

Product Name: HELLCAT HERBICIDE  
APVMA Approval No: 92516/135803



Label Name:	HELLCAT HERBICIDE
-------------	-------------------

Signal Headings:	CAUTION KEEP OUT OF REACH OF CHILDREN READ SAFETY DIRECTIONS BEFORE OPENING OR USING
------------------	--

Constituent Statements:	ACTIVE CONSTITUENTS: 200 g/L GLUFOSINATE-AMMONIUM 3.6 g/L CARFENTRAZONE-ETHYL
-------------------------	---

Mode of Action:	GROUP 10   14 HERBICIDE
-----------------	-------------------------

Statement of Claims:	For non-residual control of broadleaf and grass weeds in various situations, as specified in the Directions for Use table.
----------------------	--

Net Contents:	1 L to 1,000 L
---------------	----------------

Restraints:	This section contains file attachment.
-------------	--

Directions for Use:	This section contains file attachment.
---------------------	--

Other Limitations:	
--------------------	--

Withholding Periods:	WITHHOLDING PERIODS:
----------------------	----------------------

**HARVEST (H):**  
 CITRUS, FRUIT, GRAPE, OLIVES, RUBUS, TREE NUTS, TROPICAL AND SUB-TROPICAL FRUITS – INEDIBLE PEEL OR CANE BERRIES: NOT REQUIRED WHEN USED AS DIRECTED.  
 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 (G):**  
 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.

Trade Advice:	<b>EXPORT OF TREATED PRODUCE</b> Growers should note that suitable MRLs or import tolerances may not be established in all markets for produce treated with Hellcat. If you are growing produce for export, please check with American Vanguard Australia for the latest information on MRLs and import tolerances BEFORE using Hellcat.
---------------	---

General Instructions:	This section contains file attachment.
-----------------------	--

Resistance Warning:	<b>RESISTANT WEEDS WARNING</b> <b>GROUP 10 14 HERBICIDE</b>  Hellcat is a member of both the N-Phenyl triazoline and phosphinic acid groups of herbicides. Hellcat has two modes of action which is through a process of membrane disruption initiated by the inhibition of the enzyme protoporphyrinogen oxidase, additionally, it is an inhibitor of glutamine synthetase. For weed resistance management Hellcat is a Group 10 and Group 14 herbicide.  Some naturally occurring weed biotypes resistant to Hellcat and other Group 10 and Group 14 herbicides may exist through normal genetic variability in any weed population and increase if these herbicides are used repeatedly. These resistant weeds will not be controlled by Hellcat or other Group 10 or Group 14 herbicides. Since the occurrence of resistant weeds is difficult to detect prior to use, American Vanguard Australia Pty Ltd accepts no liability for any losses that may result from the failure of Hellcat to control resistant weeds.  For further information contact your local supplier, American Vanguard Australia Pty Ltd. representative or local agricultural department agronomist.
---------------------	--

Precautions:	<b>PRECAUTIONS</b> <b>RE-ENTRY</b> Do not allow entry into treated areas until the spray has dried, unless wearing cotton overalls buttoned to the neck and wrist (or equivalent clothing) and chemical resistant gloves. Clothing must be laundered after each day's use.
--------------	--

Protections:	PROTECTION OF CROPS, NATIVE AND OTHER NON-TARGET PLANTS
--------------	---

	<p>DO NOT apply under weather conditions, or from spray equipment, which may cause spray drift onto nearby susceptible plants, adjacent crops, or pastures.</p> <p>DO NOT apply to trees and vines less than 2 years old or with green bark unless protected from the spray solution by a physical barrier.</p> <p>DO NOT apply on desirable foliage or allow spray to drift onto the foliage of desirable plants, trees or vines, as damage will occur. DO NOT allow product to contact green or uncalloused bark (such as on desirable young trees and vines) or cut, cracked, damaged or wounded tissue, where the affected surface is not adequately healed. Hellcat Herbicide may be used around desirable trees/vines less than two years old provided they are effectively shielded from spray and spray drift. DO NOT allow desirable plant foliage to contact any inert surface, such as plastic mulches, which have been treated with Hellcat Herbicide. DO NOT apply Hellcat Herbicide to recently fumigated or sterilised soil.</p> <p><b>PROTECTION OF WILDLIFE, FISH, CRUSTACEANS AND THE ENVIRONMENT</b></p> <p>Very toxic to aquatic life.</p> <p>DO NOT contaminate wetlands or watercourses with this product or used containers.</p>
--	---

Storage and Disposal:	<p><b>STORAGE AND DISPOSAL</b></p> <p>Store in the closed, original container in a cool, well-ventilated area. Do not store for prolonged periods in direct sunlight. Triple rinse containers before disposal. Add rinsings to spray tank. Do not dispose of undiluted chemicals on site. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush, or puncture and deliver empty packaging for appropriate disposal to an approved waste management facility. If an approved waste management facility is not available, bury the empty packaging 500 mm below the surface in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots, in compliance with relevant Local, State or Territory government regulations. DO NOT burn empty containers or product.</p>
-----------------------	---

Safety Directions:	Harmful if inhaled or swallowed. Will irritate the eyes. May irritate the skin. Avoid contact with skin and eyes. Do not inhale vapour. When using prepared spray wear cotton overalls, buttoned to the neck and wrist (or equivalent clothing) and a washable hat and elbow-length chemical resistant gloves. In addition, when opening container and preparing spray, wear a face shield or goggles. If product is eyes, wash it out immediately with water. Wash hands after use. After each day's use, wash gloves, face shield or goggles and contaminated clothing.
--------------------	---

First Aid Instructions:	<p><b>FIRST AID</b></p> <p>If poisoning occurs, contact a Doctor or Poisons Information Centre (Phone Australia 131126).</p>
-------------------------	--

First Aid Warnings:	
---------------------	--

**F9 GHF5 -BHG**

**DO NOT** apply by aircraft.

**DO NOT** apply when rain is expected within 6 hours.

**DO NOT** irrigate to the point of water run-off from the treatment area for at least 3 days after application.

**DO NOT** apply if heavy rains or storms are forecast within 3 days.

**DO NOT** apply to weeds under stress due to, for example, very dry, very wet, frosty or diseased conditions.

**DO NOT** apply under hot dry conditions (temperatures above 33°C, with a relative humidity below 50%).

**DO NOT** apply without an antifoam agent.

**SPRAY DRIFT RESTRAINTS**

Specific definitions for terms used in this section of the label can be found at [apvma.gov.au/spraydrift](http://apvma.gov.au/spraydrift).

**DO NOT** allow bystanders to come into contact with the spray cloud.

**DO NOT** apply in a manner that may cause an unacceptable impact to native vegetation, agricultural crops, landscaped gardens and aquaculture production, or cause contamination of plant or livestock commodities, outside the application site from spray drift. The buffer zones in the relevant buffer zone table below provide guidance but may not be sufficient in all situations. Wherever possible, correctly use application equipment designed to reduce spray drift and apply when the wind direction is away from these sensitive areas.

**DO NOT** apply unless the wind speed is between 3 and 20 kilometres per hour at the application site during the time of application.

**DO NOT** apply if there are hazardous surface temperature inversion conditions present at the application site during the time of application. Surface temperature inversion conditions exist most evenings 1 to 2 hours before sunset and persist until 1 to 2 hours after sunrise.

**DO NOT** apply by a boom sprayer unless the following requirements are met:

- Spray droplets are not smaller than a MEDIUM spray droplet size category.
- Minimum distances between the application site and downwind sensitive areas (see 'Mandatory Buffer Zones' section of the following tables titled 'Buffer Zones for Boom Sprayers') are observed.

**Buffer Zones for Boom Sprayers**

Application Rate	Boom Height Above the Target Canopy	Mandatory Downwind Buffer Zones:	
		Natural Aquatic Areas	Vegetation Areas
Up to 5.0 L/ha	0.5 m or lower	20 metres	15 metres
	1.0 m or lower	55 metres	50 metres
3.75 L/ha or lower	0.5 m or lower	15 metres	10 metres
	1.0 m or lower	45 metres	30 metres

## 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)	<p>Apply as a directed or shielded spray. Refer to the label section <b>APPLICATION</b> for specific information on application methods.</p> <p><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>.</p> <p>Controlled Droplet Application equipment must <b>not</b> be used for application in cherry orchards.</p> <p>Hellcat Herbicide may be used around trees/vines less than two years old provided they are effectively shielded from spray and spray drift.</p> <p><b>The recommended rate of use is determined by the following criteria:</b></p> <p><b>WEED SPECIES</b>  <b>WEED STAGE OF GROWTH</b>  <b>WEED DENSITY</b>  <b>CLIMATIC CONDITIONS</b></p> <p><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 tables.</p> <p><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).</p> <p><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></p> <p><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.</p> <p><b>COVERAGE</b>  Complete coverage of weeds is essential for good control. Poor coverage may result in regrowth.</p> <p><b>PERENNIAL WEEDS</b>  Apply when weeds are actively growing. Follow up treatments will be necessary to control re-growth of perennial weeds in most cases.</p> <p>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.</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><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.</p>
Olive plantations				
Tree nut plantations				
Pome and Stone fruit		21 days (H)  8 weeks (G)		
Grapevines			Nil (H) 8 weeks (G)	

Part A. WEED CONTROL IN ORCHARDS, PLANTATIONS, VINEYARDS and OTHER ROW CROPS				
Crop / Situation	Weeds Controlled	Rate	WHP	Critical Comments
Cane Berries (Inter-row) <i>Rubus</i> spp. (including raspberry, blackberry, loganberry and boysenberry)				<p><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.</p> <p><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.</p>
Blackcurrants				<p><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.</p>

Part B. SUMMER FALLOW					
Situation / Crop	Weeds Controlled	Weed Stage	Rate	WHP	Critical Comments
Maintenance of summer fallow prior to planting:  <b>Cereal grains</b> (Including wheat, barley, oats, maize and sorghum)  <b>Pulses</b> (including chickpeas, faba beans, field peas, lentils, lupins and mungbeans)  <b>Oilseeds</b> (including canola, cotton, soybeans and sunflowers)	<b>Control of:</b> Annual polymeria, Bellvine, Bladder ketmia, Caltrop, Dwarf amaranth, Field bindweed, Flax-leaf fleabane, Milk thistle (sowthistle) Paddy melon, Peach vine, Red pigweed, Rhyncho (Rhyncosia), Sesbania pea, Volunteer cotton (other than Liberty Link cotton), Yellow vine  <b>Suppression of:</b> Chinese lantern (Wild gooseberry), Noogoora burr complex	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 <b>APPLICATION</b> 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>

<b>Part C. COMMERCIAL, INDUSTRIAL, NON-AGRICULTURAL AREAS, FENCELINES IN AGRICULTURAL AREAS and FORESTRY PLANTATIONS</b>				
<b>Situation</b>	<b>Weeds Controlled</b>	<b>Rate</b>	<b>WHP</b>	<b>Critical Comments</b>
Commercial, industrial, plantation forestry, firebreaks, and public service areas, (such as rights-of-way, rail track and yards, roadsides)	See list of weeds in Table 1.	1.7 to 5.0 L/ha  Handgun and knapsack application: 300–500 mL/100 L	--	<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 and 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>
Fencelines in agricultural areas			8 weeks (G)	
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 & 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></p> <p>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></p> <p>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></p> <p>Complete coverage of the target is essential for good control. Poor coverage may result in regrowth.</p> <p><b>CLIMATIC CONDITIONS</b></p> <p>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.</p>
Forestry plantations (pre-plant plantation establishment)		5 L/ha		

<b>Part C. COMMERCIAL, INDUSTRIAL, NON-AGRICULTURAL AREAS, FENCELINES IN AGRICULTURAL AREAS and FORESTRY PLANTATIONS</b>				
<b>Situation</b>	<b>Weeds Controlled</b>	<b>Rate</b>	<b>WHP</b>	<b>Critical Comments</b>
				<p>Trials have shown better results from autumn and winter applications than from applications in spring or summer.</p> <p><b>SYMPTOMS</b></p> <p>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>
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>

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

**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 peppercress	<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 pumilio</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 spp.</i>	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 tetragonoides</i>	2.0 to 5.0	500	75
Paterson's curse	<i>Echium plantagineum</i>	1.7 to 3.0	300	45
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>Rhynchoselytrum 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 italicica</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 bicolour</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
Variegated 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 spp.</i>	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

#### PERENNIAL WEEDS

Blady grass	<i>Imperata cylindrica</i>	3.0 to 4.0	400	60
Cape tulip	<i>Homeria spp.</i>	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 spp.</i>	2.0 to 5.0	500	75
Paspalum spp.	<i>Paspalum spp.</i>	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 spp.</i>	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.

## **GENERAL INSTRUCTIONS**

Hellcat Herbicide is a micro-emulsion formulation, to be applied as a post-emergence herbicide to be used for the control of certain broadleaf weeds and grasses in summer fallow or as a directed spray in orchards, plantations, vineyards and other row crops, or in commercial, industrial, forestry, fencelines and public service areas.

Hellcat Herbicide is a non-volatile with non-selective activity against many annual and perennial broadleaf weeds and grasses. Application of Hellcat Herbicide should target small actively growing weeds. Subsequent germinations will not be controlled.

Hellcat Herbicide is rapidly absorbed through the green foliage of plants. It is a contact herbicide that will only kill that part of the green plant that is contacted by the spray; therefore, adequate coverage of the target weed is necessary. Within a few hours following application, the foliage of susceptible weeds display signs of desiccation, and in subsequent days necrosis and death of the plant.

Extremes in environmental conditions e.g., temperature and moisture, soil conditions and cultural practices may affect the activity of Hellcat Herbicide. Best results are achieved when application is made under good growing conditions (warm moist conditions may accelerate herbicide symptoms). While under very dry conditions, the expression of herbicidal symptoms is delayed, and weeds hardened off by drought are less susceptible to Hellcat Herbicide. Applications to weeds under stress (e.g. due to continuous severe frost, dry or waterlogged conditions) should be avoided.

### **Antifoam Agent**

When mixing Hellcat Herbicide with water in the spray tank, excess foaming can occur, therefore, it is necessary to use an antifoam agent suitable for agricultural pesticide spray mixtures. Antifoam agents containing polydimethylsiloxane compounds are recommended, follow their labelled directions, and use rates. Allow time for the antifoam agent to activate in the water before the addition of Hellcat Herbicide. Prior to the use of an antifoam agent, a jar test can be performed to assess the required rate of agent to be used to suppress foaming in a Hellcat Herbicide spray mixture.

### **Crop Plant Back**

Hellcat Herbicide does not provide adequate residual activity, as it is metabolized by microorganisms in the soil to become inactive. After application allow at least 14 days to elapses prior to sowing a crop.

### **Soli Fumigation / Sterilisation**

Hellcat Herbicide is metabolised (broken down) by microorganisms in the soil to become inactive. Soil fumigation sterilisation will reduce the number of microorganisms present, thus slowing the breakdown of Hellcat Herbicide. As damage to transplants or seedlings may occur, it is not advisable to apply Hellcat in conjunction with soil fumigation or sterilisation.

### **Plastic Mulches**

Hellcat Herbicide will remain active on inert surfaces such as plastic. Special care should be taken when applying Hellcat over plastic mulches, as plant contact with the mulch after spraying may result in crop damage.

### **Compatibility**

As formulations of other manufacturers' products are beyond the control of American Vanguard Australia, all mixtures should be tested prior to mixing commercial quantities.

## **MIXING**

Two-thirds fill the spray tank with clean water and start agitation. Add an antifoam agent, then add any partner SC or WG herbicide, allow these to fully disperse before adding a partner EC herbicide. Next, add the measured amount of Hellcat Herbicide followed by the balance of water to fill the tank. Maintain good agitation at all times until spraying is completed.

## **APPLICATION**

DO NOT apply by aerial application.

The best application conditions are when soil is moist, weather fine and rain unlikely within six hours.

#### **WEED CONTROL IN ORCHARD, PLANTATIONS, VINEYARDS and OTHER ROW CROPS**

Apply Hellcat Herbicide as a broadcast or directed spray application using a conventional boom, shielded/hooded, or directed orchard/vineyard sprayer with either mechanical or by-pass agitation. Use a nozzle that produces a MEDIUM-COARSE spray quality (according to ASAE S572 specifications).

Spray equipment should be properly calibrated to ensure correct and uniform application. Use sufficient water to give thorough coverage of weeds. Apply in spray volumes of 300 to 500 L/ha. Experience has shown that increasing spray volumes can improve weed control especially if using a MEDIUM-COARSE spray quality. Use the lowest pressure and boom height which provides uniform coverage. If weed infestation is dense and/or tall, use higher volumes as the weed stand should be thoroughly wetted with spray. Incomplete coverage may result in poor control. Equipment should be set up in such a way that practically no spray intercepts susceptible parts of the crop being sprayed but provides good coverage of weeds.

#### **SUMMER FALLOW**

Apply by ground spraying equipment only. Aim to apply a thorough and even coverage of spray to the target weeds. Incomplete coverage may result in poor weed control.

Hellcat Herbicide should be applied at the recommend rate in sufficient water volume to give adequate coverage and penetration of the weed stand. Application volumes of at least 100 L/ha through nozzles that will deliver a MEDIUM-COARSE spray quality (according to ASAE S572 specifications).

#### **HANDGUN and KNAPSACK**

Apply Hellcat Herbicide at the recommended rate as outlined in Table 1, in sufficient water to adequately and uniformly wet the foliage of the target weeds, up to the point of run-off i.e. spray volumes of 500 L to 1000 L/ha. Dense stands and taller vegetation will require up to 1000 L/ha of spray mixture. It is recommended to use hollow-cone nozzles for high volume hand spraying. The selected nozzle should give a COARSE spray quality to minimise risk of off target drift.

#### **SPRAYER CLEAN OUT - AFTER THE USE OF HELLCAT HERBICIDE**

Thoroughly clean all spray equipment (including transfer systems, suction hoses, filters, tank lids, strainer baskets, booms, spray lines, nozzles etc.) using the following procedure when you have finished spraying highly active materials such as carfentrazone-ethyl. In addition to the following procedure, ensure proper equipment clean-out for any other products mixed with Hellcat Herbicide as specified on the other product labels.

#### **IMPORTANT:**

**More complete cleaning can be achieved if the spray equipment is cleaned immediately following each use.**

**Mix only as much herbicide spray solution as needed at a time.**

**DO NOT store the sprayer for any extended period of time, especially overnight, with Hellcat Herbicide spray solution remaining in the tank, spray lines, spray boom plumbing, spray nozzles or strainers.**

#### **Preparation of the Cleaning Solution:**

Prepare a spray equipment cleaning solution by mixing All Clear® DS at a rate of 250 mL for every 100 L of clean water used.

Upon completion of applying Hellcat Herbicide and before spraying sensitive crops including **canola, pulses such as faba beans, lentils, other legumes and cotton**:

1. Immediately after spraying, drain all equipment. Half fill the spray tank with clean water and add ALL CLEAR DS at label rate. Start agitation and allow the operation of the spray system to flush the equipment for a few seconds, with boom-end valves open and/or bungs removed.
2. Close boom-end valves and/or replace bungs, then stop flow to boom and completely fill tank with water. Allow to stand for at least 15 minutes with the boom closed and agitation running, all internal surfaces of the spray system should then remain in contact with ALL CLEAR DS solution for at least 24 hours.

3. After the 24 hours soaking, Agitation should be resumed for 15 minutes before the solution is flushed out of the spray tank via the boom line for 15 minutes, then completely drain the spray system.
4. Rinse the tank with clean water and flush through the hoses, spray boom, and spray nozzles. Ensure pressure relief valve and line from pump to spray tank are activated, and dump/regulator/compensator valve and line from spray line controllers to spray tank are also activated.
5. Nozzles, non-drip diaphragms, screens and filters should be cleaned separately with a fresh solution of ALL CLEAR DS and water at the rate of 25 mL in 10 L of water.
6. Immediately prior to commencement of spraying a sensitive crop, purge the boom lines by operating the spray system onto a fence line or waste area for sufficient time to remove any solution that has been residing in the spray lines. **This is also recommended for subsequent tank loads or if the sprayer has been left standing for a period of time containing spray solution.**

Properly dispose of all cleaning solution and rinsate safely in accordance with Federal, State, and local regulations and guidelines.

**DO NOT** apply sprayer cleaning solutions or rinsate to sensitive crops.

Should small quantities of Hellcat Herbicide remain in inadequately cleaned mixing, loading and/or spray equipment, they may be released during subsequent applications potentially causing effects to sensitive crops and other vegetation.

The above method is only effective if the cleaning solution comes into contact with every surface or contact point that may contain even minute carfentrazone-ethyl residues.

Follow all instructions on the All Clear DS label.