



Industry Survey on the Crude Protein Content in Compound Animal Feeds

Background

Reduction of crude protein is listed as an action in the Climate Action Plan. Reducing crude protein content of animal feed will reduce nitrous oxide and ammonia losses. This action is one that can have an immediate effect on emissions. When this action was initially included in the Climate Action Plan, there was a lack of accurate information available on the level of crude protein in livestock rations. An initial comprehensive industry survey was undertaken in 2020 gathering data for 2015, 2017 and 2019. This survey was repeated in 2022 collecting data for 2021.

Accurate data on crude protein levels is considered essential for national emissions inventory purposes and to inform future strategy and policy in this area. The survey was coordinated and managed by DAFM with the support of the Irish Grain and Feed Association (IGFA).

Methodology

The template for the survey was sent to all feed mills and approved home mixers (pig feed) who are manufacturing compound feed in 2022. Mills and home mixers were requested to provide information on their production quantities and weighted average crude protein contents for dairy, beef, pig and poultry compound feeds. The information requested was further broken down into various categories within each animal species. For dairy and beef feed, manufacturers were requested to include both coarse and cubed feed, to include retail and wholesale listed products, but to exclude sales of straights and customised 'special' diets that were formulated specifically for one customer.



Results

Details of the response to the survey are presented in Table 1 including: the number of manufacturers who responded to the survey, the % of total manufacturers who responded, the quantity of feed and the % of national production represented by the survey.

Table 1 – Survey response

	Dairy	Beef	Poultry	Pigs	
				Mills	Home Mixers
No of Manufacturers	56	55	12	16	17
% of Total Manufacturers	91	86	92	65	50
Tonnage (MT)	1.81	1.42	0.68	0.76	0.21
% of National Production	96	97	97	99	*

* Complete data not available on total home mixer production

Crude protein contents of compound feeds are presented in Tables 2-5 expressed as weighted average crude protein %.

Weighted average values were obtained by calculating the sum of the manufacturer production quantities times the protein values and dividing by the sum of the production quantities.

Tables 2a-5a show the actual tonnage of crude protein of compound feeds produced, these figures were obtained by calculating the quantity of crude protein using the declared percentages provided by manufacturers.

Table 2 – Crude Protein % of Dairy Cow Compound Feed

Category (Time of year)	2015	2017	2019	2021	Trend 2015- 2021 (% change)	Change in % Crude Protein 2015-2021
Jan - March	17.6	17.6	17.4	17.3	-1.7	-0.3
April - June	16.1	15.7	15.7	15.1	-6.2	-1.0
July - September	15.9	15.6	15.5	14.9	-6.3	-1.0
Oct - Dec	17.3	17.2	17.1	16.8	-2.9	-0.5
Overall	16.6	16.5	16.3	15.9	-4.2	-0.7



Table 2a - Crude Protein Production (Tonnes) in Dairy Cattle Compound Feed

Category (Time of Year)	2015	2017	2019	2021
Jan - March	49769	56597	64041	70242
April - June	53930	57600	71287	82255
July - September	41297	52375	60680	72307
Oct - Dec	40034	52023	56869	62038
Overall	185030	218595	252878	286843

Table 3 – Crude Protein % of Beef Cattle Compound Feed

Category	2015	2017	2019	2021	Trend 2015-2021 (% change)	Change in % Crude Protein 2015- 2021
Calf (0 - 6 months)	17.6	17.5	17.4	17.3	-1.7	-0.3
Beef Grower (7 - 12 months)	16.0	16.1	16.0	15.8	-1.2	-0.2
Beef Finisher (>12 months)	14.1	13.8	13.7	13.8	-2.1	-0.3
Overall	15.2	15.0	14.9	14.9	-2.0	-0.3

Table 3a – Crude Protein Production (Tonnes) in Beef Cattle Compound Feed

Category	2015	2017	2019	2021
Calf (0 - 6 months)	35894	40777	41189	53344
Beef Grower (7 - 12 months)	56915	64679	64908	60176
Beef Finisher (>12 months)	93148	102958	103216	97609
Overall	185957	208414	209313	211129



Table 4 – Crude Protein % of Pig Compound Feed

Category	2015	2017	2019	2021	Trend 2015-2021 (% change)	Change in % Crude Protein 2015-2021
Creep	19.2	18.8	18.0	18.3	-4.7%	-0.9
Link	19.6	19.3	18.8	18.7	-4.6%	-0.9
1st Stage Weaner	18.7	18.6	18.2	17.9	-4.3%	-0.8
2nd Stage Weaner	19.0	18.7	18.2	17.6	-7.4%	-1.4
1st stage Finisher	17.2	17.0	16.8	16.4	-4.7%	-0.8
2nd stage Finisher	16.5	16.6	16.0	15.4	-6.7%	-1.1
Hi-fibre Dry Sow	14.9	14.9	14.7	13.8	-7.4%	-1.1
Lactating Sow	17.9	17.9	17.4	17.5	-2.2%	-0.4
Gilt Rearer	16.8	16.6	16.6	15.2	-9.5%	-1.6
Overall	17.3	17.1	16.7	16	-7.5%	-1.3

Table 4a - Crude Protein Production (Tonnes) in Pig Compound Feed

Category	2015	2017	2019	2021
Creep	3159	4720	4432	7139
Link	3941	4232	4164	4175
1st Stage Weaner	9510	10317	10195	10109
2nd Stage Weaner	8989	9649	9484	9246
1st stage Finisher	36096	37119	37381	41809
2nd stage Finisher	29497	30876	30327	33444
Hi-fibre Dry Sow	9638	8845	9436	8826
Lactating Sow	9098	8349	8776	8794
Gilt Rearer	418	459	975	420
Overall	110347	114565	115170	123962



Table 5 – Crude Protein % of Poultry Compound Feed

Category	2015	2017	2019	2021	Trend 2015-2019 (% change)	Change in % Crude Protein 2015- 2021
Rearing birds to point of lay*	16.7	16.7	16.7	18.6	+11.4	+1.9
Layers**	15.7	15.5	15.6	15.9	+1.3	+0.2
Broilers	18.8	18.8	18.9	19.1	+1.6	+0.3
Turkey	20.8	20.1	19.4	18.9	-9.1	-1.9
Ducks	15.4	15.4	15.3	15.7	+1.9	+0.3
Overall	18.1	18.0	18.1	18.2	+0.6	+0.1

Table 5a - Crude Protein Production (Tonnes) in Poultry Compound Feed

Category	2015	2017	2019	2021
Rearing birds to point of lay*	10111	9770	13397	9219
Layers**	26820	30694	22010	33338
Broilers	52734	59577	67240	72305
Turkey	5918	7209	7649	8816
Ducks	1225	1595	871	748
Overall	96809	108846	111167	124425

* Rearing birds to point of lay includes both pullets destined for food egg production and broiler breeder pullets.

** Layers includes both hens for food egg production and broiler breeder hens.



Summary

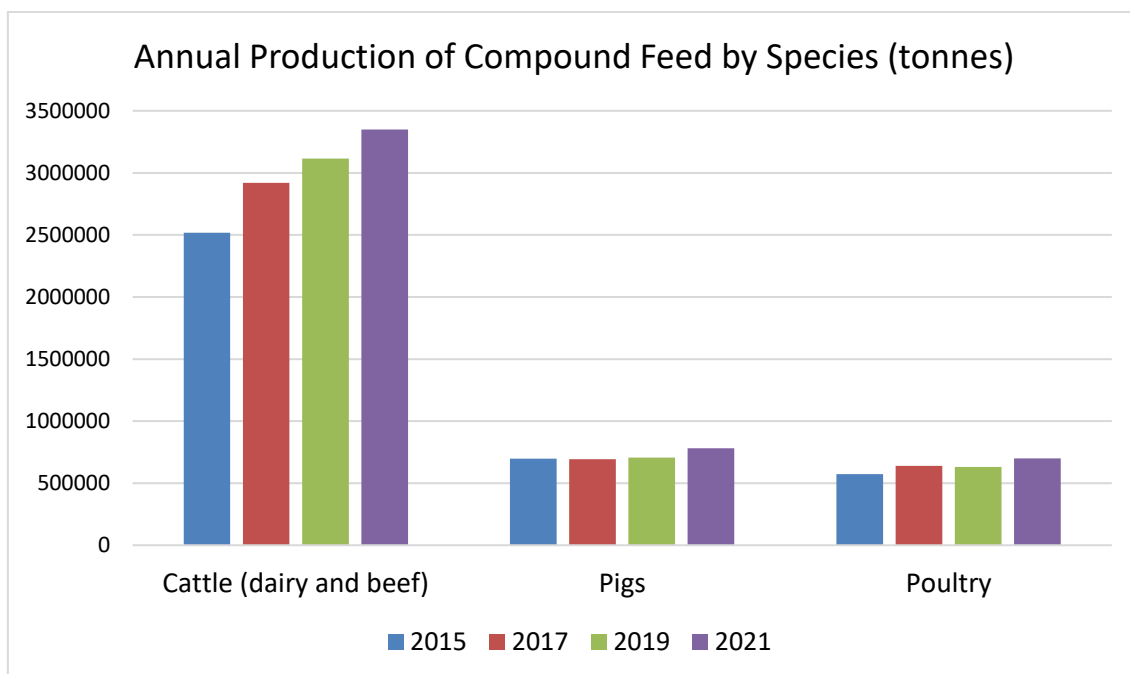
The response to the survey from mills was excellent representing 99.7% of overall national feed production. This high response rate gives an accurate picture of current protein levels in livestock rations.

Overall average crude protein content of dairy, beef, pig and poultry feed for 2021 was 15.9%, 14.9%, 16% and 18.2% respectively.

Crude protein levels varied among the feed categories for each species. For dairy feed, protein levels in 2021 were higher from Oct-March (17.1%) than from April-September (15%) reflecting both the lower crude protein in grass silage compared to grass and the legal requirement to comply with the Good Agricultural Practice Regulation (SI 113 of 2022).

Overall protein levels have been following a positive environmental downward trend since 2015. The biggest reduction has been in pig feed with an overall reduction of 1.3% over this period.

Actual quantities of crude protein in animal feed has increased over the time period examined due to increases in volumes of feed.



While a reduction in crude protein % was recorded for all feed categories, except poultry feed, since 2015, there was an increase in actual crude protein over the time period examined due to increases in volumes produced.



Conclusion

Reducing crude protein content in livestock rations can reduce both N excreted and the proportion of N in urine and is an important mitigation measure in reducing ammonia and N₂O emissions. It is one of the measures outlined in the government Climate Action Plan and also DAFM's Ag-Climatise roadmap.

Accurate data and its application are of critical importance in the development of emissions reduction strategies. This survey will provide the data necessary to underpin strategy development and policy in this area.

Good Agricultural Practice Regulation (SI 113 of 2022) came into effect on the 11th March 2022 setting constraints on crude protein content in concentrate feed. A maximum crude protein content of 15% in concentrate feedstuff fed to grazing livestock is set between 15th April and 30th September on holdings with grassland stocking rates of 130 kg nitrogen per hectare or above.

A reduction in % crude protein was recorded for all feed categories, except poultry feed, since 2015, but there has been an increase in crude protein over the time period examined due to an increase in volume of animal feed produced.

Feedingstuffs, Fertiliser, Grain & Poultry Division

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