METHIONINE USE IN ORGANIC POULTRY PRODUCTION

Guidance

Methionine is an essential amino acid that is used to support functions necessary for poultry growth and development. While it is naturally available through insects and plant proteins, synthetic sources of methionine are used in poultry feed as a way to meet the need for this amino acid without increasing protein levels in the feed. Organic producers must provide a feed ration to livestock that is sufficient in meeting nutritional requirements; synthetic sources of methionine are restricted to balance meeting the nutritional requirements for this amino acid, without encouraging its function to optimize growth and productivity.

NOP REGULATIONS AND PCO POLICY

Synthetic methionine is allowed in organic poultry production at a maximum average intake (pounds per ton) over the life of the flock.

- DL-Methionine, DL-Methionine-hydroxy analog, and DL-Methionine-hydroxy analog calcium (CAS Numbers 59-51-8, 583-91-5, 4857-44-7, and 922-50-9)—for use only in organic poultry production at the following pounds of synthetic 100 percent methionine per ton of feed in the diet, maximum rates as averaged per ton of feed over the life of the flock: Laying chickens—2 pounds; broiler chickens—2.5 pounds; turkeys and all other poultry—3 pounds (7 CFR 205.603(d))

The life of the flock begins with organic management, which must begin no later than the second day of life. This will require poultry producers to obtain documentation of the synthetic methionine levels of feed they are using and calculate an average over the life of their flocks. If the flock will be managed by different organic operations throughout its life, the lifetime methionine plan should accompany the flock to the new operation

ADDITIONAL INFORMATION

HOW WILL CERTIFIERS VERIFY COMPLIANCE?

PCO requires the submission of a lifetime methionine plan as part of the Poultry Organic System Plan (OSP). If the feed processor you use follows a standard formulation with added synthetic methionine at, or under, the maximum allowed pounds per ton - this would lead to compliance with the average consumption over the lifespan of the flock. This can be noted in your OSP and documentation showing how this was verified must be available at inspection. If the feed processor you use follows a custom formulation with varying levels of synthetic methionine added depending on the growth stage of the flock, additional information will need to be gathered in order to determine compliance. The information you will gather and how you will calculate the average consumption over the lifespan of the flock must be outlined in your lifetime methionine plan. Your records and calculations will be verified at inspection.

IF NEEDED, HOW CAN OPERATORS CALCULATE AVERAGE POUNDS OF SYNTHETIC METHIONINE PER TON OVER THE LIFESPAN OF THE FLOCK?

PCO has developed an excel workbook to aid with synthetic methionine calculations. An example calculation for each type of flock using that worksheet is provided below. The narrative in the following paragraphs refers to those examples. Please contact the office to request a copy of the excel workbook.

Feed processors may only report total methionine levels on feed tags, which include both natural and synthetic sources of methionine. Please note that the restriction discussed in this document only relates to synthetic sources of methionine. PCO uses the active methionine level to calculate the average synthetic methionine figure. The first pieces of information that must be determined are:

- Feed consumption of flock (pounds of feed consumed by entire flock over specific time period) for each type of feed fed. This information should be added to Column C in the Methionine Calculation workbook. Depending on how you track feed consumption (e.g. per day, per bird, etc.), you may have to calculate this number -- for example, if you are tracking feed fed per day, multiple pounds fed by number of days in the ration OR if you track feed intake per bird, multiply pounds fed by number of birds in the flock.
- Pounds of synthetic methionine per ton added for that feed formulation. Depending on how your feed company reports this information, you may have to calculate this figure. It may be reported as pounds per ton, a percentage, or total pounds of synthetic methionine added for the delivery. For synthetic methionine reported as a percentage or total pounds of synthetic methionine added, you will need to convert it to pounds per ton (see example below). This information should be added to Column E in the Methionine Calculation workbook.
- Active methionine level from the synthetic source - depending on the source of synthetic methionine, the amount of active methionine can range from 20% to 99%. This restriction specifically calculates average pounds of synthetic 100% methionine per ton of feed in the diet. This information should be added to Column F in the Methionine Calculation workbook.

EXAMPLE SOURCING METHIONINE INFORMATION

1,790 pounds of feed delivered from feed mill, formula tag says 0.5% total methionine. You contact the feed mill for the information on pounds of synthetic methionine and the concentration of methionine.

- Feed mill sends documentation that the formula delivered is 0.15% synthetic methionine and the guaranteed concentration of the synthetic methionine is 98%.
    - 1,790 lbs total feed x 0.0015 synthetic methionine = 2.68 lbs synthetic methionine
    - 1,790 lbs feed x 1 ton/2000 lbs = 0.895 tons of feed
    - 2.68 lbs synthetic methionine / 0.895 tons of feed = 2.99 lbs of synthetic methionine/ton
    - 2.99 lbs of synthetic methionine/ton x 0.98 concentration = 2.93 lbs of synthetic 100% methionine/ton

EXAMPLE CALCULATION FOR A FLOCK OF TURKEYS

This flock has 15,000 birds and uses five feed formulations. User inputs flock and feed information into Columns A, B, C, E, and F. Formulas for calculating information for Columns D, G, H and the average synthetic methionine over the life of the flock are listed at the top of the columns.

Column	A	B	C	D	E	F	G	H	AVERAGE
			TOTAL	TOTAL	SYNTHETIC	SYNTHETIC	SYNTHETIC	SYNTHETIC	SYNTHETIC
			FEED	FEED	METHIONINE	METHIONINE	METHIONINE	METHIONINE	METHIONINE
			INTAKE	INTAKE	Added	Concentration	Adj. for 100%	Adj. for 100%	OVER LIFE OF FLOCK
Feed Formulation	Age of Birds	DAYS	LBS/FLOCK	TONS /FLOCK	LBS/TON	%	LBS	TOTAL LBS FED	#/TON
				*= C /2000		enter as decimal (e.g. 0.99)	*= E x F	*= D x G	*= H Total / D Total
1	0-6 weeks	42	150,000	75	3.5	0.99	3.465	259.875	
2	6 - 8 weeks	14	120,000	60	3.5	0.99	3.465	207.9	
3	8 - 12 weeks	28	345,000	172.5	3	0.99	2.97	512.325	
4	12 - 14 weeks	14	240,000	120	3	0.99	2.97	356.4	
5	14 - 16 weeks	14	270,000	135	2.5	0.99	2.475	334.125	
6				0			0	0	
7				0			0	0	
8				0			0	0	
9				0			0	0	
10				0			0	0	
TOTAL		112	1,125,000	562.5	15.5		15.345	1670.625	2.97

EXAMPLE CALCULATION FOR A FLOCK OF BROILERS

This flock has 15,000 birds and uses three feed formulations. User inputs flock and feed information into Columns A, B, C, E, and F. Formulas for calculating information for Columns D, G, H and the average synthetic methionine over the life of the flock are listed at the top of the columns.

Column	A	B	C	D	E	F	G	H	AVERAGE
			TOTAL	TOTAL	SYNTHETIC	SYNTHETIC	SYNTHETIC	SYNTHETIC	SYNTHETIC
			FEED	FEED	METHIONINE	METHIONINE	METHIONINE	METHIONINE	METHIONINE
			INTAKE	INTAKE	Added	Concentration	Adj. for 100%	Adj. for 100%	OVER LIFE OF FLOCK
Feed Formulation	Age of Birds	DAYS	LBS/FLOCK	TONS /FLOCK	LBS/TON	%	LBS	TOTAL LBS FED	#/TON
				*= C /2000		enter as decimal (e.g. 0.99)	*= E x F	*= D x G	*= H Total / D Total
1	0-3 weeks	21	45,000	22.5	2.75	0.98	2.695	60.6375	
2	3-5 weeks	21	76,050	38.025	2.75	0.98	2.695	102.477375	
3	5-6 weeks	9	48,600	24.3	2	0.98	1.96	47.628	
4				0			0	0	
5				0			0	0	
6				0			0	0	
7				0			0	0	
8				0			0	0	
9				0			0	0	
10				0			0	0	
TOTAL		51	169,650	84.825	7.5		7.35	210.742875	2.48

EXAMPLE CALCULATION FOR A FLOCK OF LAYERS

This flock has 15,000 birds and uses five feed formulations. User inputs flock and feed information into Columns A, B, C, E, and F. Formulas for calculating information for Columns D, G, H and the average synthetic methionine over the life of the flock are listed at the top of the columns.

Column	A	B	C	D	E	F	G	H	AVERAGE
			TOTAL	TOTAL	SYNTHETIC	SYNTHETIC	SYNTHETIC	SYNTHETIC	SYNTHETIC
			FEED	FEED	METHIONINE	METHIONINE	METHIONINE	METHIONINE	METHIONINE
			INTAKE	INTAKE	Added	Concentration	Adj. for 100%	Adj. for 100%	OVER LIFE OF FLOCK
Feed Formulation	**Age of Birds**	**DAYS**	**LBS/FLOCK**	**TONS /FLOCK**	**LBS/TON**	**%**	**LBS**	**TOTAL LBS FED**	**#/TON**
				*= C /2000		enter as decimal (e.g. 0.99)	*= E x F	*= D x G	*= H Total / D Total
1	0-10 weeks	70	296,000	148	3.5	0.5	1.75	259	
2	11-16 weeks	42	292,000	146	2.9	0.5	1.45	211.7	
3	17-20 weeks	28	494,000	247	3.1	0.5	1.55	382.85	
4	21-40 weeks	168	1540000	770	2.5	0.5	1.25	962.5	
5	41-70 weeks	203	2510000	1255	2	0.5	1	1255	
6				0			0	0	
7				0			0	0	
8				0			0	0	
9				0			0	0	
10				0			0	0	
TOTAL		511	5,132,000	2566	14		7	3071.05	**1.19682385**