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Ms. Michelle Arsenault
National Organic Standards Board
USDA-AMS-NOP
1400 Independence Ave., SW
Room 2648-S, Mail Stop 0268
Washington, DC 20250-0268

Re. HS: Animal enzymes

These comments to the National Organic Standards Board (NOSB) on its Fall 2016 agenda are submitted on behalf of Beyond Pesticides. Founded in 1981 as a national, grassroots, membership organization that represents community-based organizations and a range of people seeking to bridge the interests of consumers, farmers and farmworkers, Beyond Pesticides advances improved protections from pesticides and alternative pest management strategies that reduce or eliminate a reliance on pesticides. Our membership and network span the 50 states and the world.

In reviewing this substance, the NOSB must apply the criteria in the Organic Foods Production Act (OFPA), that its use—
(i) would not be harmful to human health or the environment;
(ii) is necessary to the production or handling of the agricultural product because of the unavailability of wholly natural substitute products; and
(iii) is consistent with organic farming and handling.[1]

Animal enzymes allowed by this listing are: "Rennet—animals derived; Catalase—bovine liver; Animal lipase; Pancreatin; Pepsin; and Trypsin." No information is provided in the 2011 TR or the HS proposal concerning animal enzymes other than rennet.

Animal enzyme production causes harm to humans and the environment.

A number of solvents, acids, and bases are used in extraction and formulation. Disposal methods and accidental releases are unknown.[2]

[1] OFPA §6517(c)(1)(A). Further details at OFPA §6518(m).
[2] TR lines 523-545.

The use of enzymes from animals produced by chemical-intensive agriculture carries with it impacts of that form of production. Non-organic animal production is dependent on chemically-intensive production of corn and soybeans.

Corn

Non-organic corn production is an intensive user of pesticides and synthetic fertilizers. Most of the non-organic corn is also genetically modified.

Pesticide Tolerances —Health and Environmental Effects: The Beyond Pesticides *Eating with a Conscience* (EWAC) database shows that while field corn products grown with toxic chemicals show low pesticide residues on the finished commodity, there are 109 pesticides with established tolerance for field corn products. Of these, at least 39 are acutely toxic, creating a hazardous environment for **farmworkers**, 96 are linked to chronic health problems (such as cancer), 31 contaminate streams or groundwater, and 87 are poisonous to wildlife.

Pollinator Impacts: In addition to habitat loss due to the expansion of agricultural and urban areas, the database shows that there are 33 pesticides used on field corn products that are considered toxic to honey bees and other insect pollinators. For more information on how to protect pollinators from pesticides, see Beyond Pesticides' BEE Protective webpage.

- **This crop is foraged by pollinators.**

Soybeans

California Farmworker Poisonings, 1992–2010: 1 reported. This poisoning incident represents only the tip of the iceberg because it only reflects reported incidents in one state. It is widely recognized that pesticide incidents are underreported and often misdiagnosed.

Pesticide Tolerances —Health and Environmental Effects: The EWAC database shows that while soybeans grown with toxic chemicals show low pesticide residues on the finished commodity, there are 83 pesticides with established tolerance for soybeans, 38 are acutely toxic creating a hazardous environment for farmworkers, 75 are linked to chronic health problems (such as cancer), 28 contaminate streams or groundwater, and 75 are poisonous to wildlife.

Pollinator Impacts: In addition to habitat loss due to the expansion of agricultural and urban areas, the database shows that there are 32 pesticides used on soybeans that are considered toxic to honey bees and other insect pollinators. For more information on how to protect pollinators from pesticides, see Beyond Pesticides' BEE Protective webpage.

- **This crop is dependent on pollinators.**
- **This crop is foraged by pollinators.**

The evaluation of animal enzymes must take into consideration the use of pesticides in the non-organic production of corn and soybeans and ensure that GMO grains are not used in production of organic products. The NOSB must investigate the potential availability of organic animal enzymes if the demand was enhanced by removal of this listing.

Not all animal enzymes are essential.

It appears that animal rennet from non-organic sources is probably not essential, since according to the 2011 Technical Review (TR), non-animal sources account for 95% of the rennet used in the U.S.[3] This contradicts the statement in the HS proposal, "There are no true alternatives to animal enzymes. Enzymes can only be substituted with another enzyme with the same function." The TR, for example, lists as examples of substitutes for rennet some plants with coagulating properties, nettles, cardoon thistle, and fig tree bark.[4] Animal-based rennet could also be made from organic livestock.[5]

The TR did not investigate catalase, animal lipase, pancreatin, pepsin, and trypsin, so we lack information about the essentiality of these enzymes. Nevertheless, the comments above relating to the impacts of chemical-intensive production practices do apply.

The HS review is incomplete.

The HS proposal leaves unanswered some important questions. The most important of these questions are:

1. Are organic forms of each animal enzyme available?
2. Which of the identified ancillary ingredients are necessary?
3. Of the necessary ancillary ingredients, which are available as organic agricultural products?
4. Of the necessary ancillary ingredients, which are available as synthetic substances already on §205.605(b) and allowed to be added to organic food?

Conclusion

Unless the HS can perform an adequate review of animal enzymes, they should not be relisted.

Thank you for your consideration of these comments.

Sincerely,

Terry Shistar, Ph.D.
Board of Directors

[3] 2011 TR, lines 834-835.
[4] 20011 TR, line 369.
[5] 2011 TR, lines 829-830.