Chemical and nutritional value of organic feedstuffs : a need to address in 100% organic feeding of organic monogastric animals

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Rationale

1

Ever increasing trend in organic monogastric production since 2010

2

EU regulation towards 100% organic feeds for organic animal production

3

A lack of protein feeds in organic production

4

Make a better use of organic protein feeds (CASDAR SECALIBIO)

SECALIBIO

Sécuriser les Systèmes Alimentaires en Production de Monogastriques Biologiques

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Avec la contribution financière
du compte d'affectation spéciale
«Développement agricole et rural»

- Producing organic protein feeds
- Characterizing protein feeds and other feeds to be included in the 100% organic diets
- Informing farmers about the correct use of organic protein feeds in the 100% organic diets

Tasks and objectives

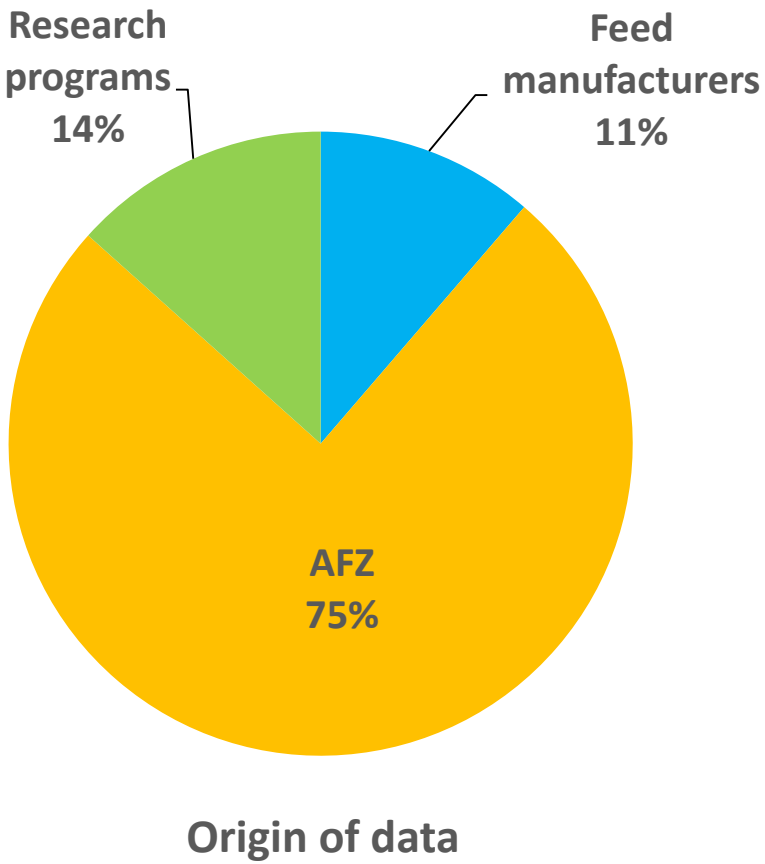
CHARACTERIZE ORGANIC RAW MATERIALS THROUGH THE COLLECTION OF DATA AND THE CREATION OF A DEDICATED DATABASE

IDENTIFY GAPS OF DATA IN ORGANIC FEEDS

COMPARE ORGANIC FEEDS TO CONVENTIONAL FEEDS

ASSESS AND PROCESS DATA FOR PUBLICATION OF ORGANIC FEED TABLES

Description of the organic database



- 35315 chemical data and 354 digestibility data
- 6577 samples (36 % after 2010)
- 94 different feeds (raw materials)
- Protein feed samples:
  - 877 soybean meal
  - 380 non-dehulled sunflower meal (71 dehulled)
  - 356 faba bean
  - 195 peas
- 70 % France ; 22 % unknown origin ; 4 % Spain ; 3 % Italy ; etc…

Main feeds



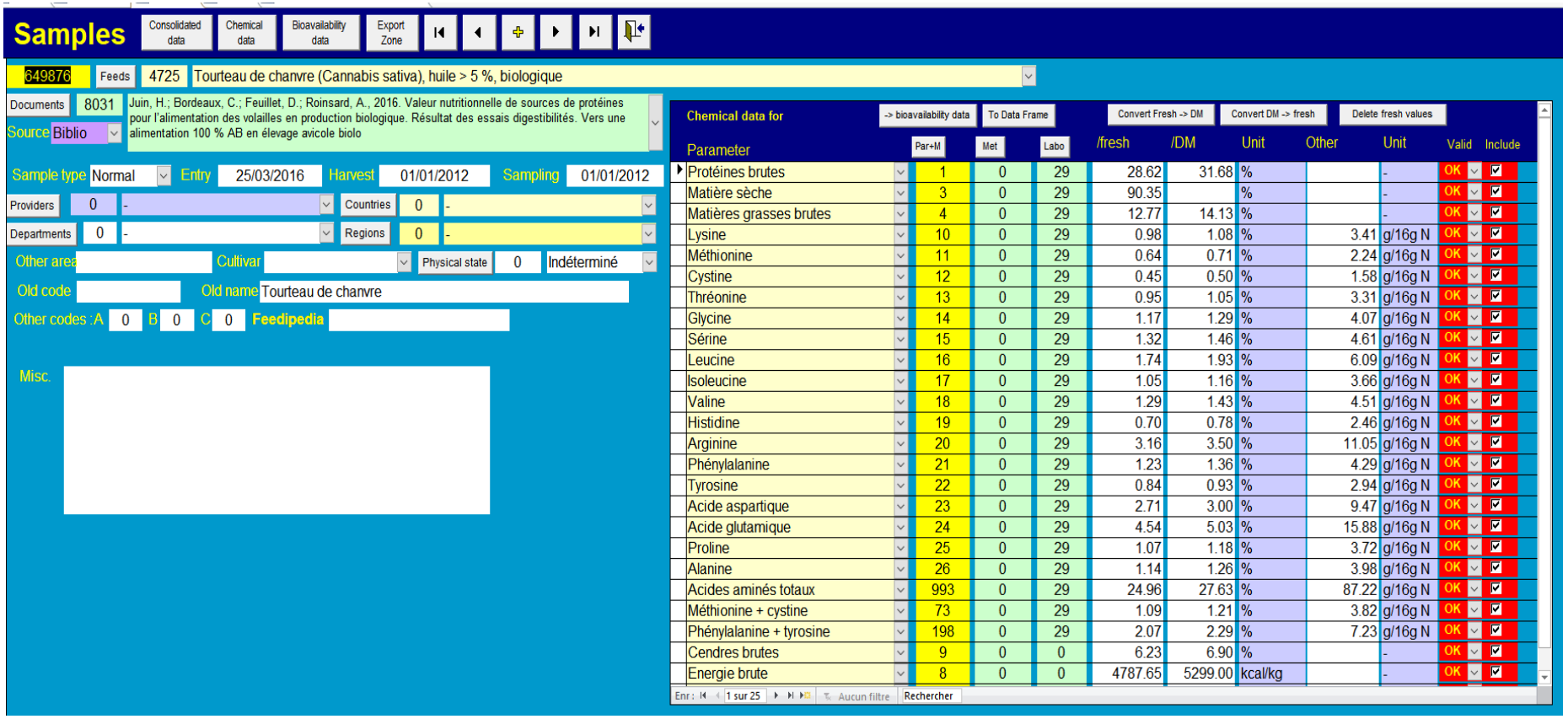


- **Cereal grains**: Maize, wheat, barley, oats, rye, triticale, spelt
- **Legume seeds**: Pea, faba bean
- **Oilseeds**: Treated soybean seeds, sunflower seeds
- **Oilmeals** : rapeseed meal, soybean meal, sunflower meal, sesame meal
- **Others**: Dehydrated alfalfa, needle , whey,, alfalfa protein concentrate, wheat bran, wheat middlings

Main parameters

- **Main chemical parameters**: DM, CP, CF, Crude Fat, Ash, Starch, Sugar, Van Soest fibre (NDF, ADF, ADL),Ca, P
- **Other chemical parameters**: Mg, Na, K, Zn, Cu, Mn, amino acids, fatty acids
- **Energy values for pigs**: growing pigs, fattening pigs (DE, ME, NE)
- **Energy values for poultry**: cockerels, broilers
- **Amino acid digestibilities**: SID in pigs, Standardised or Apparent ileal in poultry

Data collection: sample information



Variability: organic vs. conventional feeds

	Variability organic vs. conventional			
	CP	Fibre	Fat	Starch
Soybean meal exp.	-	-	=	NA
Sunflower meal exp.	-	-	-	NA
Rapeseed meal exp.	+	=	=	NA
Linseed meal exp.	+	=	+	NA
Peas	+	=	+	+
Faba bean	=	=	=	=

NA: not applicable

Legume seeds: organic vs. conventional

% DM		Protein	**Fibre**	Starch
Peas	Organic	23,6	**6,9**	50,8
	Conventional	23,0	6,4	51,9
	Significance	***	***	***
Faba bean	Organic	28,5	10,2	43,1
	Conventional	29,1	9,0	44,0
	Significance	*	***	*

*0,01 < p < 0,05 ; ** 0,001 < p < 0,01 ; *** 0 < p < 0,001

- Slight but significative differences
- higher fibre content in organic seeds
- No rule for protein content

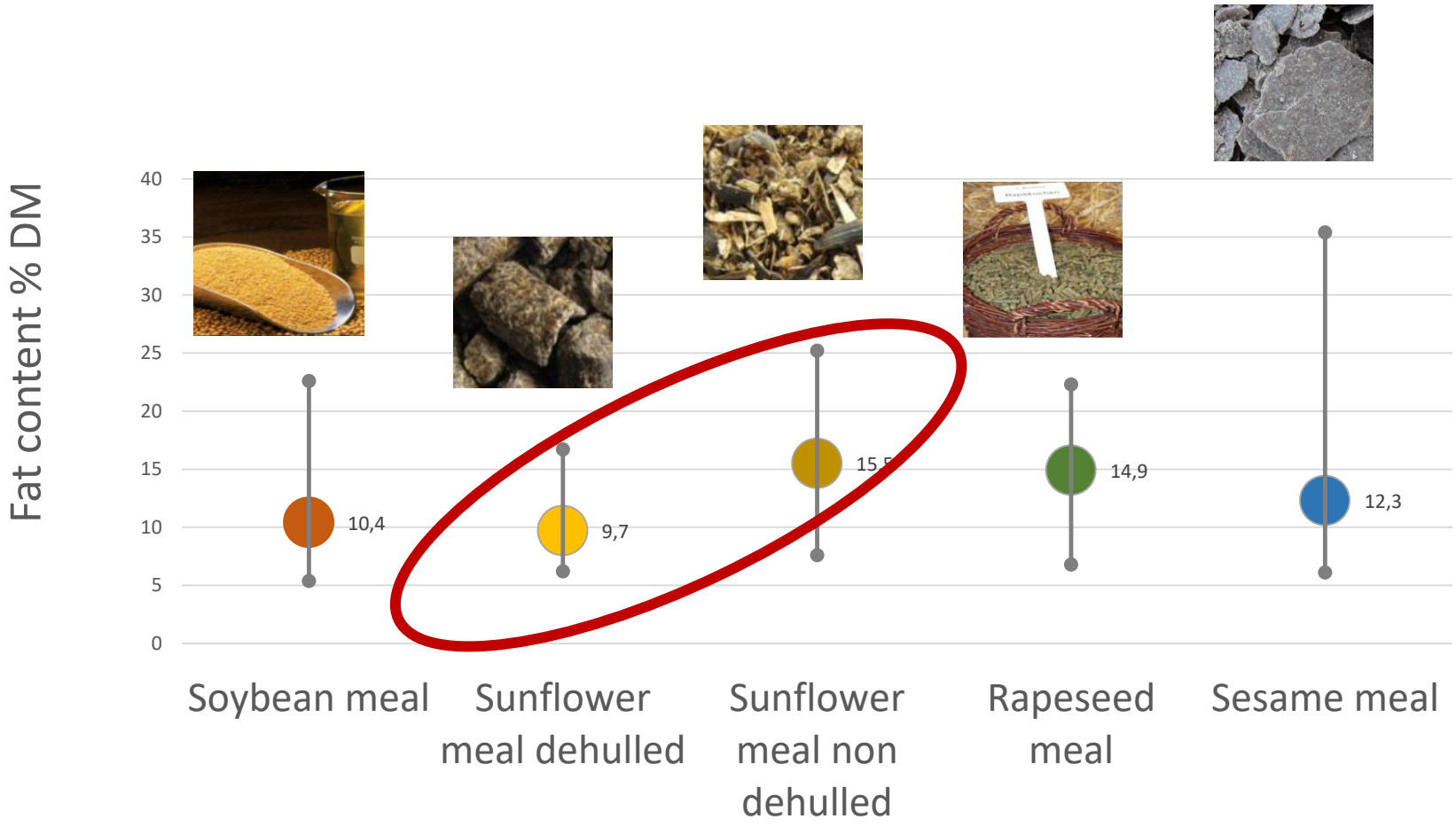
Oilmeals: organic vs conventional

% DM		Protein	Fat	Fibre
Soybean meal exp.	Organic	47,4	10,4	5,9
	Conventional	47,1	9,8	6,1
	Significance	**NS**	**NS**	**NS**
Rapeseed meal exp.	Organic	32,3	14,9	12,4
	Conventional	32,5	14,8	12,9
	Significance	**NS**	**NS**	**NS**
Sunflower meal exp.	Organic	28,2	14,5	25,6
	Conventional	29,4	12,0	25,7
	Significance	**	***	**NS**

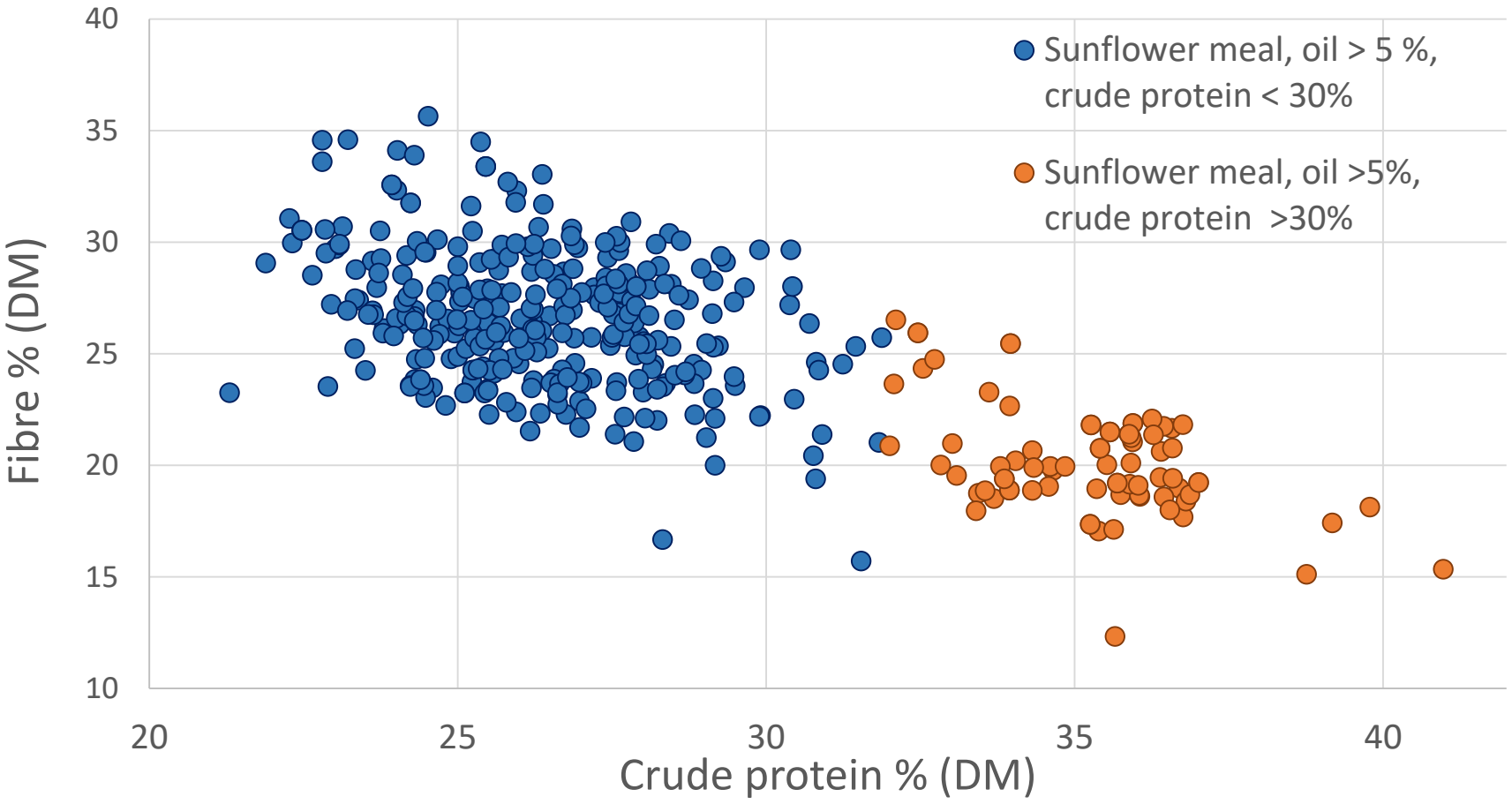
NS : non significant ; *0,01 < p < 0,05 ; ** 0,001 < p < 0,01 ; *** 0 < p < 0,001

- Method = ANOVA organic vs. conventional expeller meals
- Sunflower: more fat, less protein => manage quality

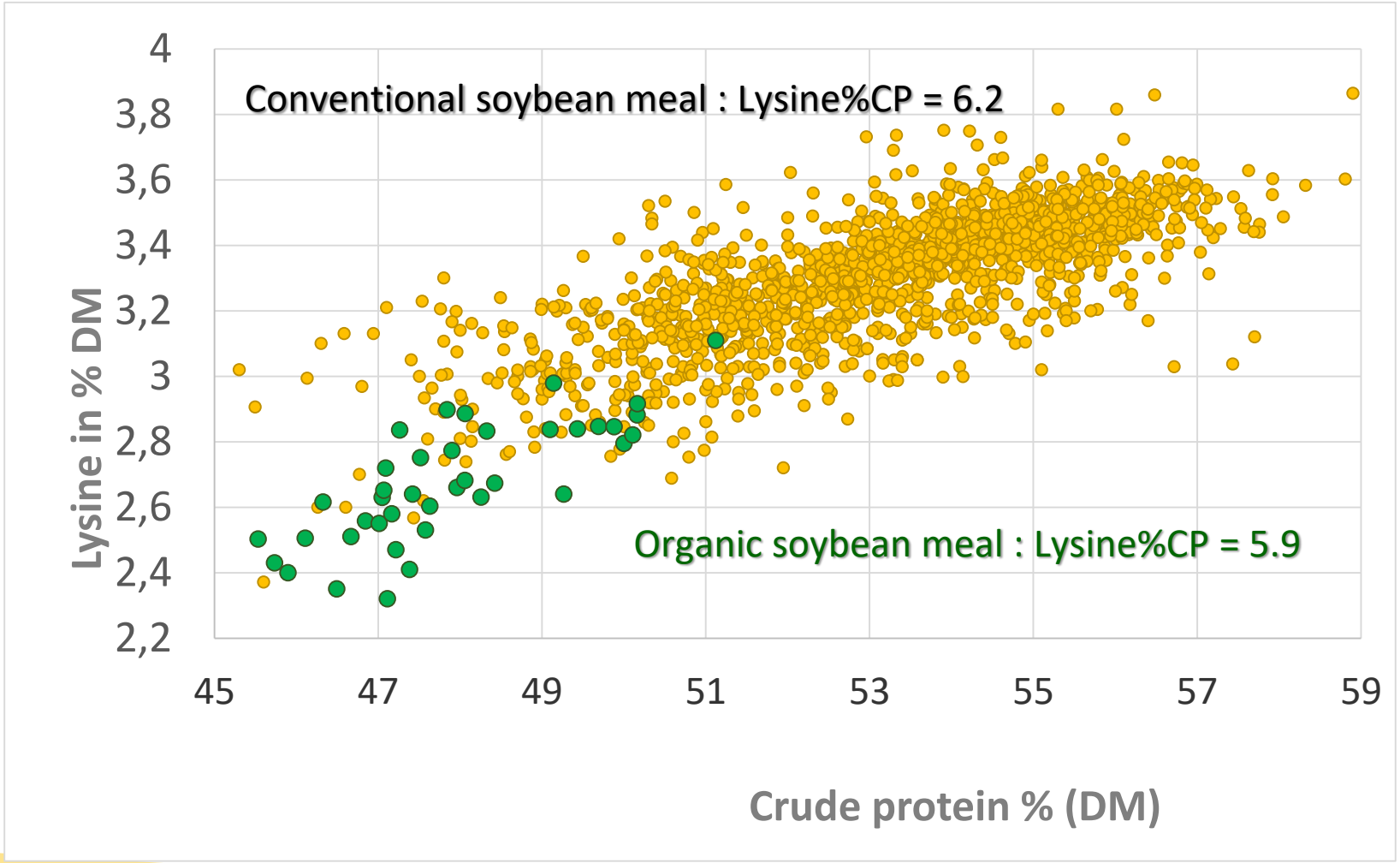
Organic oilmeals: high and variable fat content



Typology of sunflower meals: de-hulling effect



Lysine/CP ratio: lower in organic soybean meal

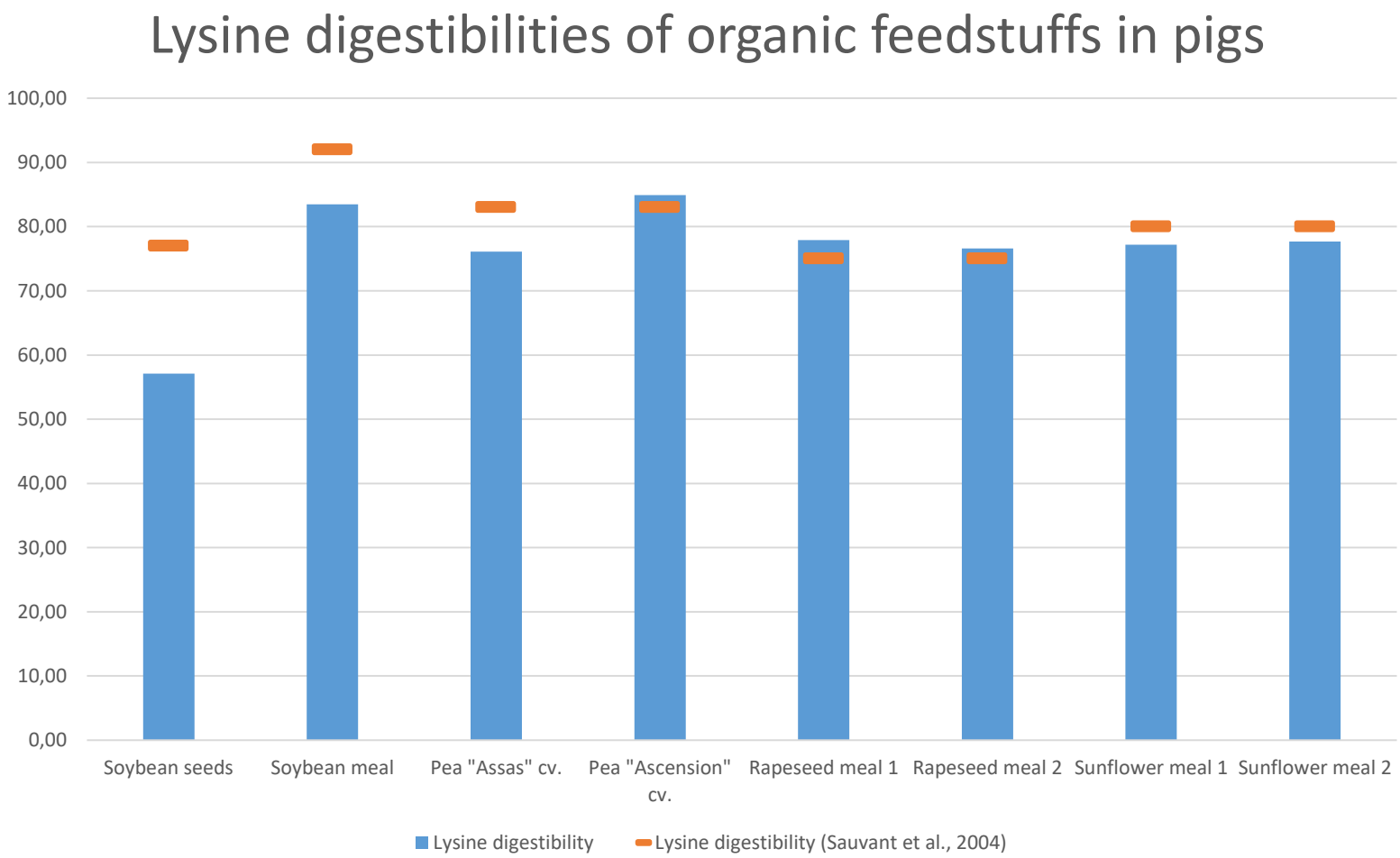


Nutritional values: poultry

		AMEn (kcal/kg)
Soybean meal exp. N=4	Organic	3002
	Min/max	2676 / 3121
	Conventional	2590 (avg.)
Sunflower meal exp. N= 8	Organic	2495
	Min/max	2274 / 2769
	Conventional	1620-1760*

AMEn : high (slow growth rate animals)

Nutritional values: pigs



Take-home message

- No higher variability than in conventional feedstuffs
- For all feeds, only slight differences between organic and conventional feeds (organic oilmeals are compared to conventional expeller oilmeals (undefatted oilmeals))
- Scarce digestibility data (to be addressed within SECALIBIO)
- Categorization of oilmeals is possible and will be taken into account in the organic feed tables
- Conclusion: methodology for the development of organic feed tables can rely on the knowledge developed for conventional feeds

Thank you for your attention