

“Good Plant Protection Practice”

INTRODUCTION

Good Plant Protection Practice (GPPP) provides the basis for the proper and appropriate use of plant protection products (PPPs). GPPP includes principles relating to the use of individual PPPs in the context of overall plant protection strategies. While GPPP places a legal obligation on professional users to ensure that product is used in accordance with the conditions of use (specified on the product label), it also places legal obligations on the professional users in relation to the safe disposal of empty packaging and unused or obsolete product. Such prescribed disposal must be in strict accordance with national and local waste disposal regulations. Additionally, GPPP confers responsibilities on professional users to act in a responsible and sympathetic way in relation to PPP use adjacent to residents and other property owners.

The terms of authorization and the conditions of use of a PPP are detailed on the product label and are referred to as the “GAP” (Good Agricultural Practice). The final step in the authorisation of a PPP involves the approval of a product label. This approved label contains the necessary information to enable end users to use the product safely and in conformity with both EU and national law. However, where certain use scenarios exist whereby it is not economically justified to produce comprehensive efficacy data, competent authorities may grant approvals which do not necessarily appear on the PPP label. In Ireland such uses are referred to as “Off Label Approvals”, details of which may be obtained from the Department of Agriculture, Food and the Marine (DAFM).

GPPP augments these conditions of use with elements which are largely general and applicable to all PPPs (chemical and micro-organism).

The PPP authorisation process involves an application being made by an applicant company for a particular product, for use in a certain crop/crops to control a specific pest/pests. Such an application will include details on how the product is to be used (rate of application, timing, etc.), and more importantly, the application will always include detailed risk assessments. These risk assessments quantify the potential risks associated with the use of the product in question, and cover all the environmental compartments and all possible human exposure scenarios.

GENERAL PRINCIPLES

The general principles of GPPP must be read in conjunction with the general principles of Integrated Pest Management (see **Appendix I**). It should be noted that in addition to GPPP there are other legal requirements in relation to the safe use of PPPs which must be complied with (see **Appendix II**).

1. Conditions of authorisation of plant protection products

The PPP authorisation procedure establishes the acceptable conditions of use for each individual PPP. However, it is frequently the case that acceptable levels of crop protection can be achieved by using lower rates of application or fewer applications of PPPs. When the use of a PPP is the required crop protection solution, professional users are required to use as little PPP as possible but as much as is absolutely necessary.

It can be considered GPPP to:

- (i) Vary the choice of active substances and formulations to control certain pests,
- (ii) Reduce,
 - the individual dose applied to the crop, and/or
 - the number of applications to be used,
- (iii) Increase,
 - the interval between applications,
 - the interval between last application and harvest.

It is illegal and therefore never considered GPPP to:

- (iv) Exceed,
 - the maximum individual dose (MID) permissible (for a particular crop),
 - the maximum number of applications permissible (for a particular crop).
- (v) Reduce,
 - the interval between PPP applications,
 - the interval between the last PPP application and harvest - pre harvest interval (PHI).
- (vi) Apply a PPP via application equipment not specified in the authorisation document or on the PPP label.

The concept of GPPP relates to all PPPs, including those formulated with micro-organisms and macro-organisms. Where, PPPs containing either macro or micro-organisms are used, professional users should be aware of the interaction between these products and chemical products. Professional users are obliged to apply the principles of Integrated Pest Management¹, and it is GPPP to apply such principles and seek to derive maximum benefit from natural control elements as well as cultural control elements.

2. Choice of PPP dosage

The maximum individual dose (MID) of a PPP is specified on each product label. However, use of reduced dose is permitted if the prevailing agronomic conditions allow. It is not GPPP to use higher doses (as they are not authorized and such use is therefore illegal).

¹ Guidance Notes on Integrated Pest Management For Use On Irish Farms (2015)

3. Choice of water volume

For all crops, it is important to apply sprays with the correct water volume. Frequently product labels prescribe a range of water volumes. For some crops (tall crops of some protected crops) PPP dose will be specified as a concentration (amount of PPP in specific quantity of water). It is not considered GPPP to apply PPPs in a concentration which is considered on the label to be too high or indeed too low.

4. Number, timing and frequency of applications

It is GPPP to apply only as many treatments as are absolutely necessary to achieve effective and sufficient control of the target pest. The number of treatments necessary may vary considerably between seasons and/or locations. The timing of the first, and if necessary subsequent applications, should be based on the current pest pressure, anticipated future pest pressure and prevailing environmental conditions. Forecasting and early warning systems exist for some crop pest combinations and can facilitate optimum timing of PPP application. In addition, account should be taken of local experience from farmers and agronomists as well as timely visual observations.

Prophylactic use of PPPs can be considered GPPP in instances where certain crop pests have the ability to inflict significant damage to both crop yield and crop quality. Such treatment may be applied in a fixed programme of calendar dates, phenological growth stages of the crop or on first identification of target pest.

The timing of the last application is determined by pest pressure and the pre-harvest interval prescribed on the PPP label.

5. Tank mixing

It is GPPP to use products in tank mixes, provided the timing and rate of the application is consistent with the conditions of use, for each product when applied separately. By reducing the number of spray applications, operator exposure, fuel use, passages through the crop, etc., can be reduced. However, it is not GPPP to use products which are chemically or physically incompatible in a tank mixture or where their individual efficacy or safety is compromised. Some product labels may contain specific tank mix recommendations, e.g. for control of PEST X use in tank mix with PRODUCT Y. Other product labels may contain more general recommendations for tank mixing, e.g. for resistance management purposes. In situations not specifically addressed on product labels, it is considered GPPP to use products in a tank mix, where on the basis of historic field use and/or field trial evidence generated by the approval holder, or on the advice of an advisor, their compatibility and continued efficacy has been established.

6. Use of adjuvants

It is considered GPPP to use an adjuvant with particular PPPs or in particular use scenarios. Such use should not be counter to the conditions of the authorisations concerned. It is the case that in certain circumstances satisfactory efficacy of particular PPPs can only be achieved by the inclusion of a particular adjuvant.

It is not considered GPPP to use an adjuvant with a PPP in such a manner that results in unacceptable residues of the PPP being present at harvest, following storage, or where such use is explicitly precluded on the PPP label.

7. Equipment and method of application

It is GPPP to select equipment and application conditions which ensure that a high proportion of the PPP applied reaches its target. Many factors must be taken into consideration e.g. nozzle type, pressure, spray volume, droplet size, speed, etc., when selecting the equipment and method of application to be used. However, in making such selections, for each PPP, care must be taken to ensure that efficacy is maintained. It is especially important that the equipment used be properly calibrated and that the calibration be regularly checked, to ensure that the correct dosage is applied.

8. Use of Plant Protection Products and Water

Water is one of our most important resources. The Earth's freshwater is stored in lakes, rivers, and streams, or below ground in aquifers. Water collecting on the ground, or in a stream, river, lake, sea or ocean, is called surface water. Groundwater on the other hand is below the soil surface and develops from the seepage or infiltration of water into the ground. As water moves, both on the surface, and under the ground, suspended or dissolved substances such as PPPs can move with it.

PPPs which are water soluble, volatile or have poor soil adsorption qualities often have a higher risk of appearing in water. In addition, when PPPs are being applied, the application can sometimes be less accurate than desired, resulting in drift from the treatment area, which if adjacent to surface water can lead to contamination.

To help mitigate any contamination of surface or indeed ground water, the conditions of use of an increasing number of PPPs may include a "buffer zone" where no application of the PPP may take place. Where a PPP label does not prescribe a specific buffer zone, a minimum distance of 1m of untreated area must be maintained between the treated area and the water course.

Spray Drift

If during the application of PPPs, spray reaches areas other than the intended treatment area, it is referred to as "spray drift". Users of PPPs must ensure that all reasonable precautions are taken to prevent spray drift. To that end, professional users should be aware of the following:

- Wind speed and direction (preference is to spray if wind does not exceed Force 3),
- Volatility of the local weather conditions,
- Vehicle speed,
- Nozzle type,
- Application pressure,
- Boom height,
- Level of equipment maintenance,
- Equipment setting.

Spray drift can cause deleterious effects to wildlife and can cause nuisance to neighbouring residents and adjacent land owners, and therefore, is considered a misuse of PPPs and is not GPPP.

Drift Reduction

When using PPPs, take all necessary measures to prevent or minimise drift from the treatment area. Such measures include the use of appropriate equipment to apply the product, taking account of the weather conditions, being considerate of residents and adjacent land owners' neighbours' interests and in turn protecting members of the public, wildlife and the environment from any possible negative effects.

The following actions should be considered:

- Check the weather forecast and the conditions at the site prior to application of a PPP,
- Reducing the application rate of the product will reduce the potential amount of product which could drift off target,
- Use the coarsest appropriate spray quality at all times,
- Maintain the boom height as low as possible whilst still providing an even spray pattern at the correct target height. (The correct boom height will depend on the spray pattern and the angle of the individual nozzles, the space between nozzles, the flatness of the area being treated and the design of the boom),
- Reduce the spray pressure and speed of the vehicle (but make sure the intended application rate, water volume and spray quality is maintained),
- Consider not treating an area closest to the downwind border of the area you are treating. For field crops, an untreated buffer zone will be most effective if the crop (or plants of at least the same height as the crop) continues into the buffer zone,
- In orchards, consider having appropriate natural windbreaks, such as other trees around the treated area,
- Use suitable drift-reducing systems, e.g. twin-fluid nozzles, air-induction nozzles, rotary atomisers, pre-orifice nozzles, air-assistance for field crop sprayers, shrouded-boom sprayers for sports turf and other amenity areas, and re-circulating tunnel sprayers for spraying fruit bushes and trees,
- Use an authorised drift-reducing additive in appropriate situations (depending on the type of equipment being used and the nature of the spray solution).

It is illegal and therefore never considered GPPP to:

- Apply PPPs where they are likely to drift from the treatment area toward adjacent sensitive areas such as residents, schools, hospitals, parks, etc.
- Apply PPPs where they are likely to drift from the treatment area toward adjacent crops (non-target plants).
- Apply PPPs inside buffer zones prescribed on PPP labels unless complying with STRIPE guidelines.
- Apply PPPs within safeguard zones around water abstraction points, wells, boreholes and ground water vulnerable areas as set out in S.I. No. 155 of 2012².

² Statutory Instrument No. 155 of 2012, European Communities (Sustainable Use of Pesticides) Regulations.

STRIPE(Surface water Tool for Reducing the Impact of Pesticides on the Environment)

STRIPE is an initiative introduced in 2015 which incentivises farmers to adopt the best practice measure of using spray drift reducing technology to reduce the impact of pesticide exposure on the environment, while concurrently increasing farm efficiency. The initiative allows farmers to reduce the size of mandatory untreated areas of land near water courses (buffer zones) which in turn allows farmers to make more effective use of their agricultural land while helping to protect aquatic life from pesticide contamination by reducing exposure. The application of STRIPE at farm level is considered to be GPPP.

Please refer to “How to use STRIPE guidelines” on www.pcs.agriculture.gov.ie

9. Seed Treatment

The application of PPPs directly to seed (seed dressing/seed treatment) is considered to be a very targeted method of application. Such applications can protect seeds both prior to and during germination, while some seed treatments with systemic activity may protect young plants for a period. The seed treatment/dressing process is considered to be the actual use of the PPP and therefore, PPP seed treatments carried out in Ireland must be with PPP authorised for use in Ireland, regardless of where the seed will be sown.

It is considered GPPP to treat seeds using annually calibrated, specialised seed treatment equipment (mobile or fixed).

It is illegal and therefore never considered GPPP to:

- Treat seeds with PPPs with equipment whose primary function is not the treatment of seeds with PPPs e.g. concrete mixer, etc.,
- Treat dead seeds with PPPs with a view to placing them in close proximity to living seeds, without first obtaining a PPP authorisation. Such seeds are termed “Dummy Pills” and are considered as being a PPP in their own right, similar to granule formulations (the dead seed acts as a mechanism to carry the PPP).

10. Use of treated seed

The use of treated seed is considered to be GPPP as it generally reduces exposure to non-target organisms in so far as the seed is transferred from its packaging to the soil without being broadcast. It is considered GPPP to use sowing equipment designed to minimise the escape of dust during the sowing process, e.g. exhausting seed boxes of precision seeders directly to the ground using deflector plates.

It is illegal and therefore never considered GPPP to:

- Broadcast treated seeds in a way that allows them be positioned on the soil surface,
- Allow treated seeds to be exposed to farm livestock or wildlife in the form of either spillages or unsecure packaging,
- Dispose of unused treated seed except as hazardous waste.

11. Filling PPP application equipment

All mixing, filling and/or loading of PPP application equipment should be carried out away from waterways, ditches, drains, boreholes, wells or springs. On farms and holdings it is best practice to have a specific area for filling a sprayer or other application equipment. Such an area should not drain directly or indirectly into a water course. It is acknowledged that it is

not always possible to fill, mix or load the sprayer in the same designated area, especially where work is carried out at several separate locations.

It is illegal and therefore never considered GPPP to:

- Fill PPP application equipment (sprayer) directly from a water course,
- Carry out mixing loading or other handling operations immediately adjacent to a water course.

12. Disposal of PPP Packaging and Unused PPP

Rinsing of containers

It is GPPP to clean plant protection product containers (packaging) using the triple rinse technique, unless otherwise specified on the product label.

PPP containers should be triple rinsed immediately after emptying. Triple rinsing involves three sequential separate rinsings and should be carried out as follows:

- A. Drain the empty PPP container fully into the sprayer.
- B. Fill the empty container 10 – 20% full of water, replace cap securely.
- C. Shake the container vigorously. and
- D. Remove the cap, add the washings to the sprayer and let the containers drain for 30 seconds or more.
- E. Repeat steps B to D two times to ensure that the containers are clean. In addition to the triple rinse procedure the following steps should be undertaken.
- F. Carefully rinse any residue on the outside of the container including the cap and cap threads and add to the sprayer for use.
- G. Inspect the containers after triple rinsing to ensure that all visible residues (inside and outside) are removed and ensure containers are fully drained.
- H. Store in a bag to avoid contamination with water, dirt, etc. until ready to deposit in bring centre or collection depot.

Unrinsed empty PPP containers are considered hazardous waste and therefore must be disposed of as hazardous waste.

Disposal of cardboard “outers”

It is GPPP to dispose of cardboard boxes/outers used to transport PPPs by recycling. However, where such cardboard is contaminated with a PPP, this cardboard must be disposed of as hazardous waste.

Disposal of Other Containers

It is GPPP to follow the disposal instructions detailed on the product label. Where it is not possible or practical to triple rinse, the label instructions will require the user to dispose of as hazardous waste or to return empty packaging to the authorisation holder.

Disposal of Obsolete PPP

When a PPP is revoked, there typically follows a maximum grace period which allows the PPP to be marketed at retail level for a period of 6 months and allows a further 12 month period to use the product. After this period elapses, the obsolete PPP is considered “hazardous waste” and therefore must be disposed of in accordance with the hazardous waste regulations³, via a licensed hazardous waste contractor.

Where the product revocation results from unacceptable environmental or human health risks, **no grace period will be allowed.**

Disposal of Sprayer Rinsate and Sprayer Washings

PPP application equipment should be kept as clean as practicably possible. This may involve washing the equipment inside and out, within the area last treated. The sprayer operator must ensure that washings or unused spray solution applied within the treated area, does not breach the maximum application rate for the PPPs on that crop/area. Generally, repeated flushing of spraying equipment with low volumes of water is as effective as a single rinse using a large volume of water.

13. Storage of PPPs

Professional end users of PPPs shall store PPPs in a safe and responsible way, at very least complying with the following requirements:

The structure of the storage facility shall be such that –

- (i) It is not connected to a pack-house or area where food products are present,
- (ii) It is a dedicated chemical store and is not used for any purpose other than storage of plant protection and biocidal products and other chemicals,
- (iii) It is enclosed and of sound construction,
- (iv) It has a secure lock,
- (v) In the case of walk-in stores, it is well ventilated,
- (vi) It is well lit,
- (vii) Its construction is such that leakages or spillages are retained within the store,
- (viii) Shelving provided is made from non-absorbent materials, and
- (ix) A warning sign is displayed on the entrance to the store.

Facilities that shall be available and used, as appropriate, shall include at least –

- (i) A list of key emergency contact numbers displayed near the entrance of the store (e.g. doctor, fire service),
- (ii) Recommended protective clothing and equipment, clean and properly maintained,
- (iii) Appropriate PPP measuring devices (e.g. scales, measuring jugs, etc.),
- (iv) Facilities for soaking up small spillages or leakages (e.g. bucket of sand or peat).

The operating procedures followed, shall include the following –

- (i) Powders shall be stored separately from or above liquids,
- (ii) PPPs shall only be stored in their original containers.

³ The National Hazardous Waste Management Plan 2014-2020 Published by the EPA on the 24th June 2014.

14. Resistance Management

Pest resistance to PPPs, or decreased susceptibility of a pest population to a PPP can develop from continued use of the same PPP or family of PPPs. Pest populations can evolve and develop pesticide resistance via natural selection, whereby the most resistant specimens survive and pass on their genetic traits to their offspring. Alternatively, successive applications of the same PPP can itself exert a selection pressure leading to the development of an increasingly resistant population. Reducing rates of application (and frequency) may also encourage the survival of resistant strains of pests, weeds or diseases. Some PPP modes of action are more prone to the development of resistant populations; therefore, where a PPP is designated as a high risk product in terms of resistance, PPPs with alternative modes of action should be used for subsequent or at least alternate applications.

It is considered GPPP to use, PPPs or PPP combinations containing a number of active substances with different modes of action that are effective against the target pest.

Compliance

Where it is found that a professional user of PPPs does not conform to the principles of GPPP or maintain records to demonstrate the application of such principles, they will be considered to be in breach of Regulation 15 of Statutory Instrument 155 of 2012 “The European Communities (Sustainable Use of Pesticides) Regulations 2012”, and consequently shall be subject to either a Fixed Payment Notice or a disallowance under the Basic Payment Scheme or both.

Appendix I

General principles of integrated pest management

1. The prevention and/or suppression of harmful organisms should be achieved or supported among other options especially by:

- crop rotation,
- use of adequate cultivation techniques (e.g. stale seedbed technique, sowing dates and densities, under-sowing, conservation tillage, pruning and direct sowing),
- use, where appropriate, of resistant/tolerant cultivars and standard/certified seed and planting material,
- use of balanced fertilisation, liming and irrigation/drainage practices,
- preventing the spreading of harmful organisms by hygiene measures (e.g. by regular cleansing of machinery and equipment),
- protection and enhancement of important beneficial organisms (e.g. by adequate plant protection measures or the utilisation of ecological infrastructures inside and outside production sites).

2. Harmful organisms must be monitored by adequate methods and tools, where available. Such adequate tools should include observations in the field as well as scientifically sound warning, forecasting and early diagnosis systems, where feasible, as well as the use of advice from professionally qualified advisors.

3. Based on the results of the monitoring, the professional user has to decide whether and when to apply plant protection measures. Robust and scientifically sound threshold values are essential components for decision making. For harmful organisms threshold levels defined for the region, specific areas, crops and particular climatic conditions must be taken into account before treatments, where feasible.

4. Sustainable biological, physical and other non-chemical methods must be preferred to chemical methods if they provide satisfactory pest control.

5. The pesticides applied shall be as specific as possible for the target and shall have the least side effects on human health, non-target organisms and the environment.

6. The professional user should keep the use of pesticides and other forms of intervention to levels that are necessary, e.g. by reduced doses, reduced application frequency or partial applications, considering that the level of risk in vegetation is acceptable and they do not increase the risk for development of resistance in populations of harmful organisms.

7. Where the risk of resistance against a plant protection measure is known and where the level of harmful organisms requires repeated application of pesticides to the crops, available anti-resistance strategies should be applied to maintain the effectiveness of the products. This may include the use of multiple pesticides with different modes of action.

8. Based on the records on the use of pesticides and on the monitoring of harmful organisms the professional user should check the success of the applied plant protection measures.

Appendix II

Other legal requirements in relation to the safe use of PPPs

A Professional User:

- Is required to have appropriate training/qualification to apply professional use PPPs.
- Is required to be registered as a professional user of PPPs (it is illegal to apply professional use products if you are not registered with the DAFM as a Professional User).
- Is required to have appropriate PPE available and in good condition.
- Is required to store PPPs as prescribed by the Minister. Please see <http://www.pcs.agriculture.gov.ie/media/pesticides/content/sud/professional/End%20User%20storage%20requirements%202014.pdf>
- Is required to only use registered PPPs as directed on the label.
- Is required to be aware of the restrictions in using PPPs in areas used by the general public and Natura 2000 sites.
- Is required to maintain records of purchases, disposals and use.
- Is required to use PPPs in a way that conforms with the principles of Integrated Pest management (IPM).

Pesticide Application Equipment:

- All pesticide application equipment must be tested by registered inspectors periodically (except knapsack sprayers).
- All pesticide application equipment must be calibrated regularly (at least once per annum).