

# Amflora

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**Amflora** (also known as **EH92-527-1**) is a genetically modified potato developed by BASF Plant Science. Amflora potato plant produces pure amylopectin starch that is processed to waxy potato starch. Amflora was approved for industrial applications in the European Union market on 2 March 2010 by the European Commission<sup>[2]</sup> and was withdrawn from the EU market in January 2012.

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## History

Originally registered on 5 August 1996, Amflora was developed by geneticist Lennart Erjefält and agronomist Jüri Känno of Svalöf Weibull AB.<sup>[1]</sup>

Due to lack of acceptance of GM crops in Europe, BASF Plant Science decided in January 2012 to stop its commercialization activities in Europe and would no longer sell Amflora there, but that it would continue seeking regulatory approval for its products in Europe, the Americas, and Asia.<sup>[3]</sup>

## Industrial applications

Regular potato starch contains two constituent types of molecules: amylopectin (80%), which is more useful as a polymer for industry, and amylose (20%) which often creates problems as starch retrogradation and therefore must be modified with chemical reactions that cost money.<sup>[4]</sup>

After two decades of research efforts,<sup>[5]</sup> BASF's biotechnologists using genetic engineering succeeded in creating a potato, named Amflora, where the gene responsible for the synthesis of amylose has been turned off and thus the potato is unable to synthesize the less desirable substance, amylose.

Amflora potato would be processed and sold as starch to industries that prefer waxy potato starch with only amylopectin. Amflora is intended only for industrial applications such as papermaking and other technical applications. Europe produces more than two million metric tons of natural potato starch a year, and BASF with its Amflora product hoped to enter into this large market.<sup>[4]</sup>

### Other possible uses

According to New York Times, BASF has a second application pending for use of Amflora's potato pulp as animal feed.<sup>[5]</sup>

## Political disagreements

Various environmental organizations, such as Greenpeace, disagreed with the introduction of the Amflora genetically modified potato into the market and the licensing procedures by the European Commission were going too slow, prompting a BASF scientist to remark on New York Times that "it's hard when you see an innovative product go through the loops again and again. These decisions are not about science but about politics".<sup>[5]</sup> After the potato was

**Amflora**



<b>Event</b>	EH92-527-1
<b>Identifier(s)</b>	BPS-25271-9
<b>Plant</b>	<i>Solanum tuberosum</i> L.
<b>Mode</b>	Transgenesis
<b>Method</b>	Insertion
<b>Vector</b>	pHoxwG <sup>[1]</sup>
<b>Developer</b>	Svalöf Weibull AB <sup>[1]</sup>
<b>Trait(s) conferred</b>	Decreased amylose production, increased kanamycin resistance
<b>Genes introduced</b>	Granule bound starch synthase, neomycin phosphotransferase II

approved, the European Greens political party and the Italian agricultural minister criticized the approval.<sup>[6]</sup> The International Peasant Movement La Via Campesina made a press release on 8 March 2010 also criticizing the decision.<sup>[7]</sup>

### Reactions by Greek politicians

After Amflora's licensing by the European Commission on 2 March 2010, the Coalition of the Radical Left's Member of Parliament for the A Thessalonikis prefecture Tasos Kouvelis asked the Greek Minister of Agriculture on 3 March 2010 to declare the production of the potato illegal in Greece,<sup>[8]</sup> while on 4 March 2010 Panhellenic Socialist Movement's European Member of Parliament Kriton Arsenis submitted a question at Europarl asking about the consequences of Amflora.<sup>[9]</sup>

PASOK's member of Europarl Maria Damanaki accepted the decision of the European Commission, while Greek agriculture minister Katerina Batzeli said that the production of Amflora will not be allowed in Greece.<sup>[10]</sup>



### Licensing procedure

Amflora could not be sold within the European Union without approval, and the licence could only be given after voting at the Council of Ministers of the European Union with a 74% threshold of support. Two rounds of voting were carried, first by experts in December 2006 and then by the agricultural ministers in July 2007, but both failed to reach the 74% threshold. Albeit the voting was by secret ballot, the New York Times reported that Amflora was supported by the agricultural ministers of Germany and Belgium, and was opposed by the agricultural ministers of Italy, Ireland, and Austria, while the agricultural ministers of France and Bulgaria preferred to abstain from voting.<sup>[5]</sup>

After the licence was given on 2 March 2010, BASF announced its intention to ask for approval of more varieties of genetically modified potatoes, such as the Fortuna potato.<sup>[11]</sup>

### Production of the potato

After the European Commission's approval of the potato, BASF announced that it is going to produce Amflora seed starting in April 2010 in Germany's Western Pomerania (20 hectares) and Sweden (80 hectares). It also announced that it was planting 150 hectares in the Czech Republic "for commercial aims with an unnamed partner."<sup>[11]</sup>

### References

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- <sup>^</sup> <http://www.basf.com/group/pressrelease/P-10-179>
- <sup>^</sup> James Kanter for the New York Times. January 16, 2012. BASF to Stop Selling Genetically Modified Products in Europe ([http://www.nytimes.com/2012/01/17/business/global/17iht-gmo17.html?\\_r=0](http://www.nytimes.com/2012/01/17/business/global/17iht-gmo17.html?_r=0))
- <sup>^</sup> <sup>*a b*</sup> [http://www.basf.com/group/corporate/en/function/conversions:/publish/content/products-and-industries/biotechnology/plant-biotechnology/images/BASF\\_Plant\\_Science\\_Amflora.pdf](http://www.basf.com/group/corporate/en/function/conversions:/publish/content/products-and-industries/biotechnology/plant-biotechnology/images/BASF_Plant_Science_Amflora.pdf)
- <sup>^</sup> <sup>*a b c d*</sup> Rosenthal, Elisabeth (24 July 2007). "A Genetically Modified Potato, Not for Eating, Is Stirring Some Opposition in Europe" ([http://www.nytimes.com/2007/07/24/business/worldbusiness/24spuds.html?\\_r=1](http://www.nytimes.com/2007/07/24/business/worldbusiness/24spuds.html?_r=1)). *The New York Times*.
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- <sup>^</sup> <http://www.kourakis.gr/question/Na-απαγορευτεί-η-καλλιέργεια-της-μεταλλαγμένης-πατάτας-Amflora-από-τους-αγρότες-της-χώρας-μ>
- <sup>^</sup> [http://kepka.org/index.php?option=com\\_content&task=view&id=1183&Itemid=27](http://kepka.org/index.php?option=com_content&task=view&id=1183&Itemid=27)
- <sup>^</sup> <http://www.naftemporiki.gr/news/pstory.asp?id=1784971>
- <sup>^</sup> <sup>*a b*</sup> <http://www.gmo-compass.org/eng/news/492.docu.html>

### Further reading

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- "Part II Summary" (<http://www.webcitation.org/610S1BQb4>), *Application for Amylopectin Potato Event EH92-527-1 according to Regulation (EC) No 1829/2003*, archived from the original ([http://www.gmo-compass.org/pdf/regulation/potato/EH92-527\\_potato\\_1829\\_application\\_food\\_feed\\_2005.pdf](http://www.gmo-compass.org/pdf/regulation/potato/EH92-527_potato_1829_application_food_feed_2005.pdf)) on 2011-08-17
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## External links

- <http://www.basf.com/group/corporate/en/products-and-industries/biotechnology/plant-biotechnology/amflora>
- <http://www.gmo-safety.eu/science/potato/263.amflora-potato-industrial-applications-starch-potatoes-renewable-raw-material.html> Amflora - a potato for industrial applications.
- [http://www.europabio.org/PressReleases/green/PR\\_061202\\_GM\\_potato.pdf](http://www.europabio.org/PressReleases/green/PR_061202_GM_potato.pdf)
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Categories: Genetically modified organisms in agriculture | Potato cultivars | BASF

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