

**National Organic Standards Board
Crops Subcommittee
Petitioned Material Proposal
Vinasse**

+February 25, 2014

Introduction

The NOSB received a petition for Vinasse as a synthetic soil amendment and plant nutrient (fertilizer) for organic crop production. In effect, the petition seeks to have the NOSB classify vinasse as a non-synthetic (natural). Petitioning as a synthetic is the only way to achieve a vote from the NOSB on this matter.

A limited scope Technical Review was conducted solely on the manufacturing process and whether vinasse is synthetic or non-synthetic.

Background

The path to vinasse production is complex, starting with sugar refining, passing through molasses fermentation, and ending with multiple distillations. Both sugar and molasses have historically been considered non-synthetic and allowed in organic production. From the TR:

44-45. Vinasse is generally obtained through distillation of fermented cane and beet molasses, which is a byproduct of cane and beet juice processing for the production of pure or refined sugar.

48. Sulfur dioxide is sometimes added during the processing of beet juice prior to crystallization to decolorize the cane juice.

51. The resulting byproduct, molasses, is then mixed with yeast or other microorganisms and fermented.

54-57. In the case of ethanol production, small amounts of sulfuric acid may be added prior to fermentation to reduce the populations and activity of undesired bacterial species by adjusting the pH to between 4 and 5. Distillation of the resulting fermentation broth separates the desired organic compounds (e.g., ethanol) from the mother liquor. Vinasse is the byproduct of the distillation procedure.

The TR goes on to describe in detail the processes for removing the sugar from sugar cane and beets, separating the molasses, and then fermenting it to make ethanol with vinasse as a by-product. Further information from the TR states:

365-377. Molasses is generally less contaminated with bacterial flora than cane juice, as a large portion of the non-sporulated bacteria is destroyed during sugar production. Notwithstanding, most components are frequently subjected to bacteriostatic or sterilizing thermal (steam) treatments to control any bacterial flora that may otherwise excrete undesired organic compounds into the fermentation medium (Fahrasmane, 1998). The molasses-based fermentation medium may also be treated with small quantities (~0.3 mg/L) of antibiotics, such as penicillin (Borzani, 1957) and tetracycline (Aqarone, 1960). However, the extent of this practice in current rum-making operations is uncertain. If added, it is possible that these antibiotics will not be fully degraded during the fermentation and ethanol distillation processes; a certain amount could remain in vinasse derived from antibiotic-treated fermentation mediums. Bacteriosides such as chlorine dioxide (Sumner 2011), ammonium bifluoride or quaternary ammonium compounds may also be used to control bacterial contamination (Murtagh, 1999). With the exception of chlorine dioxide, residues of these compounds may persist in vinasse. Finally, acidification of the media to a lower pH (i.e., pH = 4–5) using sulfuric acid generally precedes the fermentation step as a protective measure (Fahrasmane, 1998).

Discussion

The Crops subcommittee reviewed the manufacturing process against the draft guidance on classification of materials (NOP 5033). Some of the relevant considerations from the draft guidance are:

- 1) whether the manufacturing process for vinasse is a synthetic or a biological process
- 2) whether vinasse contains a synthetic substance, not on the National List, at a significant level.
- 3) whether vinasse is the result of a chemical change
- 4) whether all non-allowed synthetics have been removed to the degree that they have no technical or functional effect in the final product.

It is apparent although not explicitly stated in the TR that vinasse production is decentralized in many countries and with many different approaches to the substance during and after fermentation. Some vinasse is generated without synthetic materials added during and after fermentation, while some may have additional acid, synthetic anti-microbial agents, or even synthetic sources of nitrogen added after fermentation. Therefore the subcommittee has concluded that since not all vinasse is synthetic, it does not belong on the National List.

However, the subcommittee also believes that vinasse with synthetic materials added to it after fermentation should not be permitted in organic cropping systems. Therefore we are proposing specific language for a listing of vinasse in the Guidance on Materials for Organic Crops Production (NOP 5034-1). This annotation in the guidance would enable materials review organizations to determine those sources that would not be allowed. This annotation is similar, but slightly different from, the one on the molasses listing:

Vinasse - may not contain prohibited additives, such as but not limited to, pH adjusters, sanitizers, ammonium compounds, antibiotics or chlorine materials that are not provided for at §205.601. Nitrogen levels may not be fortified.

Minority Opinion

Identifying the allowed and prohibited formulations of vinasse through the National List process is the appropriate action for the NOSB. The minority proposes to create a hybrid listing on both 601 and 602, explaining in the recommendation that vinasse is available in both synthetic and nonsynthetic forms, but the restrictions that the NOSB recommends is placed on its use apply to both forms.

On 601, list vinasse as synthetic with the following annotation: "*Vinasse is only allowed when its manufacturing process does not result in synthetic additives, such as, but not limited to, pH adjusters, sanitizers, ammonium compounds, antibiotics or chlorine materials, in the formulation that are not specifically provided for at 205.601. Nitrogen levels may not be fortified. Vinasse may not be produced using genetically engineered microorganisms, sugar beets, or other substrate. If the condition on genetically engineered organisms is covered by a general policy adopted by the NOSB and codified into regulations, then that language will supersede this restriction.*" See nonsynthetic versions of vinasse manufactured without synthetic chemical change and above substances in 602. The recommendation should explain that the annotation is added because there are numerous formulations of vinasse that are synthetic and incompatible with organic production.

On 602: List vinasse with the following annotation: “*Vinasse may not be manufactured with a process that effects synthetic chemical change or utilizes in synthetic additives, such as, but not limited to, pH adjusters, sanitizers, ammonium compounds, antibiotics or chlorine materials, in the formulation that are not specifically provided for at 205.601. Nitrogen levels may not be fortified. Vinasse may not be produced using genetically engineered microorganisms, sugar beets, or other substrate. If the condition on genetically engineered organisms is covered by a general policy adopted by the NOSB and codified into regulations, then that language will supersede this restriction.*”

Subcommittee Action & Vote

Classification Motion:

Motion to classify Vinasse as non-synthetic

Motion by: Zea Sonnabend

Seconded by: John Foster

Yes: 4 No: 3 Absent: 0 Abstain: 0 Recuse: 0

Motion:

Motion to add the following specific language to the listing of vinasse in the Guidance on Materials for Organic Crops Production (NOP 5034-1). **Vinasse** - may not contain prohibited additives, such as but not limited to, pH adjusters, sanitizers, ammonium compounds, antibiotics or chlorine materials that are not provided for at §205.601. Nitrogen levels may not be fortified

Motion by: Zea Sonnabend

Seconded by: Harold Austin

Yes: 4 No: 3 Absent: 0 Abstain: 0 Recuse: 0

Approved by Zea Sonnabend, Subcommittee Chair, to transmit to NOSB February 26, 2014