



## Glossary of Plant Molecular Farming (PMF) Terms

**Please note:** *Definitions provided in this glossary have been adapted from multiple sources to reflect the context of plant molecular farming.*

### **Biodegradable Plastics**

Plastics that can be decomposed by microorganisms.

### **Chloroplast Transgenic Systems**

Where transgenes have been inserted in the genome of chloroplasts, as opposed to insertion in nuclear DNA, and are expressed exclusively in these organelles. Such transgenic systems may be useful in the mitigation of gene flow in species where chloroplasts are not inherited through pollen.

### **Confined Research Field Trial**

A confined research field trial is the release of a PNT, for research purposes, under terms and conditions of confinement designed to minimize any impact the PNT may have on the environment. These terms and conditions include, but are not limited to, reproductive isolation, site-monitoring and post-harvest land use restriction (Canadian Food Inspection Agency, October 29, 2004 [online]).

### **Construct**

An engineered DNA fragment (e.g. plasmid) which contains, but is not limited to, the DNA sequences to be integrated into a target plant's genome (Canadian Food Inspection Agency, October 29, 2004 [online]).

### **Deoxyribonucleic Acid (DNA)**

DNA is a nucleic acid molecule which carries an organism's genetic information. It is found in all living organisms except for some viruses and is the means by which hereditary characteristics pass from one generation to the next (Encarta® World English Dictionary (North American Edition), no date [online])

### **Food Processing Enzyme**

An enzyme used to control food texture, flavour, appearance, or nutritional value. Examples of such proteins include amylases that break complex polysaccharides down to simpler sugars and proteases that tenderize meat proteins (Food and Agriculture Organization of the United Nations, 2004 [online]).

### **Gene Flow**

The transfer of genetic material by interbreeding from one population of a species to another population (same or related species), thereby changing the composition of the gene pool of the receiving population (Canadian Food Inspection Agency, October 29, 2004 [online]).

### **Genetic Engineering**

Procedures involved in the isolation, manipulation or expression of genetic material, or the combining of

DNA from two different organisms, either for basic research or in the development of industrial processes (Integrated Pest Management Resource Centre, no date [online]).

### **Genotype**

The sum total of the genes of an organism, latent or expressed (Canadian Food Inspection Agency, October 29, 2004 [online]).

### **Human Biologic**

A human biologic is a drug prepared using a biological starting or source material (e.g. derived from a microorganism, virus, animal, human, or plant), and using either conventional manufacturing methods, recombinant DNA technology, and/or other novel approaches for its production. Some examples of biologics include vaccines, blood and its derivatives, certain hormones, and enzymes, recombinant DNA products, gene therapies, and transgenics (Government of Canada BioPortal, October 4, 2005 [online]).

### **Male Sterility**

Phenotype found in male flowering plants whereby pollen is either absent or non-functional (Integrated Pest Management Resource Centre, no date [online]).

### **Pharmaceutical**

A pharmaceutical is a synthetic drug made from chemicals. Pharmaceuticals include prescription and non-prescription drugs, disinfectants, as well as low risk products such as sunscreens, antiperspirants and toothpaste (Government of Canada BioPortal, October 4, 2005 [online]; Health Canada (October 1, 2004 [online]).

### **Phenotype**

The observable characteristics of an organism (including physical, biochemical or other traits) which may result from the interaction of the organism with its environment (Canadian Food Inspection Agency, October 29, 2004 [online]).

### **Plant Molecular Farming**

The use of plants in agriculture for the production of pharmaceutical or industrial compounds rather than for the production of food, feed or textile fibres.

### **Plant with a Novel Trait (PNT)**

A plant variety possessing a characteristic that is intentionally selected or created through a specific genetic change and is either not previously associated with a distinct and stable population of the plant species in Canada or expressed outside the normal range of a similar existing characteristic in the plant species (Canadian Food Inspection Agency, October 29, 2004 [online]).

### **Platform**

Plant species chosen for the introduction and subsequent expression of a novel gene.

### **Promoter**

The region of DNA which binds RNA polymerase and directs this enzyme to the correct site where transcription of the gene will begin. Promoters may be constitutive, inducible, or tissue-specific (Integrated Pest Management Resource Centre, no date [online]).

<i>Constitutive promoter:</i>	An unregulated promoter that allows for continual transcription of its associated gene (Food and Agriculture Organization of the United Nations, 2004 [online]).
<i>Inducible promoter:</i>	The activation of a promoter, and, consequently, of the transcription of the associated gene(s), in response to either the presence of a particular compound ( e.g., presence of a plant hormone) or of a defined external condition (e.g., elevated temperature) (Food and Agriculture Organization of the United Nations, 2004 [online]).
<i>Tissue-specific promoter:</i>	A promoter that limits the expression of the transcribed gene to certain tissues (e.g., protein expression is limited to seed and is not expressed in the leaves, stems, or roots of the plant).

### **Recombinant DNA (rDNA)**

A strand of DNA synthesised in the laboratory by splicing together selected parts of DNA strands from different organisms or by adding a selected part to an existing DNA strand. (Integrated Pest Management Resource Centre, no date [online])

### **Transcription**

The process of RNA synthesis by an RNA polymerase to produce a single-stranded RNA complementary to a DNA template (Integrated Pest Management Resource Centre, no date [online]).

### **Transformation**

The uptake and integration of DNA in a cell, in which the introduced DNA is intended to change the phenotype of the recipient organism in a predictable manner. (Food and Agriculture Organization of the United Nations, 2004 [online])

### **Transgene**

An isolated gene sequence used to transform an organism. Often, but not always, the transgene has been derived from a different species than that of the recipient.(Food and Agriculture Organization of the United Nations, 2004 [online])

### **Unconfined Release**

A release into an environment of a plant with novel trait(s) that is not isolated either reproductively or physically from managed or natural environments, but may be subject to certain conditions (Canadian Food Inspection Agency, November 19, 2004 [online]).

### **Vaccines**

A preparation of killed microorganisms, living attenuated organisms, or living fully virulent organisms that is administered to produce or artificially increase immunity to a particular disease (Merriam-Webster Online Dictionary, no date [online]).

### **Veterinary Biologic**

A helminth, protozoa or micro-organism; a substance or mixture of substances derived from animals, helminths, protozoa or micro-organisms; or a substance of synthetic origin that is manufactured, sold or represented for use in restoring, correcting or modifying organic functions in animals or for use in the diagnosis, treatment, mitigation or prevention of a disease, disorder, abnormal physical state, or the symptoms thereof, in animals. Veterinary biologics include vaccines, bacterins, bacterin-toxoids,

immunoglobulin products, diagnostics kits, and any veterinary biologic derived through biotechnology (Canadian Food Inspection Agency, August 8, 2005 [online]).

### **Veterinary Drug**

Any substance or mixture of substances manufactured, sold or represented for use in

- ▶ the diagnosis, treatment, mitigation or prevention of a disease, disorder or abnormal physical state, or its symptoms in animals, or
- ▶ restoring, correcting or modifying organic functions in animals (Justice Canada, August 31, 2004 [online]).

### **Volunteer**

A plant from a previous season's crop that regenerates in a subsequent crop (Integrated Pest Management Resource Centre, no date [online]) .

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