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“ANNEX I-A”

**APPROVAL REGISTRY OF STACKED REGULATED ARTICLES
 FOR DIRECT USE AS FOOD AND FEED AND FOR PROCESSING**

(As of May 9, 2019)

Stacked Trait Product	Introduced Trait and Gene	Date Approved/ Renewed	Interaction of the resulting gene products		Technology Developer	Other Countries with Similar Approval
			Yes	No		
1. Corn 87460 x corn MON89034 x corn NK603 and all progenies from crosses of this product	Contains two genes (<i>cry1A.105</i> and <i>cry2Ab2</i>) from <i>Bacillus thuringiensis</i> which protect the plant from Asiatic corn borer, common cutworm and corn earworm and <i>cp4epsps</i> coding sequence from <i>Agrobacterium</i> sp CP4 strain which confers tolerance to the Roundup family of agricultural herbicides.	July 10, 2014		✓	Monsanto Philippines	Japan (food and feed); Korea (feed); Taiwan (food)
2. Soybean MON87701 x MON89788	Contains <i>cry1Ac</i> gene from <i>Bacillus thuringiensis</i> (Bt) subsp. <i>kurstaki</i> , which confers resistance to lepidopteran pests: velvetbean caterpillar (<i>Anticarsia gemmatalis</i>), soybean looper (<i>Pseudoplusia includens</i>), soybean axil borer (<i>Epinotia aporema</i>), and sunflower looper (<i>Rachiplusia nu</i>) and <i>cp4epsps</i> coding sequence from <i>Agrobacterium</i> sp. Strain, CP4 which confers resistance tolerance to Round up family of agricultural herbicides	September 26, 2014		✓	Monsanto Philippines, Inc.	Mexico, Taiwan (Food); Turkey (Feed); China, Columbia, EU, India, Philippines, South Africa, South Korea (Food and Feed); Paraguay (Food and Cultivation); Argentina, Brazil, Japan, Uruguay (Food and Feed, and Cultivation)
3. Corn MON87460 x MON89034 x MON88017 and all progenies from crosses of this product	Contains <i>cp4epsps</i> from <i>Agrobacterium tumefaciens</i> , which confers tolerance to glyphosate, the active ingredient in Roundup agricultural herbicides, two genes (<i>cry1A.105</i> and <i>cry2Ab2</i>) from <i>Bacillus thuringiensis</i>	September 26, 2014		✓	Monsanto Philippines	Japan, Korea, Taiwan

	which protect the plant from Asiatic corn borer, common cutworm and corn earworm, <i>cry1Ac</i> gene from <i>Bacillus thuringiensis (Bt)</i> subsp. <i>kurstaki</i> , which confers resistance to lepidopteran pests: velvetbean caterpillar (<i>Anticarsia gemmatalis</i>), soybean looper (<i>Pseudoplusia includens</i>), soybean axil borer (<i>Epinotia aporema</i>), and sunflower looper (<i>Rachiplusia nu</i>)					
4. Corn TC1507 x DAS59122 x MON810 x MIR604 x NK603 and all progenies from crosses of this product	Contains <i>cry1F</i> and <i>pat</i> genes which confer resistance to certain lepidopteran pests such as the Asiatic corn borer and pink borer (<i>Sesamia</i> spp) and tolerance to glufosinate herbicides respectively, <i>cry34Ab1</i> and <i>cry35Ab1</i> from <i>Bacillus thuringiensis</i> , which confers resistance to certain coleopteran pests such as corn rootworm, <i>Diabrotica</i> sp. and the <i>pat</i> gene from <i>Streptomyces viridochromogenes</i> which provides tolerance to glufosinate- ammonium herbicides, <i>cry1A(b)</i> gene from <i>Bacillus thuringiensis</i> var. <i>kurstaki</i> which confers resistance to corn borer, modified <i>cry3A</i> (mCry3A) from <i>Bacillus thuringiensis</i> subsp. <i>tenebriones</i> which confers resistance to corn rootworm, and <i>cp4epsps</i> coding sequence from <i>Agrobacterium</i> sp. CP4 strain which confers tolerance to the Roundup family of agricultural herbicides	October 28, 2014		✓	Pioneer Hi-Bred	Australia/New Zealand, Canada, Japan, Korea, Mexico, Taiwan and USA
5. Corn GA21 x corn T25	Contains modified <i>epsps</i> gene from corn which confers tolerance to herbicides and <i>pat</i> gene from <i>Streptomyces viridochromogenes</i> for	December 9, 2014		✓	Syngenta Philippines Inc.	Japan, Mexico (Food 2015), South Korea, Taiwan (Food 2014)

	tolerance to herbicide, phosphinotricin					
6. Corn TC1507 x MON810 x MIR162 x NK603 and all progenies from crosses of this product	Contains <i>cry1F</i> and <i>pat</i> genes which confer resistance to certain lepidopteran pests such as the Asiatic corn borer and pink borer (<i>Sesamia</i> spp) and tolerance to glufosinate herbicides, respectively, <i>cry1A(b)</i> gene from <i>Bacillus thuringiensis</i> var. <i>kurstaki</i> which confers resistance to corn borer, two novel genes: <i>vip3Aa20</i> gene from <i>Bacillus thuringiensis</i> which confers resistance to lepidopteran pests and <i>pmi</i> gene from <i>Escherichia coli</i> encoding the enzyme phosphomannose isomerase present as a selectable marker, and <i>cp4epsps</i> coding sequence from <i>Agrobacterium</i> sp. CP4 strain which confers tolerance to the Roundup family of agricultural herbicides	Jan. 8, 2015		✓	Pioneer Hi-Bred	Argentina, Brazil, Japan, Mexico (Food 2013), South Korea, Taiwan (Food 2013)
7. Cotton 531 x cotton 1445	Contains <i>cry1Ac</i> gene from <i>Bacillus thuringiensis</i> var. <i>kurstaki</i> , which confers resistance to lepidopteran pests and <i>cp4epsps</i> coding sequence from <i>Agrobacterium</i> sp strain, CP4 which confers tolerance to the Roundup family of agricultural herbicides	Jan. 8, 2015		✓	Monsanto Philippines	Argentina, Brazil, Colombia, European Union, Japan, Mexico (Food 2002), New Zealand (Food 2000), Paraguay, South Korea, Taiwan (Food 2015)
8. Cotton 15985 x cotton 1445	Contains the <i>cry2Ab2</i> and <i>cry1Ac</i> genes which encode proteins that convey protection from lepidopteran insect pests and <i>cp4epsps</i> coding sequence from <i>Agrobacterium</i> sp strain, CP4 which confers tolerance to the Roundup family of agricultural herbicides	Jan. 8, 2015		✓	Monsanto Philippines	Canada, European Union, Japan, Mexico (Food 2006), New Zealand (Food 2002), South Korea
9. Corn MON89034 x corn 1507 x corn 88017 x corn 59122 and all progenies from crosses of this product	Contains <i>cry1A.105</i> and <i>cry2Ab2</i> from <i>Bacillus thuringiensis</i> which protect the plant from Asiatic corn borer, common cutworm and corn earworm, <i>cry1F</i> gene from <i>Bacillus</i>	Feb. 9, 2015		✓	Monsanto Philippines and Dow Agro Sciences	USA, Canada and Japan

	<p><i>thuringiensis</i> which confers resistance to certain lepidopteran pests such as the Asiatic corn borer and pink borer (<i>Sesamia</i> spp) and the <i>pat</i> gene from <i>Streptomyces viridochromogenes</i> which provides tolerance to glufosinate-ammonium herbicide, <i>cry3Bb1</i> gene from <i>Bacillus thuringiensis</i> which confers resistance to the corn rootworm, <i>Diabrotica</i> spp and <i>cp4epsps</i> gene from <i>Agrobacterium</i> sp. which confers tolerance to glyphosate, and <i>cry34Ab1</i> and <i>cry35Ab1</i> genes from <i>Bacillus thuringiensis</i>, which confers resistance to certain coleopteran pests such as corn rootworm, <i>Diabrotica</i> sp.</p>					
10. Corn NK603 x corn T25	<p>Contains <i>cp4epsps</i> coding sequence from <i>Agrobacterium</i> sp CP4 strain which confers tolerance to the Roundup family of agricultural herbicides and <i>pat</i> gene from <i>Streptomyces viridochromogenes</i> which encodes for tolerance to herbicide phosphinotricin</p>	April 22, 2015		✓	Monsanto Philippines	Brazil, Colombia, European Union, Japan, Mexico (Food 2010), South Africa, South Korea, Taiwan (Food 2011)
11. Corn MON89034 X TC1507 X NK603 and all progenies from crosses of this product	<p>Contain two genes (<i>cry1A.105</i> and <i>cry2Ab2</i>) from <i>Bacillus thuringiensis</i> which protect the plant from Asiatic corn borer, common cutworm and corn earworm</p> <p>Contains <i>cry1F</i> gene from <i>Bacillus thuringiensis</i> which confers resistance to certain lepidopteran pests such as the Asiatic corn borer and pink borer (<i>Sesamia</i> spp) and the <i>pat</i> gene from <i>Streptomyces viridochromogenes</i> which provides tolerance to glufosinate-ammonium herbicide.</p> <p>Contains <i>cp4epsps</i> coding sequence from <i>Agrobacterium</i> sp CP4</p>	December 7, 2015		✓	Dow Agro Sciences and Monsanto Philippines	Argentina (Food 2012), Brazil, Colombia (Food 2014), European Union, Japan, Mexico (Food 2011), South Africa, South Korea, Taiwan (Food 2011), Uruguay (Food 2012)

	strain which confers tolerance to the Roundup family of agricultural herbicides					
12. Corn Bt11 x corn DAS59122 x corn MIR604 x corn TC1507 x corn GA21 and all progenies from crosses of this product	Contains the cry1Ab gene from <i>Bacillus thuringiensis</i> which confers resistance to corn borer and pat gene from <i>Streptomyces viridochromogenes</i> which provides tolerance to herbicide; cry34Ab1 and cry35Ab1 genes from <i>Bacillus thuringiensis</i> , which confers resistance to certain coleopteran pests such as corn rootworm, <i>Diabrotica</i> sp. and the pat gene from <i>Streptomyces viridochromogenes</i> which provides tolerance to glufosinateammonium herbicides; modified cry3A (mCry3A) from <i>Bacillus thuringiensis</i> subsp. <i>tenebriones</i> which confers resistance to corn rootworm; cry1F gene from <i>Bacillus thuringiensis</i> which confers resistance to certain lepidopteran pests such as the Asiatic corn borer and pink borer (<i>Sesamia</i> spp); and modified epsps gene from corn which confers tolerance to herbicides	April 5, 2018		✓	Syngenta Philippines Inc.	USA, Australia, Canada (food and feed) and Japan (food)
13. Corn MON88017 x MON810	Contains cry3Bb1 gene from <i>Bacillus thuringiensis</i> which confers resistance to the corn rootworm, <i>Diabrotica</i> spp; cp4epsps from <i>Agrobacterium</i> sp. which encodes for tolerance to glyphosate resistance and cry1Ab gene from <i>Bacillus thuringiensis</i> var <i>kurstaki</i> which confers resistance to corn borer	May 28, 2018		✓	Monsanto Philippines	Canada (Feed and Environment, 2006); European Union (Food and Feed, 2010); Japan (Food, 2005; Feed 2006; Environment 2006); Korea (Feed, 2008; Food 2006); Mexico (Food and Feed, 2006); Philippines (Food, Feed and Processing, 2011); South Africa (Food, Feed, or Processing, 2011); Taiwan (Food, 2014); U.S.(Environment (EPA), 2015*)
14. Cotton MON15985 X MON88913	Contains the cry2Ab2 and cry1Ac genes which encode proteins that convey protection from lepidopteran insect pests and the cry3Bb1 gene from <i>Bacillus thuringiensis</i> subs <i>kumamotoensis</i> which	May 28, 2018		✓	Monsanto Philippines	Australia (Environment, 2006); Brazil (Food, Feed and Environment, 2012); Canada (Feed, 2005); Colombia (Food, 2010; Feed, 2007; Environment, 2007); Japan (Food, 2005; Feed, 2006; Environment, 2006); Korea

	confers resistance to corn root worm and the <i>cp4epsps</i> coding sequence from <i>Agrobacterium</i> sp. <i>CP4</i> strain which confers tolerance to the Roundup family of agricultural herbicides					(Food, 2006; Feed, 2008); Mexico (Food & Feed, 2006, 2008; Environment, 2011); Philippines (Food, Feed & Processing, 2011); South Africa (Food, Feed and Environment, 2007); Taiwan (Food, 2015)
15. Soybean FG72 X A5547-127	Contains <i>2mepsps</i> from <i>Zea mays</i> which decreases binding affinity for glyphosate, thereby increasing tolerance to glyphosate herbicide, <i>hppdPF W336</i> from <i>Pseudomonas fluorescens</i> strain A32 which confers tolerance to HPPD-inhibiting herbicides by reducing the specificity for the herbicide's bioactive constituent, and a synthetic phosphinothricin acetyltransferase (<i>pat</i> gene) from <i>Streptomyces viridochromogenes</i> expressing tolerance to glufosinate ammonium herbicide	June 22, 2018		✓	Bayer CropScience Inc.	Argentina, Australia/New Zealand, Brazil, Canada, Colombia, Japan, Korea, Mexico, Taiwan, and the United States
16. Corn 3272 x BT11 x MIR604 x TC1507 x 5307 x GA21 and all progenies from crosses of this product	Contains the <i>amy797E</i> gene expresses the alpha-amylase enzyme that catalyzes the hydrolysis of starch into constituent sugars, <i>pmi</i> gene which encodes the phosphomannose isomerase protein that enables the plant cells to convert mannose to a readily metabolized compound, fructose-6-phosphate, thereby improving the energy status of the cells and avoiding the accumulation of derivatized mannose. <i>pmi</i> also allows the positive selection for the recovery of the transformed plants, <i>cry1Ab</i> gene encodes the Cry1Ab protein which provides protection against Asiatic corn borer. It also contains <i>pat</i> gene which codes for the production of the enzyme phosphinothricin-N-acetyltransferase (<i>pat</i>)	June 25, 2018		✓	Syngenta Philippines Inc.	Canada (cultivation and feed), Korea (environment, feed, and food), Japan (environment), Mexico (food, feed, and processing), and Taiwan (food)

	<p>which confers tolerance to glufosinate, contains the <i>mCry3A</i> gene which encodes the mCry3A protein that provides protection against rootworm and the <i>pmi</i> gene which allows the positive selection for the recovery of the transformed plants, <i>eCry3.1Ab</i> gene which provides protection against rootworm, <i>pmi</i> gene as a selectable marker, <i>Cry1F</i> gene which produces the Cry1F protein that when ingested by the insect, causes gut paralysis and eventual death. Event TC1507 also produces the PAT protein which provides tolerance to glufosinate herbicide. GA21 contains the <i>mepsps</i> (modified 5-enolpyruvylshikimate-3-phosphate synthase) gene which confers tolerance to glyphosate.</p>					
17. Soybean MON87705 X MON87708 x MON89788 and all progenies from crosses of this product	<p>Contains the <i>FAD2-1A/FATB1-A</i> suppression cassette which suppresses <i>FATB</i> and <i>FAD2</i> soybean genes and leads the intended fatty acid changes in oil; <i>dmo</i> gene from <i>S. maltophilia</i> strain DI-6 which confers tolerance to dicamba herbicide; <i>cp4 epsps</i> gene from <i>Agrobacterium</i> sp CP4 strain which confers tolerance to the Roundup family (glyphosate) of agricultural herbicides</p>	July 10, 2018		✓	Monsanto Philippines, Inc.	Canada, Japan, Mexico, South Africa, South Korea, Taiwan
18. Corn Bt11 x MIR162 x MIR604 x MON89034 x 5307 x GA21 and all progenies from crosses of this product	<p>contains <i>cry1Ab</i> gene which encodes the Cry1Ab protein that provides protection against Asiatic corn borer, <i>pat</i> gene which codes for the production of the enzyme</p>	October 31, 2018		✓	Syngenta Philippines, Inc.	Canada, Japan, South Korea

	<p>phosphinothricin-N-acetyltransferase (<i>pat</i>) that confers tolerance to glufosinate, <i>vip3Aa20</i> gene which provides protection against other Lepidopteran insects and <i>pmi</i> gene which encodes the phosphomannose isomerase protein that enables plant cells to convert mannose to a readily metabolized compound, fructose-6-phosphate, thereby improving the energy status of the cells and avoiding the accumulation of derivatized mannose, <i>mCry3A</i> gene which encodes the mCry3A protein that provides protection against rootworm, <i>cryIA.105</i> and <i>cry2Ab2</i> genes that provide protection against feeding damage caused by the European corn borer (<i>Ostrinia nubilalis</i>) and other lepidopteran insect pests, <i>eCry3.1Ab</i> gene which provides protection against rootworm and the <i>pmi</i> gene as a selectable marker, and <i>mepsps</i> (modified 5-enolpyruvylshikimate-3-phosphate synthase) gene which confers tolerance to glyphosate</p>					
19. Corn Bt11 x MIR162 x MIR604 x TC1507 x 5307 x GA21	<p>contains <i>cry1Ab</i> gene which encodes the Cry1Ab protein that provides protection against Asiatic corn borer, <i>pat</i> gene which codes for the production of the enzyme phosphinothricin-N-acetyltransferase (<i>pat</i>) that confers tolerance to</p>	October 31, 2018		✓	Syngenta Philippines, Inc.	Argentina, Brazil, Canada, Colombia, Japan, Mexico, South Africa, Taiwan

	<p>glufosinate, <i>vip3Aa20</i> gene which provides protection against other Lepidopteran insects and <i>pmi</i> gene which encodes the phosphomannose isomerase protein that enables plant cells to convert mannose to a readily metabolized compound, fructose-6-phosphate, thereby improving the energy status of the cells and avoiding the accumulation of derivatized mannose, <i>mCry3A</i> gene which encodes the mCry3A protein that provides protection against rootworm, <i>cry1F</i> gene which produces the Cry1F protein that when ingested by the insect, causes gut paralysis and eventual death, <i>eCry3.1Ab</i> gene which provides protection against rootworm and the <i>pmi</i> gene as a selectable marker, and <i>mepsps</i> (modified 5-enolpyruvylshikimate-3-phosphate synthase) gene which confers tolerance to glyphosate</p>					
<p>20. Soybean MON87708 x MON89788 x A5547-12 and all progenies from crosses of this product</p>	<p>contains the <i>dmo</i> gene from <i>S. maltophilia</i> strain DI-6 which confers tolerance to dicamba herbicide; <i>cp4 epsps</i> gene from <i>Agrobacterium</i> sp CP4 strain which confers tolerance to glyphosate, the active ingredient in Roundup® brand agricultural herbicides; and <i>pat</i> gene from <i>Streptomyces viridochromogenes</i> to confer tolerance to</p>	<p>November 19, 2018</p>		<p>✓</p>	<p>Monsanto Philippines, Inc.</p>	<p>Colombia, Mexico, South Africa, South Korea, Taiwan</p>

	glufosinate herbicide					
21. Soybean 305423 x soybean 40-3-2	<p>Contains <i>gm-fad2-1</i> gene fragment providing increased levels of monounsaturated (oleic) fatty acid and decreased levels of polyunsaturated fatty acids (linoleic and linolenic) and to a lesser extent, palmitic acid, via a mechanism of gene silencing and <i>gm-hra</i> gene which encodes the GM-HRA protein conferring tolerance to ALS-inhibiting herbicides; it was used solely as a selectable marker, and does not provide a commercial level of herbicide tolerance</p> <p>It also contains <i>cp4epsps</i> coding sequence from <i>Agrobacterium</i> sp strain, CP4 which confers resistance tolerance to Round up family of agricultural herbicides</p>	April 29, 2019		✓	Pioneer Hi-Bred Philippines	U.S.A., Canada, Mexico, Australia / New Zealand, South Africa, Japan, South Korea and Taiwan