

January 7, 2005

National Organic Standards Board  
c/o Robert Pooler, Agricultural Marketing Specialist,  
USDA/AMS/TM/NOP, Room 2510-So.,  
Ag Stop 0268,  
P.O. Box 96456,  
Washington, D.C. 20090-6456

Dear NOP Staff and NOSB Chair,

We respectfully submit to you this petition (attached) for continued allowance of Synthetic Methionine (MET) in organic poultry diets. This document has been a collaborative effort of industry representatives. Although competitors in the marketplace we share solidarity in the realization that our industry is in a precarious situation as the October 2005 sunset for the allowance of MET approaches. We are pleased and honored that the NOSB has agreed to consider this matter at the upcoming March meeting in Washington DC.

It is important for the readers of this document to understand that due to the narrow timeline this is a live document which will continue to grow in the days and weeks leading up to your meeting. The petition refers to a number of reports designed to illuminate the information outlined in the petition. Several of these documents are included as is and will be updated in the near future. Others are regrettably not ready to be presented at this time and will be sent as soon as possible. Your patience and understanding in this matter are greatly appreciated.

Also in the near future will be a much broader list of endorsements to this petition as we circulate it among the industry and solicit endorsements. Our intent is to demonstrate a wide base of support from all areas of the organic poultry industry and from across competitive boundaries.

We plan to continue working as a group to aid the process as this important and complex case moves toward decision. To that end we are prepared to expound on details, present information face to face and whatever else we can do to assist you. We sincerely hope you take full advantage of our willingness. To that end we again thank you for this opportunity and look forward to your response.

Respectfully,



Jim Pierce, Organic Valley/CROPP Cooperative



Bob Buresh, Tyson Foods

cc: Barbra Robinson  
Richard Mathews  
Robert Pooler  
Jim Riddle

**Petition for Amending the National List of the USDA's  
National Organic Program  
For the continued allowance of:**

**DL- Methionine, ML-Methionine Hydroxy analog, and  
DL-Methionine-hydroxy analog calcium-for use only in  
organic poultry production**

**A Synthesized Essential Amino Acid**

**Submitted January 7, 2005 by;**

**Jim Pierce, Organic Valley and Bob Buresh, Tyson Foods**

*Please refer to the first attachment to this petition Signatory List for further endorsement of this petition.*

**Petitioners are required to provide the following information as applicable:**

**Category for inclusion on the National List:**

- *This request is to continue the inclusion in 205.603 Synthetic substances allowed for use in organic livestock production (d) As feed additives.*

**Common name:**

- *The three names in the title of this document are the most widely used common names. They are however the common names associated with specific manufacturers. Throughout this petition the term "Methionine" will be used to refer to the natural form of the amino acid and the term MET will be used to refer to any synthetic analog.*

**Chemical Structure:**

- *According to the May 21, 2001 TAP review the formula for Methionine is  
 $H_2NCH_2SCH_2CH_2COOH$   
Other Chemical Structures;  
DL-Methionine  $CH_3-S-CH_2-CH_2-CH(NH_2)-COOH$   
Methionine Hydroxy Analog  $CH_3-S-CH_2-CH_2-CH(OH)-COOH$*

**Manufacturers name, address and telephone number**

- *There are three major manufacturers of MET world wide;*  
Adisseo  
3480 Preston Ridge Road, Suite 375. Alpharetta, GA 30005 Phone 678-339-1513  
  
Degussa Feed Additives  
1701 Barrett Lakes Blvd., Suite 340 Kennesaw, GA 30144 Phone 800-955-3114  
  
Novus International, Inc.  
530 Maryville Centre Drive St. Louis, MO 63141 888-906-6887

**List of uses, rates and applications for crops and livestock uses, mode of action for handling uses:**

- *Please refer to the attachment; Nutritional Function of MET in Poultry Diets*

**Sources and detailed description of manufacturing procedures:**

- *Please refer to the May 21, 2001 TAP review for this information.*

**Summary of any previous reviews by state or private certification agencies:**

- *Please refer to the attachment; History and Overview*

**Regulatory status with EPA, FDA or state authorities:**

- *Please refer to the May 21, 2001 TAP review for this information.*

**Chemical Abstract Service (CAS) number or other product number, samples of labels:**

- *Please refer to the May 21, 2001 TAP review for this information.*

**Physical properties of the substance and chemical mode of action: including environmental impacts, interactions with other materials, toxicity and persistence, effects on human health, effects of soil organisms, crops or livestock:**

- *Please refer to the May 21, 2001 TAP review for this information.*

**Safety information, including a MSDS (Material Safety Data Sheet) and report from National Institute of Environmental Health Studies (NIEHS):**

- *Please refer to the May 21, 2001 TAP review for this information.*

**Petition justification statement - that states why the synthetic substance is necessary, alternatives that could be used, beneficial effects to the environment, etc:**

### **Overview**

*In 2001 after three Technical Advisory Panel reviews and nearly three years of debate and discussion synthetic methionine [hereafter referred to as MET] was approved for use in organic poultry production for use only until October 2005 . In fact the approval allowed for the continued use of MET since the US organic poultry industry has historically used MET. The intent of the NOSB was clear; Synthetic Methionine was not to be on the National List with the same status as other materials subject to renewal every five years. Nor was their intent to start a process that would damage or destroy the organic poultry industry. The intent with this material was to send a message that hard fast research would be required to find alternative feedstuffs and breeds. To source and develop the production of those alternatives and to seamlessly if not painlessly wean the US organic poultry industry from this last essential amino acid before the sunset.*

*At the time of the NOSB decision most of us thought that we would be able to reformulate organic feed without methionine just as we had removed several other synthetic amino acids. Organic poultry feed rations were reformulated without other synthetic amino acids such as Threonine and Lysine with relatively little difficulty. Of the 11 essential amino acids required by chickens the one that the organic poultry industry remains dependant upon as an adjunct in its synthetic form is methionine.*

*As the attached document History and Overview shows there was no formal Petition including a Petition Justification Statement (PJS) prompting the original TAPs since they were requested by the NOSB as part of a historic petition list request and not by members of the industry. If there had been a PJS it would doubtless have included many of the same points presented here. Instead most of the justification came as Public Comments presented independently or during NOSB meetings. As part of this petition we went through the Public Comments from those meetings and captured as much information as we could find pertaining to MET discussion. As the attached document Transcripts and Public Comment show the vast majority of Industry favored the continued allowance of Synthetic Methionine. Some industry members would still prefer to see MET allowed on an ongoing basis while others among us realize that this is unlikely and so we are working on alternative feed and production practices.*

### **Previous TAP**

*The Methionine TAP dated May 21, 2001 compiled by the Organic Materials Review Institute is one of the most extensive, thoroughly researched and detailed*

Methionine Extention January 7, 2005

*TAP reviews to date. It also remains one of the most controversial and criticized. The authors of this petition agreed early on not to dwell on the issues of the TAP review. We feel that doing so would be divisive and fruitless. We decided instead to build upon the valuable information reported in that review and to incorporate it into the current time frame.*

*Our concerns with the TAP are not the facts as they were gathered and presented but the interpretation of them by the reviewers that seemed to confuse the NOSB discussion and influence the decision. For that reason we would like to challenge some of the Reviewers' assumptions in light of new information gathered since that decision.*

*On page one, lines 12-17 of the TAP, in the Executive Summary appears the following language;*

The majority of the reviewers advise the NOSB to not add them to the National List for the following reasons:

- 1) Adequate organic and natural sources of protein are available [6517(c)(1)(ii)];
- 2) Methionine supplementation is primarily to increase growth and production, not to maintain bird health, and this is counter to principles embodied in the OFPA requirements for organic feed [(c)(1)];
- 3) Pure Amino Acids in general and synthetic forms of Methionine in particular are not compatible with a sustainable, whole systems approach to animal nutrition and cycling [6518(m)(7)].

*We fully agree with this third assumption, like humane treatment and outdoor access a whole systems approach to animal nutrition and cycling is one of the foundation principles of organic livestock production. The other two statements however are not accurate as they are stated here.*

*1) While the industry has uncovered some exciting potential natural sources of protein they are questionable as to whether or not they are adequate without further research and clearly are not available in sufficient amounts as organic at this time. Please refer to the attachments Methionine Content of Various Feedstuffs and Formulation and Comparison Information for more detailed discussion of this topic.*

*2) While the addition of MET may appear counter to principles embodied in OFPA it's addition to an organic ration is not primarily to increase growth but is precisely to maintain bird health. Health through good nutrition is the fundamental key to successful organic livestock production since there is so very little recourse available to a producer once disease manifests. MET is considered a "Maintenance Nutrient" added to organic poultry rations only in amounts necessary to achieve the basic nutritional level necessary to maintain good health and avoid disease. When good nutrition is achieved growth and production will happen naturally.*

*Excess MET in a poultry ration would not increase production but would actually*

*result in nutritional imbalance. Some of the confusion on this fact may be due to the inherent difference of available feed ingredients between conventional and organic producers. MET levels may in fact be slightly higher in organic feed rations since NOP standards prohibit common conventional feedstuffs like bone, meat and feather meals, all rich sources of natural methionine.*

### **European Union;**

*As the attached report US and EU Poultry Report illustrates the European Union has approached the prohibition of MET differently which we feel does not serve their organic producers or consumers as well as the US model. Each country of the EU has specific variances and prohibitions based on overriding non-binding regulations. According to the EU regulations for livestock implemented in 1999 MET is not listed as allowed but feedstuffs high in natural methionine which are not available as organic are allowed to compose up to 20% of the diet in order to balance the ration. Some countries circumvent the MET prohibition by implementing a derogation from the EU regulation. As the attached report also points out the allowance of up to 20% non-organic feed is difficult to enforce, easily used as a loophole to circumvent the higher cost of organic feedstuffs. Furthermore we feel that livestock that is not fed 100% organic feed does not meet what the US Consumer has come to expect as organically produced. None the less our European partners have collected a significant amount of valuable research much of which is included with this petition. It is worthy of note that the European model allows for experimentation anytime by anyone and in the 5+ years since the inception of EU livestock standard European producers have struggled to developed organic poultry feed without synthetic Methionine. In fact as many of the attached testimonials mention a significant number of European producers feel that their industry would be better served by the US model of allowing MET and requiring 100% organic feed.*

### **Temporary Variance Request;**

*It is important to mention the fact that in tandem with this petition for extension many of these same signatories have worked with the Organic Trade Association to petition the Administrator of the National Organic Program Agricultural Marketing Service for a Temporary Variance under 205.290(a)(3) to allow feedstuffs with methionine potential to be allowed from non organic sources for research purposes. If granted this allowance will be carefully laid out, controlled and monitored in order to maintain organic integrity while at the same time allowing producers to maintain organic value as they conduct valuable research, the results of which will become public. In our proposal for Temporary Variance we suggest that trials with non-organic feed be pre-approved, that data must be collected and shared and that the animals be raised according to NOP standards in every other way. Such an allowance would hopefully motivate producers to conduct alternative feed trials, something that has unfortunately been too slow in*

*developing so far. A copy of the Petition for a Temporary Variance to Allow the Use of Non-organic Feedstuffs is attached.*

### **University Research;**

*Attached to this petition are reports on three studies being conducted at land grant universities. Although we realize that more research will need to be done including on farm trials we are encouraged. These studies have taken two and three years to get to the actual on the ground research, that is the nature of university research. The process takes several years to get a proposal approved, secure funding and personnel before doing actual trials. As the synopses also portray, the final report generated from this research data will take three to four years to complete and publish. At that point information will become available to the trade.*

### **Alternative Feedstuffs;**

*The nucleus of this petition lies in the presentation and discussion of potential alternative feedstuffs and their use in this industry. This is a very complex topic, and inextricably interwoven with the rest of the standards. We have presented as many alternative feed ingredients as we could uncover. First, information is presented regarding the methionine content of each ingredient. Next we have used “Least Cost Feed Formulation” software to develop balanced rations using these ingredients. Then finally, we have included an analysis of the results to discuss the practical, environmental and economic impact of using these alternative materials. We have included a report by Dr. Eric Sideman, Director of Technical Services for the Maine Organic Farmers and Gardeners Association and Chair of the NOSB Livestock Committee during the MET discussion and vote in 2001. Dr. Sideman has been a valuable resource in the development of this petition. He has had some success in raising broiler chickens without the use of MET on an experimental scale.*

### **Breeds;**

*Closely interacting with the above mentioned alternative feedstuffs research is alternative breeds. As mentioned previously the organic poultry production model operates within the boundaries of the conventional industry in many respects (while rejecting many other conventional practices). In developing to the state that it has the organic poultry industry, both laying hens and broilers have relied upon conventional hatcheries for their stock. This practice has meant using animals bred aggressively for their growth traits within the conventional paradigm yielding several unfortunate consequences. Modern chicken breeds have had many traits that would benefit the organic sector, traits such as ability to forage and to digest diverse feeds, bred out of them in favor of maximizing feed conversion be it to meat or eggs. Part of the solution to eliminating MET from organic poultry production lies in finding suitable alternative or heritage breeds as well as commercial hatcheries willing to produce sufficient quantities for the organic*

*market. This is an area of research which is being pursued as illustrated in the University of Arkansas study.*

*Note that this petition focuses on chicken since our expertise is in chicken but MET is currently allowed in all organic poultry production. Consideration needs to be given to the potential impact of MET to other organic poultry such as turkey, duck, goose and ratites.*

*Another undeniable if unfortunate fact is that organic poultry producer's business models are built upon these rapid growing, high efficiency breeds. We highlight this fact because modern organic production is and will always be a balance of sustainability and profitability. Discussion of compromise related to cost of production, margin and market price need to be carefully considered with respect and compassion.*

**Conclusion;**

*The signatories of this petition believe that MET can be eliminated from organic production models through a combination of alternative practices although not within the original timeline. With just less than a year before the sunset two things are becoming apparent; we are not ready to eliminate MET from organic poultry rations, and some very good research has begun which will bear fruit. We have gathered as much information as we could gather in order to substantiate our case. We have presented it here as openly, honestly and transparently as possible in the hopes of stimulating an open, honest and transparent discussion among the NOSB, the NOP and the organic community. We look forward to this discussion and offer our further services in order to clarify, elaborate or in any other way assist the process. We very much appreciate the opportunity that we have been granted to have this issue considered on short notice and invite any of you to contact any of us for any reason.*

**Commercial Confidential Information Statement - describing information that is considered to be confidential business or commercial information:**

- *None of the information submitted in this report is considered confidential at this time.*



## **LIST OF ATTACHMENTS AND STATUS**

Current as of January 7, 2005

- **Signatory List** *-pending-*
- **History and Overview** *-pending-*
- **Public Comment and Transcripts** *-pending-*
- **US and EU Organic Poultry Report***-pending-*
- **Methionine Content of Various Feedstuffs** *-attached\**
- **Formulation and Comparison Information** *-attached\**
- **University Studies***-attached\**
- **Non-synthetic Sources of Methionine Feed Additives***-pending-*
- **Size of the US Organic Poultry Industry** *-pending-*
- **Nutritional Function of MET in Poultry Diets***-pending-*
- **OTA Temporary Variance Petition** *-attached-*

\* *Attached as included with the 12-27-04 OTA Temporary Variance Petition.*

Mr. A.J. Yates, Administrator  
Agricultural Marketing Service  
United States Department of Agriculture  
1400 Independence Avenue  
Washington, DC 20250

Dear Mr. Yates,

The Organic Trade Association (OTA) is pleased to present this petition (attached) for a temporary variance to the NOP Final Rule under 7 CFR 205.290(a)(3). Please note the several other attachments, which demonstrate preliminary work and strengthen the justification for such a variance.

OTA has brought together a number of interested parties from both industry and the academic world to try to solve the problem of the apparent need for synthetic methionine in poultry. This petition was developed by trade members and is submitted by OTA on their behalf. While there are academic research projects regarding both breeds and feed, this temporary variance would allow industry and academic researchers to work together at an accelerated rate, as industry would not have to sacrifice a significant amount of short-term production for general long-term research needs.

Under this petition, producers would have to submit research plans to AMS in order to be allowed to participate in the temporary variance. OTA believes this is advisable both so that AMS can know the extent of the utilization of the variance, and so that AMS can be notified in a timely manner of the results of the research, which will indicate the pace of progress toward a solution. If AMS would prefer a different reporting protocol, please let us know.

Please note that this petition is submitted in parallel to a second petition, which industry members plan to submit by the end of the year. This second petition will request an extension of the sunset on the allowance of synthetic methionine, an extension necessary for the industry to make a smooth transition to a non-synthetic system.

Please let OTA know as soon as possible if you need any additional information.

Thank you very much for your consideration.

Yours truly,  
Tom Hutcheson  
Associate Policy Director  
Organic Trade Association  
60 Wells St., P.O. Box 547  
Greenfield, MA 01301  
413-774-7511 x14; fax 413-774-6432

cc: Barbara Robinson  
Richard Mathews

Attachments:

Synthetic Methionine Formulations (Excel: please note, three tabs)  
NOSB transcripts and public comment  
University research summaries (Two: Fanatico and Moritz)

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**Petition for a Temporary Variance to Allow the Use of Non-organic Feedstuffs:  
Examining Alternatives to Synthetic Methionine in Organic Poultry Production**

*December 6<sup>th</sup> 2004*

**Overview**

The Organic Trade Association (OTA) is pleased to submit this petition under 7 CFR 290(a)(3) as an application for a temporary variance to allow for the inclusion of non-organic ingredients in livestock feed for the purpose of experimentation and research. OTA seeks this variance under the following sections of 7 CFR 205:

*§ 205.237 Livestock feed*

This section states that the producer of an organic livestock operation must provide livestock with a total feed ration composed of agricultural products, including pasture and forage, that is organically produced and, if applicable, organically handled.

*§205.290(a) Temporary Variances*

This section specifically states that temporary variances may be established by the administrator for “(3) Practices used for the purposes of conducting research or trials of techniques, varieties, or ingredients used in organic production or handling.”

OTA is submitting this temporary research variance petition in parallel to a second petition to the National Organic Standards Board, requesting an extenuation of the October, 2005 sunset of the allowance of synthetic methionine (MET). OTA hopes that these two actions together will provide the organic poultry industry with sufficient time and tools to develop a viable strategy for the production of organic poultry products without the use of MET.

**Proposed conditions for allowance**

OTA respectfully offers the following conditions in order to justify allowing this variance. OTA recognizes the centrality of feed to the integrity of organic livestock production and is anxious to protect the integrity of the USDA Organic Seal.

- OTA proposes requiring strict adherence to commercial availability standards. This petition for a temporary variance allows only the use of agricultural feedstuffs that are not commercially available in an organic form. If feedstuffs are available in an organic form organic producers must use them.

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- Producers must adhere strictly to all other standards in § 205.236 through 205.239. This variance should not extend to living conditions, health care practices, etc.
- OTA proposes that the temporary variance be limited to trial flocks of no more than 1000 birds on currently certified farms. OTA recommends that producers planning to run trials using the variance be required to update their organic system plan with their certifier prior to beginning the trial. OTA proposes that in order to obtain this research exemption, producers must submit an application to NOP detailing the research protocol and identifying the flock or portion of a flock intended for exemption.
- Producers running trials should be required to collect data and report the results of their trials to the Administrator for public dissemination (e.g., posting on the NOP web site).
- OTA requests that this variance be effective for three years in order to allow sufficient time for applicable research to be conducted and recorded.

### *Justification*

The elimination of synthetic methionine (MET) from organic poultry production has been one of the most difficult challenges that organic poultry producers have faced. When the National Organic Standards Board voted in October 2001 to allow for the temporary use of MET until October, 2005, all producers shared the goal of overcoming the feed challenge before the sunset. As the sunset approaches without a clear solution, the organic poultry industry has organized across competitive boundaries in order to collectively overcome this challenge.

OTA believes that allowing the possibility of some non-organic feed ingredients for research purposes is necessary for producers' combined research. This temporary variance will allow organic producers to develop poultry rations using promising alternative ingredients while maintaining their organic status. The results gathered from this research will not only give current producers a better understanding of the viability of alternatives, it will also give NOSB and NOP firm ground upon which to base future decisions regarding amino acid supplementation.

OTA believes that this petition exemption fits perfectly with both the letter and the intent of §205.290(a)(3). When the Organic Farm Production Act and the subsequent National Organic Rule were crafted it was understood that as with any such new endeavors times would arise when exemptions would be needed in order to overcome barriers.

OTA notes that during the debate and subsequent decision in 2001 by the NOSB to allow MET with a stated sunset the subject of temporary variances for experimental use was discussed. Minutes and transcripts of that meeting (attached) reveal that Livestock Committee Chair Eric Sideman, among others, felt that without such allowance the industry would be at a disadvantage regarding on-farm trials. After conducting a preliminary survey of potential alternatives, OTA members believe that this does indeed seem to be the case. The attached project summaries show that while there is significant progress being made at the University level there have unfortunately been very few on-farm trials. OTA believes that it is imperative that private and university research go forward together, and notes that while university research has tremendous value, it is not fully applicable until tested and adjusted in actual production situations.

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In proposing this document OTA has included several restrictions, both in order to illustrate how producers plan to apply this variance, and to avoid any loopholes that might be exploited to the detriment of the industry sector. Requiring adherence to commercial availability restrictions illustrates OTA's intent to limit this variance strictly to feed ingredients that are being sourced as experimental for their methionine value, while at the same time encouraging organic producers to supply organic versions of feedstuffs. It should be clear from the onset that this variance is to be much more limited in scope than the EU variance, which allows for a percentage of non-organic grain to be fed to all production animals.

OTA believes that adherence to all other applicable standards needs to be clearly stated in order to bolster consumer confidence that the final product is in all other ways organic. For example, OTA presumes that standards for living conditions and health care practices will be strictly adhered to.

OTA does not believe that limiting alternate rations to 5% of the total is appropriate for this research. The feedstuffs under consideration are indeed feed and not feed supplements, and the total alternative feed percentage could well exceed 5% of the total.

The 1000-bird experimental production limit allows a producer flexibility while limiting the amount of product (birds and eggs) that may be marketed under this exemption. Most producers raise more than 1000 birds at a time and so will be experimenting with only a portion of their flock. Producers choosing to perform trials may choose to run several variable ration trials simultaneously but would still be limited to 1000 birds total.

Since at the heart of an organic farming system is the organic system plan, OTA believes it is imperative that producers modify their plans and notify their accredited certification agency (ACA) prior to undertaking trials. The resulting transparency will provide a snapshot of the nature and number of trials currently underway while at the same time providing oversight that producers are adhering to the requirements of the temporary variance. Because there is potential for ACAs to vary in their interpretation and application of rules, OTA believes that producers and certifiers must engage in positive communication about all aspects of the trials. Likewise, by requiring producers to capture and report the results of their trials to AMS, the legitimacy of the variance is greatly increased, and industry benefits from the accumulated knowledge are ensured.

OTA members believe that three years is the minimum amount of time necessary to conduct meaningful production research. While broiler trials could conceivably be conducted up to five times in a year, trials for laying hens that produce for one or two full years will be much more challenging to carry out.

The supplemental information provided with this petition (or to be included in the sunset exemption petition to be submitted soon) gives an overview of the historical development of the organic poultry industry, provides a renewed and detailed look at alternatives to MET in poultry rations, and outlines the current status of research on the issue.

The graph titled Available Methionine for Poultry (%) (attached, in Methionine Formulations Excel file) highlights potential feed ingredients that are high in methionine and that are worth trials. Some of these materials, although promising in theory, may have limited application. For instance, canola meal can only be

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included in small quantities because it is high in fat. Likewise, sesame and fish products are limited by their effects on flavor. Other ingredients, while strong in methionine, are weak in other areas of their nutritional profile and thus adversely affect a total balanced ration. Yet another barrier to be overcome is the fact that currently, some of the feeds listed in this graph are extracted only by chemical rather than physical or mechanical means, a practice not generally embraced by the organic community.

Many of these promising feedstuffs are not yet available in the organic marketplace, nor, OTA believes, will they be, until the poultry industry discovers which ones best serve the purpose of replacing MET. Once these materials are determined, OTA expects that organic feed producers will take advantage of the opportunity to satisfy this new demand in the sure knowledge of a known and level commercial playing field.

OTA member producers wish to conduct multiple on-farm trials, protocols for which are attached, that will provide valuable knowledge on practical production aspects while not jeopardizing the organic value of the poultry involved in these trials. One such trial will focus on a recently developed hybrid of high protein corn that has potential as a poultry ration ingredient as it is high in available methionine. (The corn gluten meal from this corn contains 75% protein content, 2.23% of which is methionine at 97% availability.) Further knowledge needs to be garnered before it might be seen as a vital option for organic farmers serving the feedstuffs marketplace.

A second experiment to be carried out will look at the use of casein, currently available only on the conventional marketplace. Containing 2.7% methionine at 99% availability, it holds promise as an adjunct amino acid ingredient, and is worth testing in a production scenario.

Similarly, progress has been made in terms of the potential of pasture and forage to provide supplemental amino acid levels (see university research summaries, attached) and more work is being done in this area. However the seasonal and geographical differences of available high quality forage indicate that forage will not provide the entire solution.

Other potential ingredients, such as quinoa, earthworm meal and hemp seed oil are virtually absent from the existing body of poultry nutrition data. Materials such as these will need substantial research in order to assess their potential as supplemental feed ingredients.

## Summary

The organic poultry industry in the United States has enjoyed significant growth throughout the last decade, to the benefit of producers, processors, marketers, consumers and the environment. This expansion has been possible in large part due to the allowance of synthetic methionine in organic poultry rations. The organic poultry industry is now facing a pivotal moment, as the mandated sunset for MET draws near.

OTA strongly believes that in order to successfully make the transition away from MET, further research into suitable ration formulation is critical. Furthermore, OTA believes that the temporary allowance of feedstuffs not yet available as organic is critical to building this knowledge. This proposal satisfies the producer's need for experimental materials, protects the consumer's high expectations of organic integrity,

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and OTA hopes it also satisfies the National Organic Program's need for valuable information on which to base further decisions concerning MET in organic poultry production.

OTA looks forward to working with the NOP and the NOSB on these issues. If in reviewing these materials you find any need for further clarification, please contact us at your earliest convenience. OTA welcomes your inquiries and looks forward to providing research results as they become available.

#### **Attachment List**

- Methionine Formulations
- Transcripts and minutes from October 2001 NOSB meeting
- University Research Summaries (Fanatico and Moritz)

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The University of Arkansas was recently awarded funds by the USDA Integrated Organic Program to investigate specialty (slower-growing) poultry breeds for use in organic poultry production and as an alternative to synthetic methionine.

The phase-out of synthetic amino acids, particularly methionine (MET), is a critical issue in organic poultry production and will fundamentally change how broiler chickens are fed. Nearly all commercial and organic broiler diets contain MET, which promotes maximum growth performance with lower-cost diets. Most organic poultry producers use fast-growing commercial broilers in their production systems, but slower-growing breeds may be beneficial in that their MET requirements may be lower, thereby lessening the impact of elimination of supplemental MET. Further, slow-growing broilers may represent a market opportunity because of potential meat quality and sensory attributes.

The modern commercial broiler was developed through genetic selection over the last 50 years and is characterized by a high rate of weight gain and a very efficient conversion of feed to body weight. It reaches market weight in less than 7 weeks. In contrast, in Europe slower-growing breeds are used for natural, free-range, and organic production. For example, the French *Label Rouge* program requires the use of slow-growing genotypes that take at least 81 days or almost 12 weeks to reach market weight. Many French consumers consider the products to have a flavor and texture that is superior to conventional poultry products and they pay twice as much for them.

In typical poultry diets based on corn and soybean meal, MET and cysteine are the most limiting amino acids. The provision of synthetic MET is a cost-effective way to provide the amount of MET needed to support the fast growth rate of conventional broilers without having to provide it all from intact protein sources like soybean meal, which would increase the total amount of protein and the expense.

Diverse feeding strategies may offer alternatives to supplemental MET. Feeding ingredients that are rich in MET such as fishmeal, corn gluten meal, potato protein, milk protein, sunflower seed meal, and sesame seed meal. Although expected to grow in availability, there are not enough organic sources of these ingredients to supply the need for organic poultry production. It is also important to investigate the impact of pasturing birds on MET needs.

Another possible solution is the use of poultry breeds that may have lower MET requirements. Slow-growing birds may require less MET in the diet because they have a slower rate of growth and are less muscled than fast-growing broilers. Although the yield and efficiency of slow-growing broilers is poorer than fast-growing broilers, a market opportunity does exist. The University of Arkansas has done preliminary work and found that the MET requirements of the slow-growing genotype during the starter period are less than the fast-growing genotype.

The solutions to the phase-out of MET may involve a combination of feeding and breed strategies.

The objectives of the Univ of AR work are:

1. Determine the MET and cysteine requirements for slow-growing broilers  
MET is a precursor of another amino acid cysteine. The investigative process involves determining the MET requirement in the presence of excess cysteine and then determining the cysteine requirement with the MET requirement met. Slow, medium, and fast growing birds will be used.



2. Evaluate the impact of feeding strategies with slow-growing broilers that do not incorporate synthetic MET on production performance, meat quality, and economics  
Feeding trials will be conducted to validate determined MET requirements under various conditions (with/without supplemental MET and indoor/outdoor).

The three target requirements (80%, 100%, and 120%) help inform whether the requirements are overestimated, correct, or underestimated, respectively. Diets with supplemental MET will be based on conventional corn and soybeans; diets with no supplemental MET are likely to be based on nontraditional feed ingredients.

This experiment will be repeated with outdoor treatments, using only the slow-growing breeds and 100% of MET and cysteine requirements. The Univ of AR has a portable free-range research facility. Meat quality of the birds will also be investigated: pH, color, tenderness, nutrient content, water-holding capacity to determine the impact of using alternative genetics and eliminating supplemental MET on meat quality.

On-farm field trials will be conducted to verify the resulting strategies on a working organic farm. West Virginia University (WVU) will test organic diets in a whole farm setting. WVU has an integrated organic farm with sheep and poultry and sells organic poultry to a local market. Both conventional and organic free-range housing will be used, and both fast and slow-growing breeds will be used. Diets will be formulated based on the breed requirements determined from the University of Arkansas feeding trials.

The National Center for Appropriate Technology will work with WVU to analyze economic data. Production costs for all feeding regimens will be calculated and compared among the different types of birds produced and consumers' willingness to pay for organic and alternative poultry products will be examined.

3. Disseminate research findings and provide outreach to the organic and scientific communities

Along with university Extension activities, The National Center for Appropriate Technology will disseminate producer-friendly information to the organic community and others. NCAT will maintain a website and will develop producer-friendly materials.

The project is led by Dr. Jason Emmert, a poultry nutritionist at the University of Arkansas with years of experience in amino acid research, and coordinated by myself. UA will collaborate with Joe Moritz at WVU who has experience in organic poultry nutrition research and applied feeding. The project begins in 2005 and has a 4-year timeline.

This project will improve organic production methods, while turning a problem into a unique opportunity.

**SYNTHETIC METHIONINE AND FEED RESTRICTION EFFECTS ON  
PERFORMANCE AND MEAT QUALITY OF ORGANICALLY REARED BROILER  
CHICKENS**

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Key words: Organic production, broiler production, methionine, feed restriction, meat quality

Running Title: **RESTRICTING ORGANIC BROILERS**

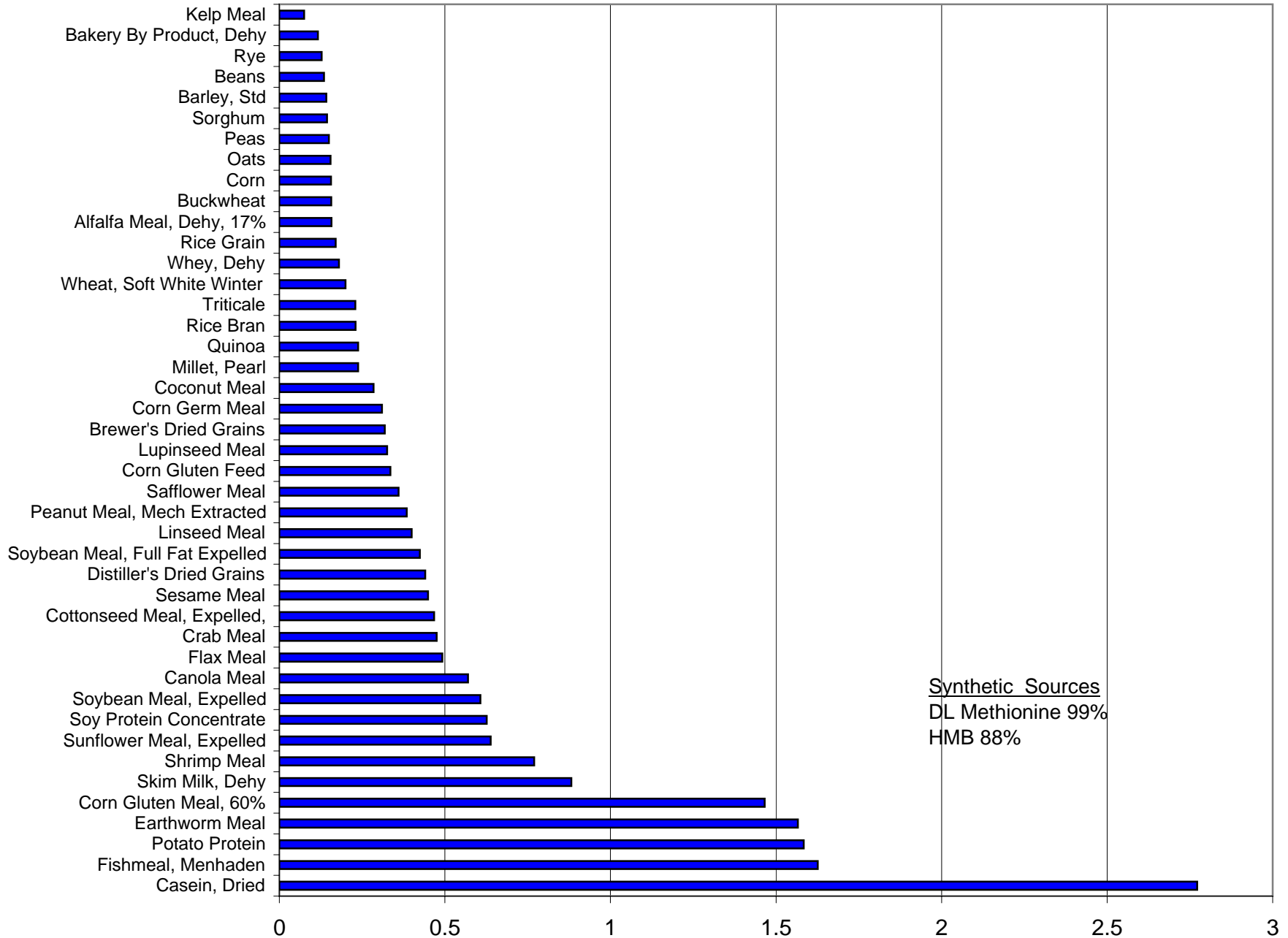
**Primary Audience:** Organic producers, Nutritionists, Broiler Producers, Researchers

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**Summary**

Nutritionists have been challenged to find alternatives to synthetic methionine use in organic broiler diet formulation. Data does not exist on the ability of commercial broilers to partially meet amino acid requirements by foraging. In the current study, diets were formulated to include or preclude synthetic methionine (analyzed dietary methionine = 0.40 and 0.36% respectively). Foraging ability was assessed by implementing two feeding strategies (ad libitum and restrictive feed access). The objectives of the study were 1) to determine performance, carcass characteristic and meat quality effects of organically-reared broilers fed diets with and without synthetic methionine, and 2) to assess these variables when feeding strategies were modified to encourage foraging. Experimentation focused on broilers in the 3-to-8-wk growing phase and was conducted during two different times of the year (summer and fall). The time of year and associated environmental conditions were observed to have an effect on feed intake and subsequent performance/carcass quality. Summer-reared broilers fed diets without synthetic methionine demonstrated trends toward decreased gain to feed ratio (G:F) and breast yield compared to broilers fed diets that included synthetic methionine. These trends did not exist for fall-reared broilers that had comparably increased feed intake. However, suggested growth impairments and/or compensatory feed intake associated with a marginal methionine deficiency were largely overcome by bird foraging. Feed restriction was shown to be an effective strategy to increase commercial broiler forage intake.

# Available Methionine for Poultry (%)



# Broiler Ration Formulation Evaluation

	Ration					
	A	B	C	D	E	F
	(lbs. per ton)					
Corn	1065	170	160	874	950	0
Soybean Meal	855	1720	1690	800	582	410
Soybean Oil	21	66	60	0	0	0
DL Methionine	4	0	0	0	0	0
Other	55	44	40	56	58	55
Fishmeal	0	0	50	50	0	50
Corn Gluten Meal	0	0	0	220	245	235
Potato Protein	0	0	0	0	0	0
Earthworm Meal	0	0	0	0	65	0
Sesame Meal	0	0	0	0	100	100
Quinoa Meal	0	0	0	0	0	1050
Dried Whey	0	0	0	0	0	100

## Nutritional Comparison

Metabolizable Energy (kcal/lb)	1350	<i>1250</i>	<i>1250</i>	1350	1350	1350
Protein, %	21	<i>38</i>	<i>39</i>	<i>29</i>	<i>28</i>	<i>27</i>
Available Methionine, %	0.49	<i>0.45</i>	<i>0.49</i>	0.49	0.49	0.49
Excess Available Lysine, %	0	<i>102</i>	<i>108</i>	<i>25</i>	<i>11</i>	<i>2</i>

Italicized values indicate imbalances of nutritional concern

# Layer Ration Formulation Evaluation

	Ration					
	A	B	C	D	E	F
	(lbs. per ton)					
Corn	1090	245	455	1075	1310	0
Soybean Meal	645	1498	1245	465	40	0
Soybean Oil	58	56	57	0	0	0
DL Methionine	3	0	0	0	0	0
Other	204	201	193	215	210	190
Fishmeal	0	0	50	50	50	50
Corn Gluten Meal	0	0	0	195	125	40
Potato Protein	0	0	0	0	65	0
Earthworm Meal	0	0	0	0	100	0
Sesame Meal	0	0	0	0	100	100
Quinoa Meal	0	0	0	0	0	1470
Dried Whey	0	0	0	0	0	65
Dried Casein	0	0	0	0	0	85

## Nutritional Comparison

Metabolizable Energy (kcal/lb)	1325	<i>1165</i>	<i>1215</i>	1325	1325	1325
Protein, %	18	<i>34</i>	<i>31</i>	22	20	18
Available Methionine, %	0.40	0.40	0.40	0.40	0.40	0.40
Excess Available Lysine, %	0	<i>107</i>	<i>88</i>	0	0	0

Italicized values indicate imbalances of nutritional concern