

Non-GMO Project Working Standard



July 2009

Non-GMO Project Working Standard

This version of the Non-GMO Project Standard includes revisions based on the Spring 2009 Public Comment Period.

The next round of public comment on the Working Standard in its entirety will be from October 10th through November 10th 2009. Comments may be submitted online at <http://www.nongmoproject.org/non-gmo-project-standard/comment-on-the-standard/> or may be sent to standard@nongmoproject.org

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1. INTRODUCTION	
<p>Explanation of layout of this Standard: <i>This Standard is published in two columns. The left-hand column contains clauses of the Standard itself. The corresponding right-hand column contains Guidance notes that are included to help interpret and explain the intent of the given standard clause, offer additional relevant details, and/or place the clause into the context of current realities. Guidance notes should be read along with the Standard’s clauses and must be followed accordingly. Where no Guidance is offered, the Standard alone suffices.</i></p>	
STANDARD	GUIDANCE
<p>1.1. Purpose: The Non-GMO Project’s Product Verification Program (the “Program” or “PVP”) aims to verify:</p>	<p>See Section 1.4, “Additional Terms and Definitions,” for meaning of “product” and definitions of other terms.</p>
<p>1.1.1. That the systems and procedures of the participant company or organization (the “Participant”) are capable of delivering products that comply with the Non-GMO Project’s Standard (the “Standard”).</p>	<p>Each Participant company or organization has the freedom to design its own systems to reflect its particular operational needs and practicalities, so long as the objectives of the Standard are met.</p>
<p>1.1.2. That the Participant consistently operates their systems according to those procedures.</p>	<p>Annual third-party verification of conformity to this Standard, via evaluation of Participant documentation and on-site inspection, is part of the Program.</p>
<p>1.1.3. That the resultant products are compliant with the Standard.</p>	<p>The Non-GMO Project’s Product Verification Program (“PVP”) is a practice/process-oriented standard that uses testing as a key strategic tool to confirm that practices/processes are meeting expectations.</p>
<p>1.2. Scope: The scope of the Program encompasses the following products, activities, and aspects:</p>	<p>Refer also to Section 4 and Appendix A regarding specific variances to this Standard and its scope.</p>
<p>1.2.1. Products</p>	
<p>1.2.1.1. Agricultural inputs, such as seeds, fertilizers, pesticides, and herbicides.</p> <p>The scope of this Standard includes a permanent exclusion for composted materials and animal manures. These may be used from any source, <i>except</i> manure from animals that have been genetically engineered to produce a novel material.</p>	<p>Examples of non-compliant fertilizers are oilcake/oilseed meal from genetically engineered soybeans, canola, or cotton, un-composted GMO cornstalks, etc.</p> <p>An example of a non-compliant pesticide is genetically altered <i>Bacillus thuringiensis (Bt)</i>.</p> <p>An example of a non-compliant herbicide is corn gluten from genetically engineered corn.</p> <p>An example of an animal engineered to produce a novel material would be a goat that</p>

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	is genetically engineered to have antibiotics or hormones secreted in its milk.
1.2.1.2. Unprocessed agricultural products, such as vegetables, grains, fruit, greens, herbs, and other fresh foods, fibers, etc.	
1.2.1.3. Livestock feed components, such as grains, vitamins, enzymes, minerals, etc.	
1.2.1.4 Microbial starters, media, and products.	Includes those used for animal feed (e.g., silage or hay inoculants, fermentation solids or similar products) or human food.
1.2.1.5. Manufacturing and processing inputs (“inputs”), including ingredients, flavorings, seasonings, colorings, additives, and all other substances present in final, manufactured products. Processing aids used by the Participant and present in the final product are also included in the scope of this Standard.	
1.2.1.6. Animal products, including dairy, meat, eggs, bee products, wool and hides.	
1.2.1.7. Veterinary inputs such as vaccines, hormones, semen and medicines.	For the purposes of the Standard, cloned animals and their progeny are not allowed.
1.2.1.8. Processed agricultural products or ingredients, manufactured food products and textiles.	
1.2.1.9 Dietary supplements, vitamins and herbal preparations.	
1.2.1.10. Health-care products.	
1.2.1.11. Personal care products and cosmetics.	Includes lotions, soaps, balms, makeup, etc.
1.2.2. Activities: The scope of the Program encompasses the following types of activities and sectors of food and related production systems:	A core goal of the Project is to identify, create, and/or maintain sources and practices that effectively minimize GMO risk to the supply chain. High-Risk Inputs (see below) will ultimately be able to be downgraded to low-risk status as a result of such efforts.
1.2.2.1. Agricultural production—seeds and crops	Includes farm production, harvest, and post-harvest handling and storage on farm or farm-related facilities. Reduction of background contamination levels in seed supplies is of primary importance toward reduction of GMO content of consumer

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	goods.
1.2.2.2. Handling	<p>Includes any form of post-harvest movement, storage, transformation, or labeling of goods along the entire chain of custody from seed to consumer, except for products enclosed in final retail packaging.</p> <p>The Product Verification Program aims to verify non-GMO content of inputs used in product sales and manufacturing, and to provide the manufacturer with information about their production system that will assist them in redesigning aspects of their system to more effectively avoid GMO contamination resulting from handling activities.</p>
1.2.2.3. Storage	Includes all links in the chain of custody from seed to finished product.
1.2.2.4. Distribution	This may or may not involve physical handling of goods.
1.2.2.5. Processing	Includes all movements, storage, transformations, combinations, or labeling of goods within any given production facility.
1.2.2.6. Manufacturing	Involves the combination of inputs to make the final product sold by the operation in question.
1.2.2.7. Packaging and labeling	Includes any and all events where the package or labeling of goods is altered.
1.2.3. Program Elements: The scope of the Program encompasses all aspects of the production process relevant to producing Non-GMO Project verified products, including the following:	
1.2.3.1. Traceability	Special attention needs to be paid to inputs and products that are verified as Non-GMO Project Standard compliant, versus like inputs or products that are not explicitly verified or included in the Program as such. This applies even if the presumed chance that non-verified goods have GMO content is low.
1.2.3.2. Segregation	Additional segregation measures for Non-GMO Project Standard compliant materials may be necessary, especially when any high-risk inputs are handled. Appendix B of this Standard lists high-risk crops and their derivatives. Segregation is also necessary between distinct lots of goods that are Non-GMO Project verified, versus inputs or

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	products that are not explicitly verified or included in the program as such.
1.2.3.3. Specifications for Inputs and Products	Refers to GMO action thresholds, etc. This Standard specifies relevant quantitative limits.
1.2.3.4. Operating Procedures	
1.2.3.5. Quality System	
1.2.3.6. Quality Assurance and Quality Control	Specific procedures and practices relevant to traceability, segregation, sampling and testing of lots for GMO content—with associated documentation and training of personnel—are a necessary inclusion in any operation’s routine activities when assuring adherence to this Standard. Existing procedures and documents can be amended or new ones created, as deemed most appropriate by the operation in question.
1.2.3.7. Training	
1.2.3.8. Document Control	
1.2.3.9. Maintenance of Records and Data	
1.3. Additional Terms and Definitions	In addition to explanations of terms provided by other Guidance notes, the terms in this section are explicitly defined.
1.3.1. Compost	Decayed organic material used as a fertility amendment in agricultural production, produced by a combination of actions over time by microbes, invertebrates, temperature, and other elemental factors (e.g., moisture content, aeration). Composted material shows practically no substantive indication as to the original substrate(s) from which it was made.
1.3.2. Farming operation	Any operation involved with production, handling, storage, or management of crops until legal ownership or physical transformation of crops or livestock products occurs.
1.3.3. GM	Genetically Modified or Genetic Modification—A term referring to products or processes employing gene splicing, gene modification, recombinant DNA technology, or transgenic technology, and referring to products of the gene-splicing process, either as inputs or as process elements.
1.3.4. GMO or Genetically Modified Organism	A plant, animal, microorganism, or other organism whose genetic makeup has been modified using recombinant DNA methods, also called gene splicing, gene modification, or

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	transgenic technology. Cloned animals and their progeny are also considered GMOs under this Standard.
1.3.5. Input	<p>The term “input” includes any material or substance that becomes a part of the final product, or a component of which becomes a part of the product, or is used otherwise in the production of a product. These include the following:</p> <ul style="list-style-type: none"> • Agricultural inputs, such as seeds, fertilizers, and pesticides. • Unprocessed agricultural products, such as vegetables, grains, fruit, greens, herbs, and other fresh foods etc. • Feed components, such as grains, forage plants, vitamins, enzymes and minerals. • Livestock production inputs such as vaccines, hormones, and other veterinary materials. • Manufacturing and processing inputs, including ingredients, flavorings, seasonings, colorings, additives, enzymes, cultures, and all other substances present in final manufactured products. <p>The PVP distinguishes between inputs as being “mono” (composed of only one component) or “compound” (composed of more than one component).</p>
1.3.6. Non-GMO or Non-GM	A plant, animal, or other organism or derivative of such an organism whose genetic structure has not been altered by gene splicing, or a process or product that does not employ GM processes or inputs. Cloned animals and their progeny are considered GM.
1.3.7. Participant	A company or other entity independent of the Non-GMO Project that enrolls in the Program.
1.3.8. Product	The term “product” refers to that which the Participant offers to the marketplace, at whatever stage of the production chain (i.e., final consumer product, ingredient for further manufacturing, raw agricultural crop or commodity, etc., as applicable). “Product” refers to products that are involved in the Non-GMO Project Product Verification Program.
1.3.9. Shall or Must	A mandatory requirement under the Standard.

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1.3.10. Should or May	A non-mandatory recommendation or recommended practice.
1.3.11. Standard	The “Standard” herein refers to the Standard for The Non-GMO Project Product Verification Program, which is this document.
1.3.12. Supplier	Any party from whom an input is obtained.
1.3.13. Technical Administrator	The organization responsible for conducting the Program on behalf of the Non-GMO Project.
1.3.14. Unintentional Contamination	A contamination incident (event) will be deemed unintentional if available information confirms that: <ul style="list-style-type: none"> i. The operator did not knowingly use GMOs or GMO-derived inputs. ii. The operator used all due diligence to exclude GMO contamination.
2. CORE REQUIREMENTS	
2.1. Traceability	
2.1.1. Each lot of Non-GMO Project-verified product or input must be traceable back to specific lots of the inputs used in its production.	<p>If the operation is dedicated strictly to Non-GMO Project Standard compliant production then it is sufficient to have a record-keeping system that records the lot numbers for all lots of inputs used to make a specific lot of product.</p> <p>If the operation is not dedicated to Non-GMO Project Standard compliant production, systematic procedures shall be in place for tracking lot numbers and/or marking and labeling of packaging, containers, and storage facilities to assure traceability of inputs, work-in-progress, and final products at all points in the production process.</p>
2.1.2. Traceability records shall explicitly trace and track the Non-GMO Project Standard compliant status of both inputs and the final product.	If lots of a given input are co-mingled in storage before use in production of a certain lot of product, the lot numbers related to all lots commingled shall be linked to that particular lot of product.
2.1.3. The producer/manufacturer must be prepared to provide the Technical Administrator of the Program with traceability information.	

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<p>2.2. Cleanout and Segregation</p>	<p>The aim of cleanout and segregation procedures is to prevent GMO contamination of inputs, work-in-progress, and final products.</p>
<p>2.2.1. Cleanout:</p>	
<p>2.2.1.1. Receiving, production, processing, manufacturing, transfer, and storage facilities, as well as shipping and transportation conveyances, shall be inspected and cleaned/purged as needed to remove sources of GMO contamination, and all relevant cleaning, purging, and inspections shall be documented.</p>	
<p>2.2.1.2. Procedures shall be appropriate to the operation and may likely differ significantly between agricultural producer, manufacturer, etc.</p>	
<p>2.2.2. Segregation</p>	<p>If the operation is dedicated strictly to Non-GMO Project Standard compliant production, then segregation measures within the production operation are unnecessary, since only Non-GMO Project verified inputs will enter the operation.</p>
<p>2.2.2.1. If the operation is not dedicated to Non-GMO Project verified production, systematic procedures shall be in place during production to keep Program verified inputs, work-in-progress, and finished products separate from all materials that are not compliant with the Non-GMO Project Standard.</p>	
<p>2.2.2.2. Tracking of lot numbers and labeling/marketing on packaging and containers shall be used as necessary to identify and segregate Non-GMO Project Standard compliant materials from non-compliant materials.</p>	
<p>2.3. Specifications for Inputs and Products</p>	<p>The intent of the program is for the Participant to design production processes and input specifications that exclude GMOs from the Participant's products. This not only requires that one use inputs that are compliant with the Non-GMO Project Standard, but also that one employ practices that control unintentional contamination with GM material.</p>
<p>2.3.1. Participants shall not knowingly plant, purchase, or use inputs that are not compliant with the Non-GMO Project Standard.</p>	

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<p>2.3.2. Preventive measures, as defined below, must be undertaken by Participants to prevent or reduce unintentional GMO contamination in excess of the action thresholds set by this Standard.</p>	<p>This requirement is necessitated because risk of unintentional contamination of inputs and products with GMOs is increasing due to the growing use of GMOs in non-organic agriculture.</p>
<p>2.3.3. The written specifications for all inputs and products shall include requirements regarding Non-GMO Project Standard compliance, and shall be updated when the Participant changes suppliers or inputs.</p>	
<p>2.3.4. Purchase and use of inputs shall be contingent on inputs being compliant with requirements of the Non-GMO Project Standard, including traceability, segregation and GMO content.</p>	<p>Methodology for determining this is given in sections 2.4., 2.5., and 2.6. of this Standard.</p>
<p>2.3.5. Release of products to the marketplace shall be contingent on products meeting requirements regarding Non-GMO Project Standard compliance, including traceability, segregation and GMO content.</p>	<p>Participants shall have a written methodology and rationale for determining this. Success must be documented, with adjustments made and documented as necessary to meet this Standard.</p> <p>Methodology for determining this as described in sections 2.4., 2.5., and 2.6. of this Standard may be applied.</p>
<p>2.4. Input Categories</p>	<p>Appropriate preventive measures depend on the category of the input, and are elaborated below.</p>
<p>2.4.1. Non-Risk Inputs: Materials that are not derived from biological organisms and are not, therefore, susceptible to genetic modification.</p>	<p>Examples: salt, lime, and water.</p>
<p>2.4.1.1. Preventive measures for Non-Risk Inputs consist of examining the specification sheet for compound ingredients to confirm the absence of components with GMO-risk.</p>	<p>Specification sheets must fully disclose all components of the input in question.</p>
<p>2.4.2. Low-Risk Inputs: Species for which genetically modified versions have not yet been commercialized.</p>	<p>Although biotechnologists are engaged in laboratory experimentation with most species, crops, ingredients, and production inputs derived from such species (for example, cherries, wheat, and green peppers) have extremely low risk of being contaminated.</p>
<p>2.4.2.1. Preventive measures for Low-Risk Inputs consist of:</p>	
<p>2.4.2.1.1. Examining the specification sheet for compound ingredients to verify absence of high-risk ingredients.</p>	<p>Specification sheets must fully disclose all components of the input in question.</p>
<p>2.4.2.1.2. Verifying that the input was</p>	<p>a. If the facility does not use any High-Risk</p>

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<p>produced under conditions designed to avoid cross-contamination with GM materials.</p>	<p>Inputs, then demonstration of this fact is sufficient to fulfill this requirement.</p> <p>b. If the facility does use High-Risk Inputs, fulfillment of this requirement will involve demonstrating that procedures and systems are in place that effectively segregate the Low-Risk Input under consideration from potential sources of high-risk contamination within the facility.</p>
<p>2.4.3. High-Risk Inputs: Crops and their derivatives that carry high risk of being genetically modified are listed in Appendix B.</p>	<p>Genetically modified varieties of the crops listed in Appendix B include:</p> <ul style="list-style-type: none"> ▪ genetically modified crops that are grown on a large scale in North America and certain other parts of the world; and ▪ close relatives of these crops that are subject to cross-pollination. <p>There is greater risk that any lot of these crops, whether natural or organic, could become contaminated, either via cross-pollination or admixture during storage, shipping, handling or processing.</p> <p>Animal products are included in the list of High-Risk Inputs because animal feed commonly contains High-Risk Inputs. In addition, injections of recombinant bovine growth hormone are sometimes used to increase milk production, and other High-Risk Inputs may be used to treat problems encountered in livestock production.</p> <p>There are other GM crops and biological materials, in addition to those in Appendix B, that have been commercialized. However, because these are not in wide or common use in the food production system at this time, this Standard does not classify them as high-risk.</p>
<p>2.4.4. Participants shall undertake preventative measures to assure the Non-GMO Project Standard compliance of High-Risk Inputs, and shall consist of at least the following:</p>	
<p>2.4.4.1. Examining the specification sheet of the input to identify all high-risk ingredients.</p>	<p>A specification sheet or similar description must be on file with Participants for each</p>

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	unique input received from each supplier, which discloses all components contained in that input.
2.4.4.2. Verifying that the input was produced under conditions designed to avoid cross-contamination with GM materials (traceability and segregation).	Participants must be able to show their methodology and due diligence in this.
2.4.4.3. Monitoring for GMO contamination against an Action Threshold, which, if exceeded, triggers the Participant to investigate the cause of the contamination and to correct that cause when identified.	Monitoring and associated testing regimens may be conducted by the supplier and/or the user of any given input. The validity of the testing regimen shall be evaluated.
2.4.4.5 Compliance of animal products with the Standard is not necessarily verified by testing of the animal product, but by showing that inputs (feed, supplements, etc.) are compliant with the Standard, and that adequate traceability, cleanout, and segregation measures have been used in handling the inputs and the resulting animal products.	A similar approach is applicable to other inputs where GMO content or origin is not readily determined by analysis, e.g. ethanol derived from GMO corn.
2.5. Reclassification of Specific High- and Low-Risk Materials Based on Experience in the Field	
2.5.1. A Low-Risk Input that is found through verified, random testing to contain GM material at levels above the Action Threshold (defined below) at a frequency of greater than 1 sample per 50 samples tested, or that is projected to contain such GM material at a frequency greater than 1 in 50 samples based on existing test results, shall be classified as a High-Risk Input, the verification of which shall be carried out according to the requirements for High-Risk Inputs.	Such risks will be evaluated on a Project-wide basis, i.e., from compiled experience with Product Verification Program Participants using any given Low-Risk Input. One example of a Low-Risk Input that might be classified as High-Risk according to this criterion would be wheat flour. GM wheat itself has not been commercialized. However, due to rotation with soy, cross-contamination frequently takes place in the fields, and, due to accidental admixture, cross-contamination of wheat flour with soy or corn often takes place in the flour mill or during other post-harvest activities. This also applies to most other flours, many of which may be made in the same mill.
2.5.2. On a case-by-case basis, certain High-Risk inputs may be downgraded to Low-Risk status based on source, documentation, protocols for contamination prevention/avoidance, and empirical results	An example would be cornstarch produced in a country where GMOs are prohibited, clean seed was verified as having been used, and documented IP procedures are in place for the manufacturing and transport of the product.

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<p>demonstrating consistently low risk of GMO contamination.</p>	
<p>2.6. Action Thresholds for High-Risk Inputs: The Non-GMO Project has established the following long-term Action Thresholds for High-Risk Inputs and Products based on input from a broad range of stakeholders:</p> <ul style="list-style-type: none"> • Seed and Other Propagation Materials (see sections 2.7 and Appendix B): 0.1%. For all other species, below the limit of detection. • Human Food, Products, Ingredients, Supplements, and Body Care Products: 0.5% • Animal Feed and Supplements: 0.9% 	<p>Absence of all GMOs is the target for all Non-GMO Project Standard compliant products. However, current risk of contamination makes it necessary to establish quality management systems to assure that GMO contamination stays within the applicable Standard.</p> <p>A key requirement of such quality management systems is to establish an Action Threshold, which, if exceeded, triggers the Participant to investigate the cause of the contamination, and to correct that cause when identified. Inputs contaminated above the action thresholds may not be intentionally used.</p>
<p>2.6.1. Compliance with Action Thresholds shall be verified on the basis of test results or affidavits from suppliers, as is consistent with the technical requirements applicable at each point in the production/storage/handling chain. The following methods shall be used where appropriate:</p>	
<p>2.6.1.1. Genetics-based testing using the PCR method.</p> <p>Where genetic testing is most appropriate, the following applies:</p>	<p>Genetics-based testing shall be used when sensitive and/or quantitative analytical results are required.</p>
<p>2.6.1.1.1. A statistically valid sampling and testing plan shall be designed on the basis of risk assessment of the production/handling system, and shall reflect the level of monitoring appropriate for the risks inherent in the production/handling system, as well as industry standards.</p>	<p>Risk assessment and monitoring must be done by the Participant, and the sampling and testing plan shall be approved as part of the Product Verification Program.</p> <p>Sampling plans must be designed to achieve 90% confidence in quantification of GMO at the action threshold set by this Standard.</p> <p>When achieving this level of confidence through crop sampling is impractical (e.g. for large crops such as zucchini and papaya), the testing program may be shifted to the seed level, provided that there are identity preservation and contamination avoidance practices in place.</p>

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	<p>Technical guidance on sampling plans can be obtained from the GIPSA, ISO, GAFTA, and other international sources. More information and resources can be found at www.nongmoproject.org.</p> <p>The Non-GMO Project shall stay informed of industry standards and trends and provide a framework in which stakeholders may periodically review relevant issues and make corresponding changes to this Standard.</p>
<p>2.6.1.1.2. Statistical calculations can also be used to design compositing strategies through which portions of multiple samples can be combined and tested together for the purpose of reducing the number of tests required and therefore the costs for testing.</p>	<p>Compositing must be done in a manner that assures that any single sample in excess of the relevant action threshold produces a positive result for the composite sample as a whole. If a positive result is obtained for the composite, it will be necessary to retest all samples individually.</p> <p>Intentionally blending lots in order to achieve an overall lot that is below the action threshold is not allowed.</p>
<p>2.6.1.1.3. Testing shall be carried out by a laboratory that is accredited to ISO17025 and uses methods that are included within the scope of their ISO17025 accreditation, for the crops/inputs in question.</p>	<p>This can be documented by the ISO17025 accreditation certificate and statement of scope of accreditation.</p>
<p>2.6.1.2. Immunologically-based testing using strip tests.</p> <p>In cases where lateral flow strip tests are suitable, the following applies:</p>	<p>These methods shall be used when rapid, qualitative in-field testing is needed and when accuracy, sensitivity, and ramifications of false negative results are not large concerns.</p>
<p>2.6.1.2.1. A statistically valid sampling and testing plan shall be designed on the basis of risk assessment of the production/handling system and shall reflect the level of monitoring appropriate for the risks inherent in the production/handling system, as well as industry standards.</p>	<p>See guidance to 2.6.1.1.1.</p>
<p>2.6.1.2.2. Analysts must be trained and their performance verified to assure they use the tests reliably.</p>	<p>Participants shall document the in-house evaluation of performance.</p>
<p>2.6.1.3. Supplier Affidavits. In cases where a non-GMO affidavit is appropriate, the following applies:</p>	<p>This option is available in cases where an input that is normally classified as High Risk is shown to be produced under conditions where the risk does not exist, for example, a crop</p>

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	from a country where no GMO production has been allowed, or a class of enzyme for which no GMO form has been developed.
2.6.1.3.1. The affidavit must attest that the origin of the input as well as its chain of custody merits the classification of the input as Low Risk as described in section 2.4.2 of this Standard.	
2.6.1.3.2. The affidavit must be signed by the manufacturer of the input.	
2.7. Seed Production and Vegetative Propagation Materials	The production of Non-GMO Project compliant seed and vegetative propagation materials requires specific practices and considerations in addition to the core requirements for all other products in the supply chain. Perpetuation of GMOs in the chain from one generation to the next is to be minimized by all practical means.
2.7.1. Categories	<p>The categories named below reflect the different stages involved with breeding and production of seed. Participants wishing to market seed under the Product Verification Program as being of a specific category must adhere to all applicable requirements for that category, as detailed below.</p> <p>Seed producers may use different terms and demarcations to refer to different categories of seed, depending on what types of seed are involved. For example, vegetable seed producers may use terms that differ from small grain or bean producers. The terms and categories given below attempt to sort seed into its main stages of variety selection, preservation, and multiplication through the production chain, as they apply to the objectives of the Non-GMO Project Standard and the Product Verification Program.</p>
2.7.1.1. Breeder seed, or Foundation seed	<p>Breeder seed is seed that is under direct control of the party who originally sponsors and/or selects the characteristics of the variety in question. It is the most genetically pure and serves as the basis for creation of foundation seed.</p> <p>Foundation seed is the amplified quantity of</p>

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	genetically pure breeder seed. It serves as the basis for inventories of registered, certified, and/or stock seed.
2.7.1.2. Registered seed, Certified seed, and Stock seed	The seed in these categories is taken from relatively smaller breeder or foundation seed populations and managed to maintain varietal characteristics. It is then multiplied to produce crop or production seed.
2.7.1.3. Crop seed, Production seed, or Common seed	Crop seed or production seed refers to the seed used by farmers to produce crops that are grown as the basis of the main consumer supply chain. Common seed is saved by the farmer for his own crop use.
2.7.1.4. Vegetative Propagation and other Plant Materials	Examples are rootstocks and scions (and trees produced from them), cuttings, strawberry crowns, seed potatoes, and sweet potato slips.
2.7.2. Sources	
2.7.2.1. All sources of seed or vegetative propagation materials used by an operation under the Non-GMO Project Standard must be identified.	
2.7.2.2. A risk assessment of the potential for contamination of the supply to a Non-GMO Project Participant’s operation must be done, with appropriate action steps taken to minimize risk and maximize adherence to the Action Thresholds set in this Standard. The risk assessment shall consider at least the following factors:	For any given species and/or variety to be approved under the Product Verification Program, all sources used by the operator must be assessed for risk.
2.7.2.2.1. Species	Any species that has been commercialized in GMO form is considered at risk of contamination in the seed supply. This applies whether or not the species is listed on Appendix B; e.g., tomato and rice do not appear on Appendix B. This Standard includes species-specific requirements for production of these species of seed. Species that have not been marketed as GMO but are known to be under such experimentation or field trials will likewise be subject to specific control measures as noted below.
2.7.2.2.2. Source-specific and/or site-specific	This applies to any suppliers of breeder,

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<p>production history of suppliers of seed or vegetative propagation materials.</p>	<p>foundation, registered, certified, or stock seed to any subsequent links in the supply chain who wish to participate in the Product Verification Program as a supplier of Non-GMO Project compliant seed or vegetative propagation materials.</p> <p>Any sites that have been previously used to grow GMOs, or suppliers who also grow GMO varieties of the same species that the Participant wants to include in the PVP, must demonstrate how, via historical data, cultural and handling practices, and/or analytical testing, the source and site do not pose threats of contamination by GMOs above Action Thresholds set by this Standard.</p>
<p>2.7.3. Practices – Participants shall take precautionary measures to ensure that production of seed and vegetative propagation materials by their own operations minimizes the possibility of GMO contamination. Such practices include:</p>	<p>These requirements apply to all stages of the seed and vegetative propagation material production chains.</p>
<p>2.7.3.1. Site selection and consideration of production site history</p>	<p>Any sites that have been previously used to grow GMO varieties of the same species that the Participant wants to include in the Product Verification Program must demonstrate to the Technical Administrator how, via historical data, cultural and handling practices, and/or analytical testing, the source and site do not pose threats of contamination by GMOs above Action Thresholds set by this Standard.</p>
<p>2.7.3.2. Maintaining isolation distances between the production site and other sites that might be sources of GMO pollen.</p>	<p>Appendix C to this Standard sets recommended minimum isolation distances on a per-species basis, assuming no mitigating factors are in place to further minimize contamination by GMO pollen from off-site sources. Examples of such mitigating factors are:</p> <ul style="list-style-type: none"> ▪ Existence of geological, topological, or vegetative barriers; ▪ Design of field shape and size to reduce chances of exposure to GMO pollen; <p>Normally low relative atmospheric humidity in the relevant region.</p>
<p>2.7.3.3. Timing of planting to avoid concurrent</p>	

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<p>pollen development and crossing by potentially threatening GMO crops being grown nearby.</p>	
<p>2.7.3.4. Variety selection that avoids or reduces the possibility of receiving pollen from GMO varieties.</p>	
<p>2.7.3.5. Post-harvest sorting to remove obviously or potentially GMO-contaminated seeds.</p>	
<p>2.7.4. Verification via analytical testing</p>	
<p>2.7.4.1. Any lot of seed listed in Appendix C that is to be included in the Product Verification Program for the express purposes of seed or crop production must include verification by analytical testing that GMO presence is below the Action Thresholds set by this Standard.</p>	<p>At what stage the test must be conducted will depend on whether previous stages in the production chain (i.e., breeder, foundation, and/or stock seed) have been tested (and what the results of those test were), and what risks are associated with the final stage of production before marketing under the Product Verification Program.</p>
<p>2.7.4.2. It is not required to test for GMO presence in breeder, foundation, or stock seed, unless:</p> <ul style="list-style-type: none"> (i) This category of seed is specifically requested for approval under the Product Verification Program; (ii) It has been shown that a specific site or operation at one or more of these stages of the production chain has been contaminated by GMOs; (iii) Testing of crop production seed for inclusion in the Product Verification Program consistently shows contamination above the Action Thresholds set by this Standard – either on a site-specific or operation-specific basis, and/or on an industry-wide basis. 	<p>Contamination at these levels of the seed supply is a serious problem that warrants special attention.</p> <p>In order to reduce contamination issues at these stages, the operational limit of testing should be thought as 0.01% for all practical purposes. At this level of detection, it is very reasonable to expect a standard deviation of 50% or more for quantitative analysis. Confidence of true negative readings can be increased by increasing sample size or number of tests done on independent samples.</p> <p>Action Thresholds set by this Standard for seed are the enforced limits, but producers of seed upstream from crop production seed in the seed production chain (i.e., breeder, foundation, or stock seed) are encouraged to test their seed at these technological analytic limits, to avoid amplification of GMO contamination levels at the crop production seed level.</p>
<p>2.7.4.3. For seed that is considered extremely valuable or in short supply (e.g., small quantities of breeder or foundation seed, where testing may use too many seeds), a sampling regimen where an equivalent amount of plant tissue samples are collected and analyzed may be used as an alternative approach.</p>	

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3. Quality Assurance and Quality Control	
3.1. The Participant's quality assurance and quality control program shall be revised as needed to assure compliance with the Non-GMO Project Standard.	These modifications will, in most cases, involve additions or revisions to existing procedures, but where necessary, may include new procedures specific to processes, procedures, and record keeping critical to compliance with the Non-GMO Project Standard.
3.1.1. Compliance with applicable requirements of the Non-GMO Project Standard shall be identified as a key quality indicator of the Participant's products, and standard operating procedures shall be revised, or added where necessary, to incorporate measures that assure such compliance of products with the Non-GMO Project Standard.	
3.1.1.1. Where needed, additional training shall be provided to staff to assure that they are capable of fulfilling their duties in a manner that supports compliance of the operation, and the products produced, with the Non-GMO Project Standard.	
3.1.1.2. Documents and forms shall be revised, as necessary, to include compliance with the requirements of the Non-GMO Project Standard as a key quality indicator, and to assure that the Participant organization operates in a manner that fulfils the requirements of the Non-GMO Project Standard.	
3.1.1.3. All documents, forms, reference materials, and specifications needed by personnel to fulfill the requirements of the Non-GMO Project Standard shall be readily available to relevant personnel.	
3.1.1.4. Records shall be retained for 3 years.	
3.2. Monitoring and control of key parameters relevant to compliance with the Non-GMO Project Standard shall be incorporated into the quality assurance and quality control program of the Participant organization. Key parameters are:	The Participant shall create or revise documentation accordingly to show compliance with each aspect identified below.
3.2.1. Traceability	
3.2.2. Segregation	
3.2.3. Compliance with Action Thresholds	Periodic monitoring of compliance with Action

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	<p>Thresholds is typically done via additional analytical testing at strategic times and points in the system to corroborate and support the regular sampling and testing program that the operation has implemented.</p>
<p>3.2.4. Labeling</p>	<p>Labeling claims must be accurate and truthful, and must not mislead the consumer about the GMO content of the product. Any reference to the Non-GMO Project or use of the seal must be approved by a written agreement with the Non-GMO Project.</p> <p>An example of a claim that would not be acceptable is “contains zero GMOs.”</p> <p>The Technical Administrator will review labels to assess compliance with these claim guidelines.</p>
<p>3.3. The Participant organization shall monitor and verify the Non-GMO Project Standard compliance of inputs purchased, in line with section 2.3. of this Standard, and this shall be documented.</p>	<p>Record-keeping procedures shall be revised as necessary to assure that records include relevant information regarding the Non-GMO Project Standard compliance of each specific lot of input.</p>
<p>3.4. The Participant organization shall monitor and verify the Non-GMO Project Standard compliance of final products sold, in line with section 2.4. of this Standard, and this shall be documented.</p>	<p>Record-keeping procedures shall be revised as necessary to assure that records include relevant information regarding the Non-GMO Project Standard compliance of each specific lot of product.</p>
<p>3.5. Corrective actions. Non-conformities in processes, procedures, inputs, or products, which could impact compliance with the Non-GMO Project Standard, shall trigger:</p>	<p>Nonconformities can be discovered through internal quality-assurance processes, complaints from customers, or third party surveillance.</p>
<p>3.5.1. Timely root-cause analysis.</p>	<p>“Timely” is considered to be typically within 7 days, and rarely longer than 30 days. Longer delays must be justified in writing.</p>
<p>3.5.2. Corrective actions designed to improve the system and products to achieve compliance with the Non-GMO Project Standard.</p>	<p>Corrective action plans shall include identification of persons responsible for their execution, defined timelines for actions, and realization of the desired results of the corrective action plan.</p>
<p>3.5.3 Identification of non-conformities, corrective actions, root-cause analysis, and successful remediation of the non-compliance shall all be documented.</p>	<p>This documentation shall be available to the Technical Administrator and its inspectors.</p>
<p>3.5.3.1. Major non-conformities shall be reviewed at the time of occurrence,</p>	<p>A major non-conformance is a deviation that directly affects the compliance of the product</p>

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<p>documented, and reported to the Product Verification Program's Technical Administrator.</p>	<p>with the Non-GMO Project Standard, such as accidental contamination of the product with GM material.</p> <p>Appropriate next steps shall be proposed by the operator and then reviewed and mutually agreed upon with the Technical Administrator.</p> <p>Major non-conformities that go uncorrected may be cause for a product or company to be removed from the Product Verification Program.</p>
<p>3.5.3.2. Minor non-conformities shall be reviewed at the time of the annual inspection.</p>	<p>A minor non-conformance is a deviation in procedures, recordkeeping, documentation, or other part of the program that does not cause any of the relevant ingredients used throughout the operation to exceed action thresholds.</p>
<p>3.6. In addition to Participants, suppliers and contractors shall also participate in the Non-GMO Project Product Verification Program to verify compliance with the Standard.</p>	<p>In some cases, inputs certified by other non-GMO certification programs may be approved as equivalent for use in Non-GMO Project compliant products. A program would be acceptable as long as that program is fully equivalent to or exceeds the requirements of the Non-GMO Project Product Verification Program. The decision on equivalency will be made by the Board of Directors based on evaluation of said program by the Technical Administrator via a procedure duly approved by the Board. In such cases, certificates of compliance from such a program may be accepted as equivalent to verification by the Non-GMO Project.</p> <p>Such suppliers and contractors must still, in all cases, input their product, ingredient and facilities data into the Non-GMO Project Product Verification Program database.</p>
<p>3.6.1. A Product Verification Program update shall be required at least annually.</p>	<p>The Technical Administrator may require a Participant to submit updates more frequently, if history shows cases of major non-conformities occurring as a result of unannounced changes to the operation.</p> <p>Such changes could include the following: changes in product composition that involve High-Risk Inputs, changes in suppliers of</p>

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	High-Risk Inputs, changes in processes or procedures that alter segregation or traceability of products, or changes in specifications of a high-risk ingredient or of a final product that contains High-Risk Inputs.
4. Transition Period and Continuous Improvement	
It is expected that with systematic efforts within each sector of the industry, it should eventually be possible for the industry to be successfully operating uniformly and consistently with all aspects of this Standard. Until that time, compliance will be assessed according to program-wide variances set in Appendix A. All variances are meant to be temporary, and will be reviewed on at least an annual basis by the Standard Revision Committee. Each variance shall be removed from this Standard as quickly as is practically feasible on an industry-wide level.	
4.1. During this transition period Participants will develop systems, procedures, and source materials required to enable their companies and the industry to operate effectively and sustainably to the Action Thresholds.	
4.2. During this transition period, while the industry is working cooperatively and dynamically to achieve the ability to consistently operate to these target Action Thresholds, temporary variances will be set on a sector-by-sector basis. Participants are required to operate to the most stringent conditions practical at this time, while also working with others in their sector to develop sources that are progressively closer to the Action Thresholds described above.	A primary goal of the Project is that sufficient experience (systems) and data will be generated to downgrade some sources of high-risk materials to low-risk status.
4.3. Variances can, in principle, be applied to any aspect of the Standard or the verification process, including the Action Thresholds, the risk classification of a given crop or input, or the criteria required to verify compliance with other aspects of the Non-GMO Project Standard. Variances are applied on an industry-wide basis, and apply uniformly to all companies.	Recommended changes to variances will be made by the Standard Revision Committee (which includes members of the Technical Advisory Board), and will be based on input received from stakeholders. These recommendations will be approved and finalized by the Board of Directors.
4.4. Individual Participants may choose to either operate to long-term action thresholds or avail themselves of current variances. Use of a variance is contingent upon participation in industry-wide continuous improvement efforts aimed at eliminating the need for that variance.	Variances have been set in acknowledgement of current industry-wide limitations, but the goal is to eventually overcome those limitations through collaborative efforts.
4.5. For manufactured food and feed products, distinct variances may be established for each	All percentages noted below are weight percentages of the product, not counting the

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<p>of the following categories of High Risk Inputs (see Appendix A for currently applicable variances):</p>	<p>weight of salt or added water in the finished product.</p> <p>For livestock feed, the categories below are calculated based on the weight of the input as a percentage of the total daily ration fed to the animal.</p>
<p>4.5.1. Major Ingredients, each of which represents 5% or more of the product or is a defining ingredient.</p>	<p>A defining ingredient is one whose name appears in the name of the product.</p>
<p>4.5.2. Minor Ingredients, each of which represents at least 0.5% but less than 5% of the product, and is not a defining ingredient.</p>	
<p>4.5.3. Micro Ingredients, each of which represents less than 0.5% of the product and is not a defining ingredient.</p>	
<p>APPENDIX A: Current Variances to the Standard</p>	
<p>Variance #1—Elevated Action Thresholds</p>	<p>Current variances for the Action Threshold are as follows:</p> <ul style="list-style-type: none"> • Planting Seed and Other Propagation Materials that are listed in Appendix B: 0.25%. For all other species, below the limit of detection. • Human Food, Products, Ingredients, Supplements, and Body Care Products: 0.9% • Animal Feed and Supplements: 1.5% <p>Allowed use of this variance is contingent upon the Participant demonstrating their role in sustained, active efforts to develop non-GMO sources of that input.</p>
<p>Variance #2—Including on the list of crops with high risk of GMO contamination only those crops species for which genetic modification is widely and commonly used.</p>	<p>Appendix B is a list of the GMO crops and inputs considered “High-Risk” by the Non-GMO Project—this is the Project’s Operational list of High-Risk Inputs. It does not include all GMO crops that have been commercialized. Some of GMO crops that were commercialized at one time are not in commercial use today. For instance, potatoes and tomatoes were once produced commercially but today are not in North America. Another example is rice, where GMO varieties have never been commercialized, but where accidental</p>

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	<p>contamination has taken place both in the US and China. In all of these cases, the GM crop is present today in only low, residual amounts in the food system.</p> <p>These and other low-incidence GMOs have been excluded from the Project’s operational list of High-Risk Inputs (see Appendix B for list). This substantially reduces the number of products and ingredients that are classified as High-Risk and thereby reduces the number of inputs that require in-depth review.</p> <p>Allowed use of this variance is contingent on the Participant demonstrating their role in sustained, active efforts to develop non-GMO sources of High-Risk Inputs.</p>
<p>Variance #3—No production facility review for Low-Risk inputs</p>	<p>a. The stringent approach to evaluating Low-Risk Inputs involves two steps. First, the specification sheet for any compound input is reviewed to verify that it contains no high-risk GM materials. Second, the plant or production facility where the input is produced is evaluated to assure that manufacturing is carried out in a way that avoids contamination with GM risk materials (for instance, if the ingredient is buckwheat flour, this step requires inspection of the flour mill to verify that the buckwheat flour is not contaminated with soy flour during milling).</p> <p>For Low-Risk Inputs, the Non-GMO Project will not, at this time, review the production facility, but will only review the specification sheet for that input. However, such a review can be required for inputs that are formally classified as low-risk, but that have high risk due to cross-contamination during production. Under these conditions, evaluation of the production facility is reserved only for situations where risk of contamination is known to be very high, such as implied in section 2.5. of this Standard.</p>

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	<p>b. Use of this variance is contingent on the Participant demonstrating sustained, active efforts to work with suppliers of the Low-Risk Input to enable them to comply with Section 2.4.2.1.2. of the Standard.</p> <p>The following are steps that could be taken along these lines:</p> <ol style="list-style-type: none"> 1. Identify which suppliers of the input of interest also make or handle high-risk materials. 2. Work with such suppliers to make sure procedures are in place to minimize the risk that the Low-Risk Input used by the Participant might be contaminated by the high-risk materials produced or handled by the supplier. 3. Use surveillance testing to assess the degree to which cross-contamination is actually occurring. 4. Work with the producer to improve segregation and cleanout procedures as necessary to more effectively segregate the Low-Risk Input of interest from potential sources of cross-contamination with high-risk materials. 5. Work with suppliers to control GMO risk in high-risk materials that they produce or handle, thereby reducing the risk of GMO contamination of the Low-Risk Input that is used by the Participant. If this is achieved, the supplier will have, in effect, converted the high-risk material into a low-risk material, and segregation within the facility will no longer be required. <p>c. The Participant must document continuous improvement efforts in order to maintain compliance with Variance #3.</p>
<p>Variance #4—Temporary exclusion of all Micro Ingredients</p>	<p>All Micro Ingredients used in livestock feed formulations or products manufactured for human consumption may be excluded from the Verification Process at this time, with the exception of:</p>

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	<p>a. Viable microbes and their functional components, which replicate their action. Examples include yeasts, dairy cultures, and enzymes.</p> <p>b. Microbial products that have no viable microbes, or functional enzymes, but which are not isolates. Examples include cheese, bread, wine, beer and fruit puree.</p> <p>Any given product formulation included in the Program must not contain more than 10 unique non-verified High-Risk Micro Ingredients. Formulations exceeding 10 unique High-Risk Micro Ingredients must either be reformulated or enough of the micro inputs verified as Non-GMO Project Standard compliant in line with section 2.6. of this Standard, to reduce the amount of non-verified inputs to 10 or less.</p> <p>Allowed use of this variance is contingent on the Participant demonstrating their role in sustained, active efforts to develop Non-GMO Project compliant sources of the exempted Micro Ingredients.</p>
<p>Variance #5—Verification of Non-GMO Project compliance of Minor and Micro Ingredients using supplier affidavits</p>	<p>In cases where GMO analytical certificates or traceability linked to analytical certificates of precursors is not available, Non-GMO Project compliant status of Minor and Micro Ingredients may be verified based on affidavits from suppliers. Suppliers shall agree to provide further information or demonstration in support of affidavit when requested by the Technical Administrator.</p> <p>Allowed use of this variance is contingent on the Participant demonstrating their role in sustained, active efforts to develop Non-GMO Project compliant sources of that Ingredient.</p>
<p>Variance #6—Temporary exclusion of Minor Ingredients that are demonstrated to be unavailable in Non-GMO Project compliant form</p>	<p>Where there is agreement in procedural accordance with section 4.3. of this Standard that a particular Minor Ingredient is not available in Non-GMO Project Standard compliant form, then an alternate form of that ingredient may be used as long as it is a product of a system that has been designed to avoid GMOs. Examples of such systems are</p>

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	<p>organic certification and other identity preservation systems; these other identity preservation systems are subject to review by the Technical Administrator. Minor Ingredients admitted under this variance shall be listed on the Non-GMO Project’s website.</p> <p>Specific products for which this variance has been granted are listed in Appendix D of this Standard.</p> <p>Allowed use of this variance is contingent on the Participant demonstrating their role in sustained, active efforts to develop Non-GMO Project compliant sources of that Ingredient.</p>
<p>Variance #7—Verification of inputs based on testing alone at any stage of the production chain.</p>	<p>The intention of the Standard is that compliance be verified at all levels of the production chain regarding the use (intentional or accidental) of all production inputs.</p> <p>A. This variance allows for high-risk inputs to be verified as compliant with the Non-GMO Project Standard if:</p> <ul style="list-style-type: none"> (i) A copy of the original Certificate of Analysis for the PCR test shows that the GMO content of the input in question is below the relevant action threshold; and (ii) The testing must have been conducted by a laboratory in compliance with sections 2.6.1.1.1 and 2.6.1.1.3 of this Standard and must reference by lot number the specific lot of product used by the Participant; and (iii) Appropriate laboratory controls indicate that the DNA of the input is sufficiently intact to allow valid quantitative analysis by PCR. (Inputs that do not meet this criterion and are, therefore not “testable” in this manner, must be verified by lot-specific traceability back to precursors for the input that are testable.)

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	<p>B. This variance also allows for high-risk inputs to be verified as compliant with the Non-GMO Project Standard if:</p> <ul style="list-style-type: none"> (i) The precursor(s) to the input used by the Participant are tested by PCR; and (ii) For each precursor to an input used by the Participant, a copy of the original Certificate of Analysis for the PCR test of the specific lot of the precursor in question must show that the GMO content is below the relevant action threshold; and (iii) The testing must have been conducted by a laboratory in compliance with sections 2.6.1.1.1 and 2.6.1.1.3 of this Standard and must reference by lot number the specific lot(s) of the precursor used for lot of product used by the Participant; and (iv) Appropriate laboratory controls indicate that the DNA of the tested precursor is sufficiently intact to allow valid quantitative analysis by PCR; and (v) From the point of the PCR testing forward, an identity preservation system is in place to ensure the given lot of the input in question has not been exposed to any other high-risk GMO material. All such systems are subject to review and must be approved by the Technical Administrator. <p>Allowed use of this variance is contingent on the Participant demonstrating sustained, active efforts to obtain Non-GMO Project compliant sources of the ingredient in compliance with the fully applicable scope of this Standard as described in section 1.2.</p>
<p>Variance #8 – Temporary Exclusion of vaccines and medicines used in livestock production.</p>	<p>All vaccines and medicines used in livestock production, except for hormones, may be excluded from the Verification Process at this</p>

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	<p>time.</p> <p>Allowed use of this variance is contingent on the Participant demonstrating their role in sustained, active efforts to develop Non-GMO Project compliant sources of these inputs.</p>
<p>Variance #9 – Approval of a Participant’s Co-Processed Products Based on a Process Certification Combined with Analytical Testing.</p>	<p>The Non-GMO Project Standard’s Product Verification Program follows a process-based approach that is supported by testing at strategic points in the supply chain, as applicable and taking into consideration the other variances of this Standard. The Non-GMO Project acknowledges that pre-existing contractual agreements between certain Participants (e.g., brand owners) and their contracted processors, may pose barriers to enrollment in the early stages of the Program. This variance enables Participants who manufacture their products in contracted facilities (also known as co-packers or co-processors) to more quickly enter the Program while still adhering to the Program’s process-based approach.</p> <p>Under this variance, any manufactured product that is made by an operation contracted by the Participant may be evaluated and approved under the PVP as long as it is a product of a system that has been designed to avoid GMOs. Examples of such systems are organic certification and other identity preservation systems. All such systems are subject to review by the Technical Administrator, especially in cases where parallel processing occurs within the certified system. For example, processing organic soybeans in both Non-GMO Project verified and non-verified forms. In such cases lot by lot identity preservation will likely be necessary.</p> <p>The Participant and/or the contracted operation provides evidence of testing as described in Variance #7 of the Non-GMO Project Standard.</p> <p>Allowed use of this variance is contingent on</p>

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	<p>the Participant having a defined plan for bringing contracted operations into full enrollment in the PVP within a defined time frame, not to exceed three years, to be reviewed and approved by the Technical Administrator with oversight by the Standards Committee.</p>
<p>Variance #10 – Approval of Livestock Products and bee products based on process certification and a defined plan to meet action thresholds set by the Non-GMO Project Standard.</p>	<p>This variance presents a multi-year timeline for bringing seed and feed used in livestock products or ingredients, or bee products, into compliance with the long-term action thresholds and other requirements of the full Non-GMO Project Standard.</p> <p>For the purposes of this variance:</p> <ul style="list-style-type: none"> a. Seed refers to that which is planted for crops used as forage for stock or hives; b. Feed refers to that which is obtained from off-farm sources. <p>Under this variance, any livestock product or ingredient, or bee product that is used or made by the Participant, or an operation contracted by the Participant, may be verified as Non-GMO Project Standard compliant as long as:</p> <ul style="list-style-type: none"> (i) Cloned or genetically modified animals are not used to produce the product in question. (ii) It is a product of a system that has been designed to avoid GMOs in relevant production streams. Examples of such systems are organic certification and other identity preservation systems. This criterion applies to all links in the supply chain. (iii) The Participant engages in cooperative efforts to map and engage its input supply chain and prepare them for implementation of a sampling and testing program that meets the Non-GMO Project Standard. Such efforts shall include, but are not limited to, sharing information with the Project

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	<p>regarding seed and feed sources as applicable, direct communication to seed and feed suppliers about the Non-GMO Project, and collaboration with other Participants who are availing themselves of this variance. Within one year of enrollment, a map of the Participant's supply chain must be in place. For livestock, the supply chain must trace to the seed source for operations where the crop from this seed is direct fed to animals on the same farm, and to the feed mill for cases where feed is purchased. For bee products, the supply chain must include producers, processors, and consolidators.</p> <p>(iv) By the end of year two of a Participant's use of this variance, an appropriate sampling and testing regime must be in place for the relevant livestock feed inputs, or in the case of bees, the bee products.</p> <p>(v) By the end of the third year of verification under this variance, the Participant and/or its relevant supply chain must demonstrate consistent reduction of GMO contamination of livestock feed or bee products used in the production of products that are deemed compliant with the Non-GMO Project Standard. The goal of the testing program shall be compliance with Variance #7 of the Non-GMO Project Standard, and ultimately full compliance with the Standard.</p> <p>(vi) After five years of verification under this variance, if not sooner, the Participant may no longer use this variance, and must be operating to the full Non-GMO Project Standard and other relevant variances.</p>
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	Allowed use of this variance shall be reviewed and approved by the Technical Administrator with oversight by the Standards Committee.
APPENDIX B: List of Crops, Processed/Processing Inputs, Production Inputs, and other Organisms with GMO Risk	
Crops - The following crops carry risk of being genetically engineered, because engineered varieties of these crops are grown large scale in North America and certain other parts of the world:	These crops may not be used in Non-GMO Project approved products unless verified as compliant with the Non-GMO Project Standard.
Canola	There is a risk of contamination of other <i>Brassica napa</i> (e.g., rutabaga, Siberian kale), and <i>Brassica rapa</i> (e.g., bok choy, mizuna, Chinese cabbage, turnip, rapini, tatsoi) by cross-pollination from GM canola. Caution should be exercised, but these crops are not considered High-Risk inputs under section 2.4.3 of this Standard.
Corn	Except popcorn
Cotton	
Papaya	
Rice	If grown in China, beginning 2009 crop
Soy	
Sugar beets	There is a risk of contamination of other <i>Beta vulgaris</i> , (e.g., chard, table beets) by cross-pollination from GM canola. Caution should be exercised, but these crops are not considered High-Risk inputs under section 2.4.3 of this Standard.
Zucchini and yellow summer squash	There is a risk of contamination of other <i>Curcubita</i> crops by cross-pollination from GM squash, including acorn squash, delicata squash, patty pan squash, pumpkin, and spaghetti squash. Caution should be exercised, but these crops are not considered High GMO Risk inputs under section 2.4.3 of this Standard.
Animal Derivatives - These include products derived from cattle, sheep, pigs, chickens, and other common livestock, fowl, and fish, and include the following:	Most animal-derived products have GMO risk because soy, corn, cottonseed, and canola are commonly used in feed. Micro Inputs for feed such as vitamins may also carry risk of not being compliant with the Non-GMO Project

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	Standard (see below). These animal derivatives may not be used in Non-GMO Project approved products unless verified as compliant with the Non-GMO Project Standard.
Milk	
Meat	Hides and skins are also included in this category.
Eggs	
Honey and other bee products	Due to potential for contamination with GMO crop pollen.
Livestock Production Inputs	The following inputs may not be used unless, verified as compliant with the Non-GMO Project Standard. Note that these inputs are not considered as feed ingredients, and as such the variance on Micro Ingredients does not apply to them.
rBGH, rBST (recombinant Bovine Growth Hormone or recombinant Bovine Somatotropin)	
Semen	See Guidance at 1.2.1.6.
Vaccines	
Veterinary Medicines	
Microbes and microbial products	
Enzymes, including chymosin	
Microbial cultures and starters	Including yeast.
Processed/processing inputs and ingredients, and related derivatives, derived from crops, livestock, or microorganisms:	The following is a non-exhaustive list of derivatives with high GMO risk that are commonly used in food production. It is meant to provide examples of materials that will be considered high-risk in the Non-GMO Project Product Verification Program. The following inputs may not be used unless verified as compliant with the Non-GMO Project Standard.
Amino Acids	
Aspartame	
Ascorbic Acid, Sodium Ascorbate, Vitamin C	
Citric Acid, Sodium Citrate	Derived from glucose syrup.
Ethanol	Derived from corn or GMO sugar beets.
Flavorings, “natural” and “artificial”	Also the carrier may have GMO risk.

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Hydrolyzed Vegetable Protein	
Lactic acid	
Maltodextrins	
Microbial growth media	
Molasses	Derived from sugar beets, beginning 2008 crop.
Monosodium Glutamate	
Sucrose	Derived from sugar beets, beginning 2008 crop.
Textured vegetable protein	Including soy protein,
Xanthan Gum	
Vitamins	Vitamin A (various forms), Vitamin B6 (pyridoxine hydrochloride), Vitamin B12 (cyanocobalamin), Vitamin C (ascorbic acid), and Vitamin E (various forms) are known to have GMO risk. Vitamins in general are often formulated with dispersants and related ingredients that also have GMO risk (e.g., corn oil).
Yeast products	

Appendix C – Recommended Minimum Isolation Distances For Production Of <u>SEED</u>	
<p>General minimum distances based on pollination characteristics:</p> <ul style="list-style-type: none"> ▪ Self-pollinating species – 500 feet ▪ Insect-pollinated species – 2 miles ▪ Wind-pollinated species – 3-5 miles 	These distances may be larger than recommended isolation distances for conventional seed production, because there is a qualitative difference between transgenic contamination and other more traditional forms of cross-pollination.
Alfalfa	2 miles
Canola and other <i>Brassica napa</i> (e.g., rutabaga, Siberian kale), and <i>Brassica rapa</i> (e.g., bok choy, mizuna, Chinese cabbage, turnip, rapini, tatsoi)	2 miles
Corn	3 miles
Cotton	2 miles
Papaya	2 miles
Rice	500 feet
Soy	500 feet
Sugar beets and other <i>Beta vulgaris</i> , (e.g., chard, table beets)	5 miles
Zucchini, Yellow crook-neck squash, and other <i>Cucurbita pepo</i> (e.g., patty pan squash, pumpkin, delicata squash, acorn squash, spaghetti squash)	2 miles

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Appendix D – Minor Ingredients That Are Demonstrated To Be Unavailable In Non-GMO Project Compliant Form	
Dairy powders, including: <ul style="list-style-type: none">• Buttermilk powder• Cheese powders• Milk powders• Whey powder	
Ethanol	
Glycerin	
Honey and other bee products	all forms – liquid, powder, etc.