

S.I. 83 of 2003 - The European Communities (Authorization, Placing on the Market, Use and Control of Plant Protection Products) Regulations 2003

Appendix 13

Principles of Good Plant Protection Practice

(Ref. Regulation 6 (d))

INTRODUCTION

The principles of Good Plant Protection Practice (GPPP) provide the basis for the identification of optimal practice in the use of plant protection products. GPPP includes principles relating to the use of individual products in the context of overall plant protection programmes. It provides a practical standard for assessing individual practices, with efficacy, human health, animal health and environmental safety being the principal endpoints.

In the context of the provisions of Regulation 6, the conditions of authorization and the conditions of use reflected on approved labels, the principles of Good Plant Protection Practice, define the uses and manner of use which are permitted (see Regulation 6).

Within the limits established in the context of the uses for which individual plant protection products are authorized and the conditions and restrictions associated with each such authorization, the principles of good plant protection practice provide the basis for:

- (i) the choice of active substance and formulation;
- (ii) the choice of -
 - . dosage (and if appropriate volume),
 - . the number of applications to be used,
 - . their timing,
 - . the application equipment to be used and the method of application,

in the context of -

- . crop factors (*e.g.* cultivar, sowing rate, timing of sowing, fertilization regime, training system, age, spacing),
- . climatic and edaphic factors (*e.g.* topography, soil type, rainfall, temperature, light).
- . possibilities for cultural and biological control,
- . cost effectiveness,
- . the harmful organism spectrum to be controlled,
- . compatibility between products and identified side-effects;

providing an overall and rational schedule for treatment with plant protection products, timed partly by the calendar, partly by crop growth stage/phenology and partly by specific harmful organism warning systems, incorporating as appropriate other means of protection, such that efficacious control of the whole harmful organism spectrum (*e.g.* pest/disease/weed) is achieved, with the minimum amount of product usage.

While Good Plant Protection Practice, permits the use of reduced rates of application and use of products in tank mixes, in certain specified circumstances, it does not permit use of plant protection products for purposes for which the product was not authorized, unless an extension of the field of application of an authorized product has been granted in accordance with Regulation 16 for the use concerned. Good Plant Protection Practice does not permit use at rates of application higher, or frequencies more often, than provided for in the conditions of authorization and the conditions of use reflected on approved labels or than provided for in granting extensions of the field of application of authorized products.

Good Plant Protection Practice includes use, where possible, in accordance with the principles of integrated control.

GENERAL PRINCIPLES

These general principles of GPPP must be read in conjunction with the separate specific principles of GPPP for individual crops and where relevant, harmful organisms, to be issued as guidelines by the competent authority, from time to time.

1 Crop factors and cultural control

GPPP depends first on good agricultural practice in the everyday sense. Crops should be well managed according to local practice. Measures applied should be cost-effective in relation to the value of the crop. Sowing or planting material should be healthy and general hygiene should be maintained. Resistant or tolerant cultivars should be used if available and the crop should be grown in a way which minimizes the need for product inputs (*e.g.* rotation sequence, elimination of weeds as potential sources of infection). However, this can only be stated very broadly. Farmers and growers may need to grow a highly susceptible cultivar because of its high quality, or use a certain fertilization regime, sowing rate, pruning system, or other technique, because it favours high yield or the achievement of the required quality of produce.

Plant protection practices selected must be safe for the crop to be treated. It is evidently GPPP to avoid products which are phytotoxic to species or cultivars, an aspect that generally is covered by the conditions of authorization for individual plant protection products.

2 Conditions of authorization of plant protection products

The conditions and restrictions associated with individual authorizations granted, establish limits on the uses for such products. Use other than in accordance with these limits is, by definition, never GPPP. However, it is not GPPP to operate at or near these limits, where, for instance in particular situations, the use of fewer applications, lower rates of application or longer intervals between last application and harvest provide satisfactory plant protection. The aim of GPPP is to ensure use in accordance with a concept of optimum effectiveness. A fundamental principle of GPPP is that all safety advice provided on labels be followed, whether relating to the protection of humans, animals or the environment.

3 Local harmful organism spectrum to be controlled and thresholds for action

In a given crop, only certain harmful organisms are likely to occur. The spectrum of harmful organisms requiring control varies regionally, and depends on climatic conditions, soil type and other factors. Thus, GPPP is conditioned by control needs. In a given region, various indices can be used to determine whether a given harmful organism will need to be controlled in a given season - population levels at the end of the previous season, threshold levels at the beginning of the season, occurrence of weather and other conditions essential for development of the harmful organism. Therefore, going further than just the timing of applications, GPPP seeks to establish whether a harmful organism needs to be controlled or not.

The importance of particular harmful organisms varies from season to season. In general, individual plant protection products are active against a spectrum of pests. It is GPPP to use one plant protection product active simultaneously against two or more harmful organisms to be controlled, if the treatments can be correctly timed, rather than to treat them separately with two or more products. However, against a single harmful organism, a more specific product is to be preferred to a broad-spectrum product. It is necessary to avoid unnecessary use of plant protection products. Thus, carefully adjusted use of specific products, by sparing beneficial organisms or avoiding the appearance of resistance, can reduce the inputs necessary for plant protection. These considerations can become very complex and it is not possible to arrive at a general GPPP principle relating to them.

4 Choice of active ingredients and formulations

The choice of active ingredients and formulations, for use in particular situations, is constrained by a number of separate elements. There is no general GPPP principle that it is better to use few or many active ingredients, or one type of formulation, rather than another. Each individual formulated product is characterized by its efficacy, cost and side-effects.

5 Tank mixing and use of adjuvants

It is GPPP to use products in tank mixes (including those with fertilizers) provided that the timing of the application is consistent with GPPP for the products separately, since by reducing the number of spray applications, operator exposure, fuel use, passages through the crop, *etc.*, can be reduced. It is not GPPP to use products which are incompatible in a tank mixture or where their individual efficacy or safety is diminished. This is often specified through the conditions associated with authorizations granted, but is not always so specified. In situations not addressed on product labels, it is GPPP to use products in a tank mix, where on the basis of good experimental evidence relating to the range of conditions arising, generated over at least two growing seasons, their compatibility has been established and through the use of a tank mix economies can be achieved.

It is GPPP to use an authorized adjuvant with particular plant protection products, where such use is in accordance with the conditions of the authorizations concerned, or where on the basis of good experimental evidence relating to the range of conditions arising, generated over at least two growing seasons, it has been established that through use of an adjuvant, the effectiveness of the plant protection product is enhanced, or the dosage of the plant protection product may be reduced. It is not GPPP to use an adjuvant with a plant protection product in such a manner that

residues of the plant protection product at harvest or following storage are increased. It is not GPPP to use an adjuvant which has not been authorized for use with plant protection products.

6 Choice of dosage or volume

The maximum dosage permitted is fixed by the conditions associated with authorizations granted. It is not GPPP to use higher doses (as they are not authorized and such use is therefore illegal). A low-dosage treatment may be considered GPPP if there is good experimental evidence relating to the range of conditions arising, generated over at least two growing seasons, to show that it is effective. For tall-growing crops, it is important to apply sprays in the correct volume. Dosage will generally be specified as a concentration in this case, and a treatment will not be GPPP if the volume applied is too high or too low.

7 Number, timing and frequency of applications

It is GPPP to achieve adequate control by applying only as many treatments as are needed for effective control. This number may vary considerably between seasons or localities. The timing of the first application so that it is neither wastefully too early, nor too late (allowing populations to build up) is a key element in GPPP. Numerous warning systems exist which allow forecasts to be made as to when individual harmful organisms will become active (meteorological, direct monitoring, pheromone traps *etc.*). In any case, account must be taken of local experience, especially of advisory services and farmers and overall visual observation.

It may be possible to continue to use such warning systems to time subsequent applications (against successive generations of an insect, or by detecting infection periods for fungi). It is GPPP to do this as far as is practicable. It should, however, be noted that generations may come to overlap, or overall weather conditions may favour a disease over a long period.

There are frequently situations when the only possible GPPP is to treat regularly. It is not GPPP to develop a warning system which is impractically complicated, especially if it does not succeed in reducing the number of applications below those of a reasonable calendar programme. Treating according to a fixed programme of dates, or of phenological stages of the crop, can be GPPP, unless it has clearly been shown that it is possible and practical to use a warning system to reduce the number of applications in most years.

Some treatment regimes allow for an interaction of dosage and frequency (higher dose less often, lower dose more often, subject to the limits specified on labels). There is no particular GPPP preference in this respect.

The timing of the last application will be determined by what is needed for effective control, subject to the over-riding condition that the pre-harvest interval must be respected. In many cases, it may be GPPP to make the last application long before the pre-harvest interval.

8 Equipment and method of application

It is GPPP to select equipment and application conditions which ensure that a high proportion of product applied reaches its target, with, for sprays in particular, the minimum wasted as aerial drift or onto the ground. Many factors must be taken into consideration (nozzle type, pressure, spray volume, droplet size, speed, *etc.*), in selecting the equipment and method of application to be used. However, in making such selections, for each product, 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.

9 Rinsing of packaging

It is GPPP to clean plant protection product containers (packaging) using a triple rinse technique, unless otherwise specified on the label. Triple rinsing involves three sequential separate rinsings involving the following elements: -

- a) fill the empty container 10-20% full of water, replace the cap securely and shake the container vigorously,
- b) remove the cap, add the washings to the sprayer and let the container drain for 30 seconds or more,

Triple rinsed containers should be punctured to prevent re-use. Triple rinsing of empty containers facilitates their safe disposal by an authorised contractor or municipal waste recycling system.

10 Biological means of control

The concept of GPPP relates to plant protection products in general, including formulated micro-biological products and natural enemies which may be introduced into a crop (*e.g. Encarsia formosa* in glasshouses). GPPP is concerned with the proper use of such products, and with the interaction between chemical products and natural enemies introduced into a crop. GPPP is, however, concerned only up to a certain point with the management of natural enemies which pre-exist in a crop. GPPP must respect the conditions of authorization relevant to use, which seek to protect natural enemies. Integrated control seeks to derive maximum benefit from natural control elements and is therefore evidently GPPP. However, practices which are not consistent with the principles of integrated control can still be GPPP, where it is impractical to apply integrated control practices. If reliance on a biological agent (*e.g. typhlodromid mites* in orchards) has become a regular component of the control scheme within a crop, then it is GPPP to avoid products which would destroy the agent and thus lead to a need to use more of other products.

11 Identified side-effects

Side-effects on bees, or on wildlife, are basically covered by the conditions of authorization for individual products, so GPPP will automatically take account of them. Side-effects on natural enemies of harmful organisms, have been considered under "Biological means of control". It is GPPP to seek and consider all up-to-date information on such side-effects.

While GPPP requires that label recommendations, designed to minimize impact on the environment be followed, it also requires the judicious selection and use of plant protection products to ensure the avoidance of unacceptable contamination of water (surface and ground, whether or not used for abstraction of drinking water) and to ensure the avoidance of any impact on the long-term abundance and diversity of non-target species.

One of the most critical side-effects of product use is to impose a selective pressure for the development of resistant harmful organism populations. It is GPPP to take full account of all reports on appearance of practical resistance and to consider the properties of other active ingredients of the same chemical type. For particular crops, with their harmful organism spectra, recommendations may be made on a resistance avoiding strategy *e.g.* not to use one class of fungicide against foliar diseases because that would favour resistance in other pathogens later in the season, to use a "sensitive" product not more than once a season, always to use mixed formulations with a multi-site active ingredient. Where such strategies have been defined, it is GPPP to follow them.

12 Safety

GPPP requires that relevant statutory requirements and official codes of practice for the safety of the operator, consumer and environment, be respected.
