

HORMONE HERBICIDES

Avoiding Damage to Grapevines

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For Winegrowers of New Zealand

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The Hormone weed killers have been used extensively on pasture and scrub land in New Zealand for the past 50 years or more. Being very cost effective, farmers have tended to choose this group of herbicides ahead of the “non hormone” alternatives. Other names under which the hormone herbicides are called include the “Phenoxy” herbicides or “Growth Regulator Type” herbicides. In recent years a wider selection of non-hormone type herbicides have become available to farmers and foresters.

WHICH HERBICIDES ARE CATEGORISED AS “HORMONES”?

They include the following:

Product	Chemical Name	Uses
2,4-D Amine	“Baton”	Broadleaf weeds in cereals, pasture.
2,4-D Amine	“2,4-D Amine”	Broadleaf weeds in cereals, pasture.
2,4-D B	“2,4-D B”	Broadleaf weeds in new pasture, lucerne.
2,4-D Ester	“Pasture-Kleen”	Broadleaf weeds in pasture and non-crop land areas.
2,4-D Ester	“Relay”	Broadleaf weeds in pasture and non-crop land areas.
2,4-D Ester	“Thistle Killem”	Broadleaf weeds in pasture and non-crop land areas.
MCPA	“Agritone 720”	Annual broadleaf weeds including buttercup, thistles in certain crops, pasture and turf.
MCPA	“Clean Sweep” “Dow Agrosiences MCPA” “Crop Care MCPA” “MCPA 400”	Annual broadleaf weeds including buttercup, thistles in certain crops, pasture and turf.
MCPA	“Dow Agrosiences MCPB”	Broadleaf weeds in young & established pasture, clover seed buttercups, peas, linseed cereals.
MCPA	“MCPB 400” “Soft Touch”	Broadleaf weeds in young & established pasture, clover seed, peas, linseed cereals.
MCPA/MCPB Mixture	“Select” “Tropotox Plus”	Broadleaf weeds in pasture, cereals, peas, seed crops.
Mecoprop	“Mecoprop 600A”	Broadleaf weeds in barley, oats.
Mecoprop plus Bromoxynil	“Axall”	Rye corn, wheat, turf.
Mecoprop plus MCPA	“Trimec”	Broadcast weeds in cereals.

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Product	Chemical Name	Uses
Dicamba	“Banvel 200”	Broadleaf weeds in cereals, forage brassicas, maize, pasture, non-cropland.
Dicamba	“Crop Care Dicamba”	Broadleaf weeds in cereals, forage brassicas, maize, pasture, non-cropland.
Dicamba	“Kamba 500”	Broadleaf weeds in cereals, forage brassicas, maize, pasture, non-cropland.
Dicamba plus 2,4-D	“Banvine”	Broadleaf weeds in turf and waste areas.
Mecoprop, Dichlorprop MCPA Mixture	“Duplosan Super”	Broadleaf weeds in wheat, barley, pasture, and turf.
Picloram	“Tordon 2G” “Tordon Brush killer” “Tordon Gold”	Perennial weeds inc. blackberry for gorse, hemlock, inkweed, rag wort, sweet brier, barberry, Matagouri, bushweed.
Clopyralid	“Versatill”	Broadleaf weeds in range of crop.
Triclopyr	“Brushoff” “Grazon” “Renovate” “Scrubcutter” “Tribel 60EC” “Victory”	Gorse, broom, blackberry, lupin, brush weeds and broadleaf weed in turf.
2,4,5-T	“2,4,5-T” “Fecoprop” “Garlon Weed One”	Brush weeds, Gorse.

Although the common thought amongst vineyard owners is that it is the “hormone” weed killers that pose the greatest danger of causing drift damage, it must always be remembered that non-hormone herbicides can also cause serious vine damage if used incorrectly. There have been many instances noted where non-hormone type herbicides have caused serious damage to grapevines, when either used under the wrong weather conditions or the wrong herbicide choice made in the first instance.

It is vital that before using any herbicide that you – READ THE LABEL CAREFULLY.

If unsure seek advice on the best herbicide choice and best method of control before using any herbicide.

DAMAGE FROM HORMONE HERBICIDES SYMPTOMS, SUSCEPTABILITY

The damage from the “hormone” type herbicides is usually distinctive but can also be readily confused with non-hormone type herbicides. Therefore, it is important that an experienced expert checks the symptoms before conclusions are drawn. Symptoms from the pasture/cereal hormone herbicides can include leaf and shoot twisting, vein clearing and strap – like extensions to the leaf, plus flower abortion. The brush weed killer hormone herbicides may cause shoot tip blackening and abortion, or partial abortion of the shoot plus flower and bunch abortion. Vine trunks may split open with the production of aerial roots. It is the brush weed killers, which (naturally) can cause major and irreversible damage to grapevines. In some cases, vines (both mature and young) have been killed outright by drift from brush weed killers (hormone and non-hormone).

The greatest risk of causing crop damage occurs if hormone drift occurs just prior to or at flowering. In this period, fruit setting may be upset, leading to a major loss of crop or total loss of crop.

The damage that occurs also depends on the concentration of the drift. Logically the greatest damage occurs closest to the source of the herbicide drift and lessens away from the drift source. The concentration of the drift will also influence the rate of recovery (if any) of grapevines. The higher the concentration of the herbicide drift the greater the damage. High concentrations may carry over for two seasons or more, and if sufficiently high enough may cause vine deaths, particularly with the brush weed killers.

LEGAL LIABILITY – HISTORICAL

The hormone weed killers in particular have caused major damage to grapevines throughout the country. As well, other sensitive crops can be seriously affected, including tomatoes, kiwifruit, lettuce and cucurbit crops (pumpkin, squash, cucumber etc). Because of the concern about damage, the Agricultural Chemicals (Vineyards) Regulations 1962 were introduced. These regulations prohibited the use of hormone weed killers in the period September 1st – 30th April for dust formulations and not to be used within eight kilometers of a vineyard year round for a range of other formulations. However, if you planned to use some formulations (water-soluble emulsions) of hormone herbicides then it was a legal requirement under the regulations to notify the Ministry of Agriculture.

Although essentially these regulations could not prevent the use of hormone herbicides during the vine growing season, it did provide an opportunity for MAF advisors to educate the user and outline ways of avoiding drift and potential vine damage.

These regulations are no longer in force and it is a case of the user and/or his/her contractor who may apply any damaging herbicide being responsible for their actions. The Pesticides Act 1979 contained a specific clause on what was termed “reckless”

application” and which replaced the old Agricultural Chemicals Regulations. It stated that “Every person commits an offence against these regulations who applies or causes to be applied any herbicides in such a reckless manner that damage results”.

The Pesticides Act has now been replaced by the Hazardous Substances and New Organisms Act 1996, the Environmental Risk Management Authority and the Agricultural Compounds and Veterinary Medicines Act. The Resource Management Act 1991 has local interpretations via Local Authority Plans. Applications of Registered pesticides, including herbicides are now “discharging” potential contaminant within the geographic zone of the local Regional Authority, and everyone must be familiar with the particular constraints on “discharges” within their area.

Irresponsible or reckless spraying is clearly no longer acceptable and operators who tempt fate may find themselves facing criminal prosecution and hefty fines or compensations following civil action under the new regulations.

In any civil action both the liability and the quantum (value of the loss from herbicide damage) need to be proven.

EDUCATION

The key to avoiding herbicide drift on to sensitive crops is education of the user (applicator). The “Growsafe Code of NZ8409.1999 Code of Practice for the Management of Agrichemicals” should be adopted by all users of herbicides and other pesticides.

Education can also take other forms. In latter days the Ministry of Agriculture were influential in the formation of “Spray Drift Committees” that were set up in districts where “new” crops such as grapes were being established and which gave the opportunity for applicators of hormone (and other) herbicides, farmers, growers, merchants, local authorities and contractors to meet and formulate an education programme of “wise use”. This alerted applicators of hormone herbicides to the location of sensitive crops and to best strategies to apply these herbicides safely. Similar groups today in sensitive regions could have an important use in helping to avoid damaging drift.

MINIMISING DRIFT OF HERBICIDES

The following points can assist in minimising herbicide drift, including hormone herbicides:

- Selecting the correct nozzle and pressure combination to produce a maximum droplet range that will hit the target weed and not drift off target.
- Apply when there is air movement away from sensitive crops.
- Do not spray on hot days as air currents may increase drift under warm conditions. Spray early morning as convection currents are downward.

- Consider stopping spraying when wind exceeds 7 km/hr.
- Consider using a non-hormone alternative if vineyards or other sensitive crops are in close proximity, but remember all herbicide drift can be damaging.
- If unsure about air movement light a fire and watch the smoke pattern.
- Give priority to ground spraying rather than aerial application.
- Ensure untrained personnel are fully briefed before they commence spraying. Remember that both the applicator and the person that gave the instructions to spray are liable for any damage.
- Avoid the temptation or pressure to finish a spray job, when weather conditions are deteriorating.
- Drift control additives can prove to be very beneficial when applying herbicides.
- See manuals such as the “Novachem Manual” or others for more information.

REMEMBER!

Hormone weed killer drift can cause serious damage to grapevines, particularly in the spring period.

The key to avoiding drift is education and co-operation between applicator and potentially affected parties. All herbicides are potentially damaging if not used wisely, seek advice on wise use and the possibly of using a non-hormone alternative.

Civil action as a last resort can be taken when damage occurs, but both the liability and the quantum (value of loss) must be proven to be successful.

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