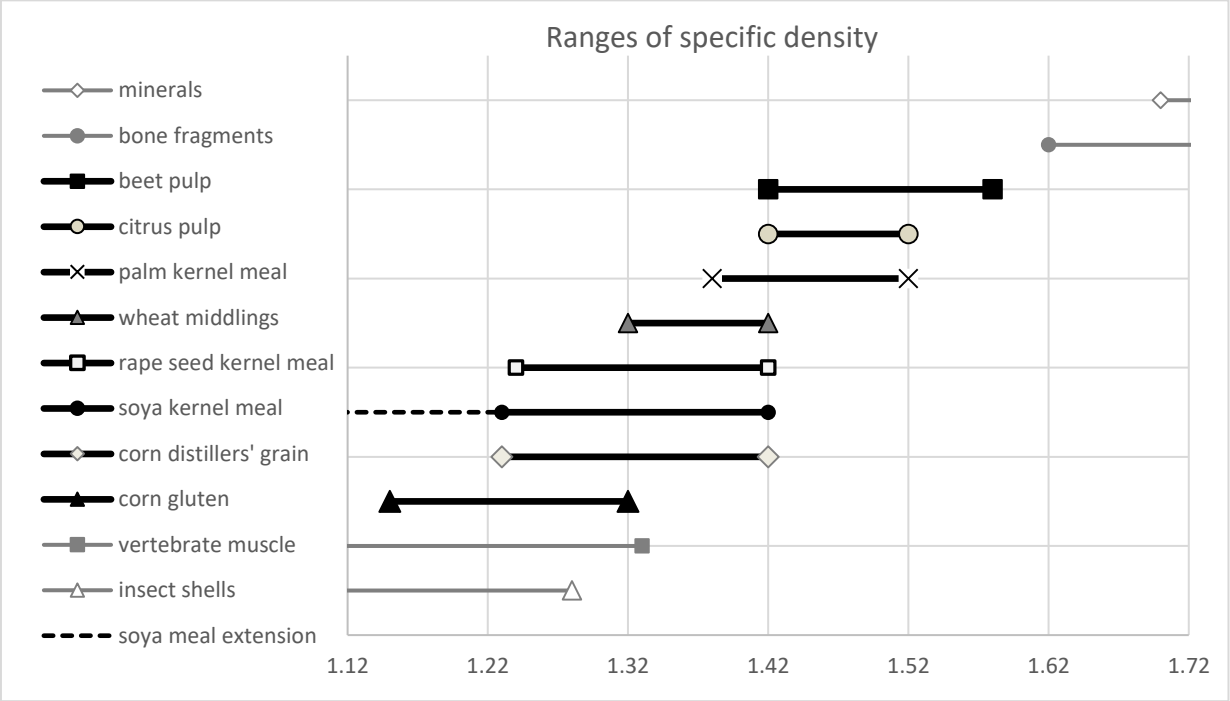


Figure 7. Overview of min-max ranges of eight different feed ingredients (black; this study) and ranges of animal or inorganic materials obtained from literature (grey).

rapeseed kernel meal, soya kernel meal and wheat middlings (1.25 – 1.42 g/cm^3), and palm kernel meal, citrus pulp and beet pulp (1.35 – 1.55 g/cm^3) (Figure). There is no clear distinction between groups, such as oil seeds versus by-products of the starch production, and ingredients with a common botanic origin show different specific densities (corn gluten and corn distillers` grain). Diversity was also found among different version of one ingredient (soya kernel meal, three samples). It is, however, demonstrated that a range of different specific densities exists among vegetable ingredients, ranging from those found for vertebrate muscles and insect fragments (below 1.3 g/cm^3) and up to 1.55 g/cm^3, close to the specific density of bone fragments (exceeding 1.62 g/cm^3).

Three mixed samples, each existing of two different ingredients at a ratio of 1:1 (w/w) were tested with solutions at different specific densities. The mixed samples consisted of wheat middlings / beet pulp, citrus pulp / soya kernel meal, and palm kernel meal / soya kernel meal. The ingredients of each mixed sample appeared to separate in the expected fractions, predominantly in either the flotate or in the sediment, at the appropriate specific density, in all three cases at 1.42 g/cm^3 (Figure 8). These experiments show that separation based on specific density can assist in the identification of feed ingredients in one or more combinations of sediment and flotate fractions.

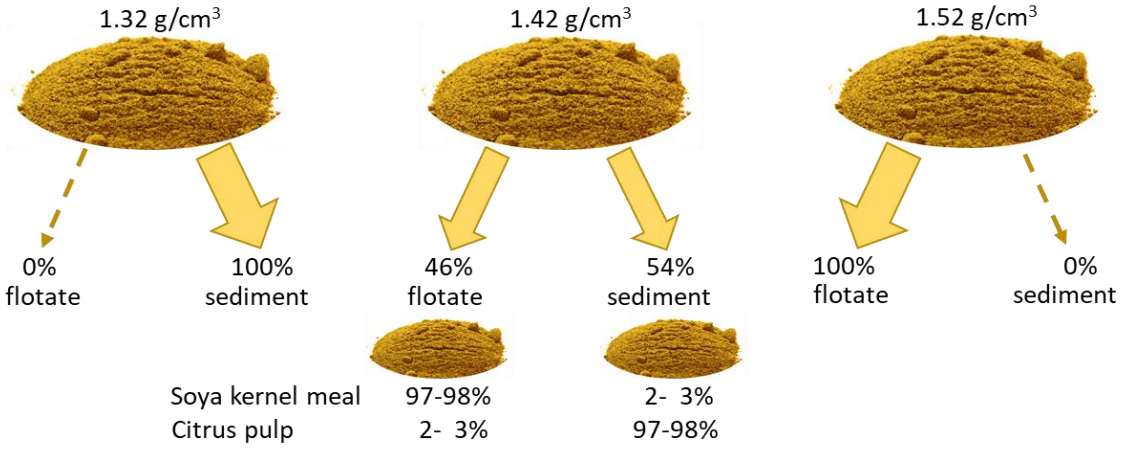


Figure 8. Mixtures of soya kernel meal and citrus pulp separated according to their specific density.

The current approach to add a characteristic to the different feed ingredients as an aid for identification should be evaluated as a proof of principle. A larger range of ingredients, and a larger range of different samples of each of those ingredients need to be investigated. The current results show that a further separation of the fraction lighter than 1.62 g/cm^3, preferably at approximately 1.4 g/cm^3, would help to achieve two subfractions in which certain ingredients are separated from each other. The expectation that certain ingredients could be abundantly present, whereas as others might be hardly present in a subsample, can be informative for identification.

References

Bremer, M.G.E.G., Fumière, O., Hekman, W., Marien, A., Kemmers-Vonken, A., Fernández Pierna, J.A., Vliege, J., Baeten, V., van Raamsdonk, L.W.D., Berben, G., 2012. Combination methods for PAP detection and species determination of animal particles. In: Jørgensen, J.S., Baeten, V., editors. Detection, identification and quantification of processed animal proteins in feedingstuffs. Namur: Presses universitaires de Namur; 139-149.

Veys P, Baeten V. 2018. Protocol for the isolation of processed animal proteins from insects in feed and their identification by microscopy. Food Control. 92: 496–504.

Scheme of ring tests 2021

The IAG section Feeding stuff Microscopy organizes annually several ring tests for the evaluation of composition or detection of prohibited constituents in animal feed. The board of the IAG section Feeding stuff Microscopy and WFSR have agreed to organize together the 2021 ring test for the following situations:

- Test IAG-2021-A. Detection of the presence of **animal proteins** in a set of four samples. This test was already organised by WFSR in previous years. Targeted protocol: Regulation (EC) 152/2009, consolidated version of November 16, 2020. Cost for participation: € 275.
- Test IAG-2021-B. Declaration of the **composition** of a compound feed (one sample). This test was organised from 2014 on by WFSR as well. Targeted protocol: IAG method A2. Cost for participation: € 75.
- Test IAG-2021-C. It is the intention to organise a test with two or three samples of bakery by-products containing **packaging material**. This PT will be a further extension of the recommendations as concluded from the previous PT (see this Newsletter for the summarized report). The design of this PT has to be decided. Intended costs: a maximum of € 175.

The single sample for the composition test will be part of the animal protein test. On behalf of the IAG section Feeding stuff Microscopy, WFSR will invite you for participation in these ring tests. WFSR will encourage you to subscribe to all three tests, although this is not mandatory. Participation in all three tests would cost € 525; in this case a discount of 10% will be granted, resulting in a total cost of € 472.50 for the total set of three tests.

The samples for test IAG-2021-A and IAG-2021-B will be send around April 2021. Also a questionnaire will be send by E-mail, together with instructions and relevant documentation on protocols. A time slot of four weeks is planned for the analyses of the samples by every participant. This means that early May all results are expected to be returned to WFSR. The samples of test IAG-2021-C will be send in autumn and results needs to be reported before the end of the year. All results are intended to be reported at the annual meeting of the IAG working group Microscopy in the Netherlands in September 2021 (tests A and B) or in 2022 (test C). The final reports will be published later in either 2021 or 2022. All communications of the evaluation will be fully anonymous.

If you are interested to participate in one or more proficiency tests, please return the application form, which accompanies this newsletter, to leo.vanraamsdonk@wur.nl AND to microscopie.wfsr@wur.nl . **Subscription closes Monday March 8th, 2021**. You are requested to make a payment after receiving the invoice from WFSR. Make sure that the reference number, your name and your institute's name are mentioned upon payment. This information is necessary to avoid loss of payments that cannot be linked to participating institutes.

Feed conference 2021, Vienna.

Feed2021
International Feed Conference
Vienna, Austria | June 23-24, 2021

On behalf of the Austrian Agency for Health and Food Safety (AGES) it is an honour to welcome you to the 7th International Feed Conference 2021 in Austria. The conference will be held at AGES headquarters in Vienna from 23rd to 24th of June 2021.

Feed2021 is the seventh in a series of conferences held biannually and has been initiated by the European Union's leading reference laboratories and research institutions in animal feed.

With the five different topics of this International Feed Conference, the organizers tried to cover the current interesting areas for animal feed:

- Feed safety
- Feed fraud and feed authenticity
- Natural Toxins and Impact of Climate Change
- Sustainability and circular economy in the area of feed
- Impact of feed on animal health and welfare

In today's world, sharing of scientific knowledge, research findings, laboratory methods and strategies within the scientific community has become a necessity. The aim of this conference is to bring scientists, researchers, laboratory personnel, policy-makers from governmental and non-governmental organizations and people from industry on a single platform where they can share their knowledge, scientific experiences and experiments on subjects crucial to animal feed. With the participation of international experts, we hope that productive discussions will stimulate new creative ideas to translate new discoveries into better practice and application.

We look forward to your active support and participation by submitting an oral presentation or poster.

Register now for the Feed2021 and join us as we look at the emerging topics in Feed Science.

Language: The conference will be in English. No interpretation will be provided.

Visit the Feed Conference from June 23 to 24, 2021. Further information is available at

https://feed2021.ages.at

The current measures and travel limitations for mastering the current COVID-19 pandemic are severe and it can be expected that they will stay for a longer period. It is recommended to follow the general news and the announcements on the website of the FEED2021 conference and on the website of IAG for additional elements or alternative ways for the organization of this conference.

Save the date!

The next annual meeting of IAG section Feed Microscopy will be held on:

Tuesday 7th to Thursday 9th of September 2021.

Together with MasterLab (Nutreco) the IAG-board will cordially invite you to join the annual IAG-meeting – organized by MasterLab in the Netherlands – The organization of this meeting is just in the beginning. Information about the place and location will be published as soon as possible!

Take this great opportunity to meet your colleagues, to participate in exchange of information and discussions on relevant issues of an important area of monitoring.
The official invitation letter by our colleagues of MasterLab and the official agenda of the IAG-Meeting will be published by time.

https://www.iag-micro.org/index-2.html

Closing remark

Dear reader,

We hope that you enjoyed reading the articles in this Newsletter. Even more, we hope that the included information will be useful for all your activities in the already started year. The board members, and naturally all other members, of IAG section Feed Microscopy will help to answer your questions. So, you are invited to contact us. We wish you fruitful 2021.

Board of IAG section Feed Microscopy.