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# HELLCAT®

## HERBICIDE

**HELLCAT contains 200 g/L glufosinate-ammonium and 3.6 g/L carfentrazone-ethyl (MOA Group 10/14)**

### A convenient co-formulation

HELLCAT® is a micro-emulsion herbicide for the control of broadleaf and grass weeds in orchards, vineyards, cane fruit, summer fallow, road and rail areas, non-agricultural areas and forestry. The convenient co-formulation provides excellent post-emergent control of a broad spectrum of weeds, including hard-to-kill weeds such as fleabane, wild oats and awnless barnyard grass.

### Features

- Convenient co-formulation
- Group 10 + Group 14 herbicide – useful resistance management tool
- Broad weed spectrum – broadleaves and grasses
- Contact and limited systemic activity
- Rapid knockdown – symptoms within hours of application
- Micro-emulsion formulation
- Not a Dangerous Good

### Uses

Apply as a post-emergent knockdown herbicide for the control of certain broadleaf and grass weeds prior to the establishment of winter crops and summer fallow, as well as a directed spray under:

- Fruit trees
- Tree nuts
- Grapevines
- Cane berries

and for use in commercial, industrial, railways, roadsides and public service areas.

For residual weed control in citrus, grapes and olives, tank mix with KATANA\* 250 WG.

### Application Timing

Application of HELLCAT for broadleaf weed control should target small, actively growing weeds. Subsequent germinations will not be controlled. Optimum results are achieved when HELLCAT is applied under warm, humid conditions (temperatures below 33°C, with a relative humidity above 50%), when soil is moist and rain is unlikely within six hours.

### Modes of Action

Glufosinate-ammonium belongs to the phosphinic acids family of herbicides (Group 10). This mode of action inhibits the activity of the enzyme glutamine synthetase in the plant, resulting in excessive accumulation of ammonia and reactive oxygen species (ROS), which ultimately destroys the cells of the target weed. Under ideal conditions, symptoms of yellowing and necrosis of leaves will occur within 24 hours.

Carfentrazone-ethyl is a member of the inhibitors of protoporphyrinogen oxidase (PPO) group of herbicides (Group 14). These herbicides are primarily contact-type, post-emergence, broadleaf-weed herbicides. Inhibition of the PPO enzyme blocks chlorophyll production, leading to the buildup of ROS which disrupt the cell membrane. Plants become bleached (white), then desiccated and necrotic (brown), often within hours.

Both active ingredients lead to the accumulation of ROS via two different pathways, causing rapid destruction of target weeds.

### Crop Safety

HELLCAT has been tested extensively, both in Australia and internationally, for crop safety on a range of different varieties



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of grapevines, citrus, olives, *Rubus*, pome and stone fruits, tropical and sub-tropical fruits across a range of soil types and seasons. To ensure safety of the target crop:

- Apply as a directed or shielded spray
- Trees and vines <2-years-old or with green bark **MUST** be shielded from spray and spray drift
- **DO NOT** allow spray or spray drift to contact desirable foliage or green (uncalloused) bark
- **DO NOT** apply by aerial application
- **DO NOT** allow incidental spray drift onto desirable green stems, foliage, fruit or flowers, as it may result in necrosis
- **DO NOT** apply to recently fumigated or sterilised soil, as plant-back issues may occur
- **DO NOT** allow desirable plant foliage to contact any inert surface, such as plastic mulches, which have been treated with HELLCAT



Foreground: HELLCAT 3 L/ha; background: HELLCAT 5 L/ha; centre: untreated control. Grapes, 2019, Pipersbrook Tas.

### Withholding Period

#### Harvest:

- Citrus fruit, grapes, olives, *Rubus*, tree nuts, tropical and subtropical fruits – inedible peel or cane berries: Not required when used as directed.
- A 30-day withholding period for all herbicide active constituents for wine grapes is recommended by the AWRI. If weed control is required within 30 days of harvest, contact your winery prior to spraying.
- Pome and stone fruit: DO NOT harvest for 21 days after application.
- Refer also to the withholding period of product(s) mixed with HELLCAT.

#### Grazing:

- Summer fallow: DO NOT graze or cut for stock food a crop sown following a fallow spray for 6 weeks after sowing.
- All other crops: DO NOT graze or cut treated areas for stock food for 8 weeks after application.

### Resistance Management

HELLCAT is a Group 10 and Group 14 herbicide. Herbicides belonging to both Group 10 and Group 14 are considered a moderate resistance risk by CropLife Australia if they are not used correctly. For resistance management, it is important to:

- Use tank mixes or co-formulations with herbicides from different MOA groups (such as HELLCAT)
- Apply sequential applications of herbicides from different MOA to weeds that are difficult to control
- Adopt an integrated weed management program based on guidelines from CropLife Australia
- Scout after herbicide application to monitor weed populations for early signs of resistance development

### Cleaning Procedures

HELLCAT should never be left in a tank after spraying. AgNova recommends using All Clear<sup>®</sup> DS Spray Tank Cleaner and Decontaminator immediately after each application of HELLCAT due to its unmatched cleaning and decontamination abilities when used according to the product label. More information on All Clear DS can be found on the AgNova website.



## Directions For Use

PART A. WEED CONTROL IN ORCHARDS, PLANTATIONS, VINEYARDS AND OTHER ROW CROPS					
CROP / SITUATION	WEEDS CONTROLLED	RATE	WHP	CRITICAL COMMENTS	
Citrus orchards	Control of perennial and annual weeds – see list of weeds in Table 1.	1.7 to 5.0 L/ha	Nil (H) 8 weeks (G)	Apply as a directed or shielded spray. Refer to the label section <b>APPLICATION</b> for specific information on application methods. <b>WARNINGS:</b> Do not allow spray or spray drift to contact desirable foliage or green (uncalloused) bark. To avoid potential crop damage, refer to the label sections on <b>APPLICATION</b> and <b>PROTECTION OF CROPS, NATIVE AND OTHER NON-TARGET PLANTS.</b>	
Tropical and sub-tropical fruits Including: avocado, banana, feijoa, guava, kiwifruit, litchi, mango, pawpaw, passionfruit, pineapple, pitaya, rambutan				Controlled Droplet Application equipment must <b>not</b> be used for application in cherry orchards. HELLCAT® Herbicide may be used around trees/vines less than two years old provided they are effectively shielded from spray and spray drift. <b>The recommended rate of use is determined by the following criteria:</b> <b>WEED SPECIES</b> <b>WEED STAGE OF GROWTH</b> <b>WEED DENSITY</b> <b>CLIMATIC CONDITIONS</b> <b>WEED SPECIES</b> Apply the appropriate rate to control the least susceptible weed present as per the lists of weeds controlled in the accompanying table. <b>WEED STAGE OF GROWTH</b> Use the lower rate when weeds are young and succulent (grasses: pre-tillering; broadleaves: cotyledons to 4-leaf) or the population is very sparse. A median rate should be used for medium sized plants (grasses: tillering; broadleaves: 4-leaf to advanced vegetative) and the high rate should be used when weeds are mature (grasses: nodding to flowering; broadleaves: budding to flowering). <b>WEED DENSITY</b> Use the higher rates when the weed population is dense. <b>Thorough coverage of weeds is essential for good control.</b> <b>CLIMATIC CONDITIONS</b> <b>Best results are achieved when applied under warm humid conditions</b> (temperatures below 33°C with a relative humidity above 50%). Control will be reduced and/or slower under cold conditions. Good results will be achieved under most other conditions, however poor results may occur under hot, dry conditions. Weeds that have been hardened or stunted in growth due to stressed conditions should be treated using the maximum rate.	
Olive plantations			21 days (H) 8 weeks (G)	Nil (H) 8 weeks (G)	<b>COVERAGE</b> Complete coverage of weeds is essential for good control. Poor coverage may result in regrowth.
Tree nut plantations					<b>PERENNIAL WEEDS</b> Apply when weeds are actively growing. Follow up treatments will be necessary to control regrowth of perennial weeds in most cases. When using HELLCAT as a spot spray, apply in sufficient water (minimum 500 L/ha) to thoroughly wet all weed foliage to the point of run-off. Use an antifoam agent to prevent undue foaming when filling the spray tank. For further details refer to the sections <b>GENERAL INSTRUCTIONS</b> and <b>MIXING.</b> <b>GRAPEVINES</b> Apply as a directed or shielded spray. Avoid spray contact or drift onto desirable plant parts, as necrosis and spotting may occur. DO NOT apply in weather conditions which may move spray drift into the canopy, or onto nearby susceptible plants, adjacent crops or pastures. DO NOT apply to vines younger than 2 years old or with green bark unless protected from the spray solution by a physical barrier.
Pome and Stone fruit			Nil (H) 8 weeks (G)	Nil (H) 8 weeks (G)	<b>CANE BERRIES</b> Apply as a directed or shielded spray to the inter-row area. Take care not to allow spray or spray drift to contact the crop. DO NOT make more than 2 applications per season. <b>WARNING:</b> This product is highly toxic to foliage and green stems, and incidental spray drift onto desirable green stems, foliage, fruit or flowers may result in necrosis. Refer to <b>GENERAL INSTRUCTIONS</b> for warnings concerning plastic mulch. <b>BLACKCURRANTS</b> Take care not to allow spray or spray drift to contact the crop, including foliage, flowers, fruits or young stems. DO NOT make more than 2 applications per season.
Grapevines					<b>PERENNIAL WEEDS</b> Apply when weeds are actively growing. Follow up treatments will be necessary to control regrowth of perennial weeds in most cases. When using HELLCAT as a spot spray, apply in sufficient water (minimum 500 L/ha) to thoroughly wet all weed foliage to the point of run-off. Use an antifoam agent to prevent undue foaming when filling the spray tank. For further details refer to the sections <b>GENERAL INSTRUCTIONS</b> and <b>MIXING.</b> <b>GRAPEVINES</b> Apply as a directed or shielded spray. Avoid spray contact or drift onto desirable plant parts, as necrosis and spotting may occur. DO NOT apply in weather conditions which may move spray drift into the canopy, or onto nearby susceptible plants, adjacent crops or pastures. DO NOT apply to vines younger than 2 years old or with green bark unless protected from the spray solution by a physical barrier.
Cane Berries (Inter-row) <i>Rubus</i> spp. (including raspberry, blackberry, loganberry and boysenberry)			Nil (H) 8 weeks (G)	Nil (H) 8 weeks (G)	<b>CANE BERRIES</b> Apply as a directed or shielded spray to the inter-row area. Take care not to allow spray or spray drift to contact the crop. DO NOT make more than 2 applications per season. <b>WARNING:</b> This product is highly toxic to foliage and green stems, and incidental spray drift onto desirable green stems, foliage, fruit or flowers may result in necrosis. Refer to <b>GENERAL INSTRUCTIONS</b> for warnings concerning plastic mulch. <b>BLACKCURRANTS</b> Take care not to allow spray or spray drift to contact the crop, including foliage, flowers, fruits or young stems. DO NOT make more than 2 applications per season.
Blackcurrants					<b>CANE BERRIES</b> Apply as a directed or shielded spray to the inter-row area. Take care not to allow spray or spray drift to contact the crop. DO NOT make more than 2 applications per season. <b>WARNING:</b> This product is highly toxic to foliage and green stems, and incidental spray drift onto desirable green stems, foliage, fruit or flowers may result in necrosis. Refer to <b>GENERAL INSTRUCTIONS</b> for warnings concerning plastic mulch. <b>BLACKCURRANTS</b> Take care not to allow spray or spray drift to contact the crop, including foliage, flowers, fruits or young stems. DO NOT make more than 2 applications per season.

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## Directions For Use (continued)

PART B. SUMMER FALLOW					
CROP / SITUATION	WEEDS CONTROLLED	WEED STAGE	RATE	WHP	CRITICAL COMMENTS
<p>Maintenance of summer fallow prior to planting:</p> <p><b>Cereal grains</b> (Including wheat, barley, oats, maize and sorghum)</p> <p><b>Pulses</b> (including chickpeas, faba beans, field peas, lentils, lupins and mungbeans)</p> <p><b>Oilseeds</b> (including canola, cotton, soybeans and sunflowers)</p>	<p><b>Control of:</b> Annual polymerica, Bellvine, Bladder ketmia, Caltrop, Dwarf amaranth, Field bindweed, Flax-leaf fleabane, Milk thistle (sowthistle), Paddy melon, Peach vine, Red pigweed, Rhyncho (<i>Rhynchosia</i>), Sesbania pea, Volunteer cotton (other than Liberty Link* cotton), Yellow vine</p> <p><b>Suppression of:</b> Chinese lantern (Wild gooseberry), Noogoora burr complex</p>	2-6 leaf	3.75 L/ha in a minimum of 100 L of water	6 weeks after sowing of the crop (G)	<p>Apply to actively growing weeds. Good coverage is essential, incomplete coverage may result in poor control. DO NOT apply in water volumes below 100 L/ha. Refer to 'APPLICATION' section for details.</p> <p><b>Apply by ground spraying equipment only.</b></p> <p>Use an antifoam agent to prevent undue foaming when filling the spray tank. For further details refer to the sections <b>GENERAL INSTRUCTIONS</b> and <b>MIXING</b>.</p> <p>Do not apply more than 3 applications per season.</p> <p>DO NOT sow crops until 14 days or more have elapsed after the final application.</p> <p>HELLCAT will have an effect on weeds that are larger than recommended leaf stage, however, the speed of activity and level of control may be reduced.</p> <p><b>CLIMATIC CONDITIONS</b> <b>Best results are achieved when HELLCAT is applied under warm humid conditions</b> (temperatures below 33°C, with a relative humidity above 50%). Under any other conditions efficacy and speed of action may be reduced.</p> <p>Do not apply onto weeds when dew, fog or mist is present.</p>

PART C. COMMERCIAL, INDUSTRIAL, NON-AGRICULTURAL AREAS, FENCELINES IN AGRICULTURAL AREAS AND FORESTRY PLANTATIONS				
SITUATION	WEEDS CONTROLLED	RATE	WHP	CRITICAL COMMENTS
<p>Commercial, industrial, plantation forestry, firebreaks, and public service areas (such as rights-of-way, rail track and yards, roadsides)</p> <p>Fencelines in agricultural areas</p>	See list of weeds in Table 1.	1.7 to 5.0 L/ha Handgun and knapsack application: 300-500 mL/100 L	--  8 weeks (G)	<p>Use the lower rates on younger weeds or weeds growing under good conditions and the higher rates on older weeds or weeds growing under less optimum conditions. Refer to the criteria on weed species, weed stage of growth, weed density and climatic conditions as described in Part A of the Directions for Use table, under Critical Comments.</p> <p>Warning: DO NOT allow spray or spray drift to contact desirable plants. To avoid potential crop damage, refer to the label section on <b>APPLICATION</b> and <b>PROTECTION OF CROPS, NATIVE AND OTHER NON-TARGET PLANTS</b>.</p> <p>Use an antifoam agent to prevent undue foaming when filling the spray tank. For further details refer to the sections <b>GENERAL INSTRUCTIONS</b> and <b>MIXING</b>.</p>



## Directions For Use (continued)

PART C. COMMERCIAL, INDUSTRIAL, NON-AGRICULTURAL AREAS, FENCELINES IN AGRICULTURAL AREAS AND FORESTRY PLANTATIONS				
SITUATION	WEEDS CONTROLLED	RATE	WHP	CRITICAL COMMENTS
Commercial, industrial, plantation forestry, firebreaks, and public service areas (such as rights-of-way, rail track and yards, roadsides)	Volunteer or wilding <i>Pinus</i> spp.	Handgun and knapsack application 500 mL/100 L water	--	<p>HELLCAT is a non-selective herbicide and will affect most weeds. Its forestry use is designed to improve the control of <i>Pinus</i> spp. wildings when pre-plant weed control is carried out. To broaden the weed spectrum, mixing with other herbicides such as glyphosate or metsulfuron-methyl at labelled rates may be necessary.</p> <p><b>APPLICATION</b> Apply with an adjuvant. The addition of adjuvant may assist in improving performance. High water volumes or nozzle systems should be used to achieve complete coverage of weeds, which is essential for good control. Handgun or knapsack rates are based on the application of 1000 L of spray mixture per sprayed hectare. This is usually adequate to thoroughly wet dense stands of weeds. Less dense stands will require lower water rates. HELLCAT does not provide residual weed control. To prevent undue foaming when filling the spray tank use an antifoam agent. For further details refer to the sections <b>GENERAL INSTRUCTIONS</b> and <b>MIXING</b>.</p> <p>Also, refer also to comments in the <b>GENERAL INSTRUCTIONS</b> which relate to application.</p> <p><b>WEED GROWTH STAGE AND CONDITION</b> Targeting <i>Pinus</i> spp. &lt;15 cm in height is recommended to maximise efficacy. Apply when weeds are actively growing. Results will be reduced if the treated plant is under stress due to very dry, very wet, frosty or diseased conditions.</p> <p><b>COVERAGE</b> Complete coverage of the target is essential for good control. Poor coverage may result in regrowth.</p> <p><b>CLIMATIC CONDITIONS</b> Best results are achieved when applied under warm, humid conditions (temperatures &lt;33°C with a relative humidity &gt;50%). Good results will be achieved under most other conditions; however, poor results may occur under hot, dry conditions. Trials have shown better results from autumn and winter applications than from applications in spring or summer.</p> <p><b>SYMPTOMS</b> Visible symptoms will appear within 3 weeks; tree death may take several months depending on initial coverage and size of tree. Follow up treatments may be necessary to control regrowth in some cases.</p>
Forestry plantations (pre-plant plantation establishment)		5 L/ha		
Line-marking on sports grounds	Turf grasses and other weeds	300 to 500 mL/100 L water	--	<p>Refer to <b>GENERAL INSTRUCTIONS</b>.</p> <p>HELLCAT is a non-selective, non-residual herbicide with limited translocation potential. Therefore, it is ideally suited for line marking on sports fields where precise weed control is required.</p> <p>Apply at 6–8 week intervals depending on growth of turf.</p> <p>Apply using a shielded single nozzle boom or hand wand. Use an antifoam agent to prevent undue foaming when filling the spray tank. For further details refer to the sections <b>GENERAL INSTRUCTIONS</b> and <b>MIXING</b>.</p> <p>DO NOT allow spray or spray drift to contact desirable turf.</p>

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**Table 1. List of Weeds**

ANNUAL WEEDS			APPLICATION RATE	
			Refer to maximum rate in Directions for Use Table	
COMMON NAME	SCIENTIFIC NAME	Boom or directed sprayer L/ha	Handgun mL/100 L	Knapsack mL/15 L
Amaranthus spp.	<i>Amaranthus</i> spp.	2.0 to 5.0	500	75
Apple of Peru	<i>Nicandra physalodes</i>	1.7 to 3.0	300	45
Argentinian peppergrass	<i>Lepidium bonariense</i>	2.0 to 3.0	300	45
Australian crassula/Stonecrop	<i>Crassula</i> spp.	5.0	500	75
Awnless barnyard grass	<i>Echinochloa colona</i>	2.5 to 3.5	350	53
Barley grass	<i>Hordeum leporinum</i>	2.0 to 3.0	300	45
Barnyard grass	<i>Echinochloa crus-galli</i>	2.0 to 5.0	500	75
Bell vine	<i>Ipomoea plebia</i>	2.0 to 5.0	500	75
Billy goat weed	<i>Ageratum conyzoides</i>	2.0 to 5.0	500	75
Bittercress	<i>Cardamine hirsuta</i>	2.0 to 5.0	500	75
Black bindweed (buckwheat) (refer Note 1)	<i>Fallopia convolvulus</i>	1.8 to 5.0	500	75
Bladder ketmia	<i>Hibiscus trionum</i>	3.0 to 5.0	500	75
Bordered panic	<i>Entolasia marginata</i>	2.0 to 4.0	400	60
Brome grass (refer Note 2)	<i>Bromus</i> spp.	2.0 to 3.0	300	45
Calopo	<i>Calopogonium mucunoides</i>	2.0 to 5.0	500	75
Caltrop burr	<i>Tribulus terrestris</i>	3.0 to 5.0	500	75
Capeweed	<i>Arctotheca calendula</i>	1.7 to 5.0	500	75
Chickweed	<i>Stellaria media</i>	5.0	500	75
Clover (subterranean)	<i>Trifolium subterraneum</i>	1.8 to 3.0	300	45
Cobbler's peg	<i>Bidens pilosa</i>	2.0 to 5.0	500	75
Common morning glory	<i>Ipomoea purpurea</i>	2.0 to 5.0	500	75
Common storksbill	<i>Erodium cicutarium</i>	1.7 to 4.0	400	60
Crabgrass	<i>Digitaria sanguinalis</i>	3.0 to 5.0	500	75
Crowsfoot grass	<i>Eleusine indica</i>	3.0 to 5.0	500	75
Dead nettle	<i>Lamium amplexicaule</i>	2.0 to 5.0	500	75
Dwarf crumbweed	<i>Chenopodium pumilo</i>	3.0 to 5.0	500	75
Fat hen	<i>Chenopodium album</i>	3.0 to 5.0	500	75
Flax-leaf fleabane	<i>Conyza bonariensis</i>	3.0 to 5.0	500	75
Fumitory	<i>Fumaria officinalis</i>	1.8 to 5.0	500	75
Green crumbweed	<i>Chenopodium carinatum</i>	2.0 to 5.0	500	75
Lesser canary grass	<i>Phalaris minor</i>	3.0 to 5.0	500	75
Lesser swinecress	<i>Coronopus didymus</i>	3.0 to 5.0	500	75
Liverseed grass	<i>Urochloa panicoides</i>	1.7 to 5.0	500	75
Marshmallow (refer Note 3)	<i>Malva parviflora</i>	5.0	500	75
Medics (annual)	<i>Medicago</i> spp.	1.7 to 5.0	500	75
Milk thistle (sowthistle)	<i>Sonchus oleraceus</i>	2.0 to 5.0	500	75
Milkweed	<i>Euphorbia heterophylla</i>	3.0 to 5.0	500	75
Mint weed	<i>Salvia relfexa</i>	3.0 to 5.0	500	75
New Zealand spinach	<i>Tetragona tetragoniodes</i>	2.0 to 5.0	500	75
Paterson's curse	<i>Echium plantagineum</i>	1.7 to 3.0	300	45



**Table 1. List of Weeds (continued)**

ANNUAL WEEDS			APPLICATION RATE	
			Refer to maximum rate in Directions for Use Table	
COMMON NAME	SCIENTIFIC NAME	Boom or directed sprayer L/ha	Handgun mL/100 L	Knapsack mL/15 L
Peanuts	<i>Arachis hypogaea</i>	1.7 to 3.0	300	45
Pigweed	<i>Portulaca oleracea</i>	3.0 to 5.0	500	75
Pinkburr	<i>Urena lobata</i>	2.0 to 5.0	500	75
Potato weed	<i>Galinsoga parviflora</i>	2.0 to 5.0	500	75
Prairie grass (refer Note 2)	<i>Bromus unioloides</i>	4.0 to 5.0	500	75
Prickly lettuce	<i>Lactuca serriola</i>	3.0 to 5.0	500	75
Prickly sowthistle	<i>Sonchus asper</i>	3.0 to 5.0	500	75
Red natal grass	<i>Rhynchelytrum repens</i>	2.0 to 5.0	500	75
Rhode's grass	<i>Chloris gayana</i>	3.0 to 5.0	500	75
Ryegrass (annual)	<i>Lolium rigidum</i>	2.0 to 5.0	500	75
Saffron thistle	<i>Carthamus lanatus</i>	1.7 to 5.0	500	75
St Barnaby's thistle	<i>Centaurea solstitialis</i>	1.7 to 5.0	500	75
Sago weed	<i>Plantago cunninghamii</i>	2.0 to 3.0	300	45
Scarlet pimpernel	<i>Anagallis arvensis</i>	2.0 to 5.0	500	75
Setaria	<i>Setaria italica</i>	2.0 to 5.0	500	75
Sheep thistle	<i>Carduus tenuiflorus</i>	2.5 to 5.0	500	75
Silver grass	<i>Vulpia myuros</i>	2.0 to 5.0	500	75
Sorghum/sudax	<i>Sorghum bicolor</i>	2.0 to 5.0	500	75
Speedwell	<i>Veronica persica</i>	3.0 to 5.0	500	75
Square weed	<i>Spermacoce latifolia</i>	2.0 to 5.0	500	75
Stagger weed	<i>Stachys arvensis</i>	2.0 to 5.0	500	75
Star of Bethlehem	<i>Ipomoea quamoclit</i>	2.0 to 5.0	500	75
Summer grass	<i>Digitaria ciliaris</i>	2.0 to 5.0	500	75
Thickhead	<i>Crassocephalum crepidioides</i>	3.0 to 5.0	500	75
Three cornered jack	<i>Emex australis</i>	2.0 to 5.0	500	75
Tomato	<i>Lycopersicon esculentum</i>	2.0 to 5.0	500	75
Townsville stylo	<i>Stylosanthes humilis</i>	1.7 to 3.0	300	45
Turnip weed	<i>Rapistrum rugosum</i>	3.0 to 5.0	500	75
Variogated thistle	<i>Silybum marianum</i>	2.5 to 5.0	500	75
Wall fumitory	<i>Fumaria muralis</i>	3.0 to 5.0	500	75
Wheat	<i>Triticum aestivum</i>	4.0 to 5.0	500	75
Whorled pigeon grass	<i>Setaria verticillata</i>	3.0 to 5.0	500	75
Wild carrot	<i>Daucus glochidiatus</i>	2.0 to 5.0	500	75
Wild gooseberry	<i>Physalis minima</i>	2.0 to 5.0	500	75
Wild mustard	<i>Sisymbrium orientale</i>	2.0 to 5.0	500	75
Wild oats	<i>Avena</i> spp.	3.0 to 5.0	500	75
Wild radish	<i>Raphanus raphanistrum</i>	5.0	500	75
Wireweed	<i>Polygonum aviculare</i>	1.7 to 5.0	500	75

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**Table 1. List of Weeds (continued)**

PERENNIAL WEEDS			APPLICATION RATE	
			Refer to maximum rate in Directions for Use Table	
COMMON NAME	SCIENTIFIC NAME	Boom or directed sprayer L/ha	Handgun mL/100 L	Knapsack mL/15 L
Blady grass	<i>Imperata cylindrica</i>	3.0 to 4.0	400	60
Cape tulip	<i>Homeria</i> spp.	2.0 to 3.0	300	45
Centro	<i>Centrosema pubescens</i>	1.7 to 5.0	500	75
Clover glycine	<i>Glycine latrobeana</i>	1.7 to 3.0	300	45
Couch grass	<i>Cynodon dactylon</i>	2.5 to 5.0	500	75
Cowpea	<i>Vigna unguiculata</i>	1.7 to 3.0	300	45
Giant sensitive plant	<i>Mimosa invisa</i>	2.0 to 5.0	500	75
Greenleaf desmodium	<i>Desmodium intortum</i>	1.7 to 3.0	300	45
Johnson grass	<i>Sorghum halepense</i>	3.0 to 5.0	500	75
Panicum spp.	<i>Panicum</i> spp.	2.0 to 5.0	500	75
Paspalum spp.	<i>Paspalum</i> spp.	3.0 to 5.0	500	75
Perennial bindweed	<i>Convolvulus arvensis</i>	2.0 to 3.0	300	45
Perennial ryegrass (refer Note 2)	<i>Lolium perenne</i>	3.0 to 5.0	500	75
Shamrock	<i>Oxalis corymbosa</i>	3.0	300	45
Sida weed	<i>Sida retusa</i>	3.0 to 5.0	500	75
Silverleaf desmodium	<i>Desmodium uncinatum</i>	4.0 to 5.0	500	75
Siratro	<i>Macroptilium atropurpureum</i>	1.7 to 3.0	300	45
Stink grass	<i>Eragrostis cilianensis</i>	3.0 to 5.0	500	75
White clover	<i>Trifolium repens</i>	3.0 to 5.0	500	75
White eye	<i>Richardia brasiliensis</i>	3.0 to 5.0	500	75
Willow herb	<i>Epilobium</i> spp.	4.0 to 5.0	500	75

**Notes:**

1. Good control will be achieved on small and medium sized plants only in non-crop situation.
2. Well-established clumps of prairie grass, brome grasses & perennial ryegrass may only be suppressed at these rates. Follow-up treatments may be necessary to control regrowth.
3. Marshmallow growing and sprayed in the summer is especially prone to drought stress and may either not show symptoms typical of HELLCAT or may regrow following treatment although plants did not appear very stressed at application.

**NOT TO BE USED FOR ANY PURPOSE, OR IN ANY MANNER, CONTRARY TO THIS LABEL UNLESS AUTHORISED UNDER APPROPRIATE LEGISLATION.**

**The information provided herein may include extracts from the product label and does not constitute the complete directions for use. READ THE PRODUCT LABEL THOROUGHLY BEFORE OPENING OR USING HELLCAT**

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