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HERBICIDE AND THEIR USE IN TEA

(This Advisory Circular replaces Circular Nos. W3, W4, W5, W7, W8, W9 and W10)

1. Introduction

From time to time, the Tea Research Institute of Sri Lanka releases recommendations of the various herbicides suitable (for use on tea estates) for the control of an array of weed species in tea plantations. Prior to recommendations are made extensive screening trials are carried out by the scientists in different tea growing regions. Therefore, any recommendation for the release of a particular herbicide is based on its weed control efficacy, weed species resistance, phytotoxicity to tea, and its suitability for the type of tea land.

There are many herbicides that could be used on tea depending on the type of weed and the stage of growth of tea. The choice of herbicide would largely depend on the weed species present and the economics of using it.

For your convenience, the following information is given:

- Details of the different herbicides recommended for use in tea, their active ingredient, mode of action and dosage to be used. Brief remarks on method of application etc are also given. The following is a list of herbicides described:

1. Oxyfluorfen
2. Diuron
3. Glyphosate
4. Paraquat
5. Glufosinate Ammonium
6. 2, 4-D
7. MCPA

- Some information is also given in the management of problem weeds. The problem weeds dealt with are as follows:

1. *Panicum repens* (Couch)
2. *Imperata cylindrica* (Illuk)
3. *Borreria latifolia* (Borreria)
4. *Spermacoce hispida* (Getakola)
5. *Wedalia trilobata* (Arunadevi)

Since all herbicides are harmful to the crop, environment, humans and animals, to varying degrees, they should be applied as directed and at such dosages as recommended with necessary precautions.

Herbicides and their Use in Tea.

Herbicide (Common name)	Percentage of a.i. & Formulation	Mode of Action	Dosage*	Remarks
1. Oxyfluorfen	24% w/v (liquid)	Pre-emergence Residual	1.2 l/ha or 0.5 l/ac or 32 ml/15 l tank	Apply to moist bare soil on a Clear day. Avoid spraying on tea foliage. Ideal for new clearings (before mulching).
2. Diuron	80% WP (wetable powder)	Pre-emergence Residual Selective	1.2 kg/ha or 490 g/ac or 32 g/15 l tank	Apply to moist bare soil in mature tea on a clear day. Dissolve thoroughly in water before spraying.
		Post-emergence action with a wetting agent	1.2 l/ha or 425-560 ml/ac or 32 ml/ 15 l tank	If the weeds have already been emerged add a wetting agent. Avoid spraying on tea foliage.
Direx	40% w/v (flowable formulation)	Pre-emergence Residual Selective	0.90-1.0 l/ha or 375-400 ml /ac or 25-27 ml/15 l tank.	Apply to moist bare soil in mature tea on a clear day.
3. Glyphosate	36.0% (w/v) 35.5% (w/v) 41 % (w/w) (liquid)	Translocated Post-emergence Total weed killer	(0.25-0.5%) 1.4 to 2.8 l/ha or 570- 1125 ml /ac or 38 - 75ml/15 l tank.	Inactivated when contact with soil. Apply to the weed foliage on a sunny day. Avoid spraying in new clearings and pruned fields

* Spray Volume requirement: 550 l/ha or 50 gl/ac

Herbicide (Common name)	Percentage of a.i. & Formulation	Mode of action	Dosage*	Remarks
4. Paraquat	20% w/v (liquid)	Contact Total weed killer	0.7-1.1 l/ha or 300-450 ml/ac or 20-30 ml/15 l tank	Resistant weeds are Illuk, Couch grass, Amalai, Foxtail grass, Getakola, Thandampullu, Alawangupullu, Morning glory, Malhabarala, Walkohila
5. Glufosinate Ammonium	15% w/v (liquid)	Contact and Partially systemic	1.3 l/ha or 530 ml in 225 l water/ac or 35 ml in 15 l tank.	1.5-1.6 l/ha for Getakola
6. 2, 4-D	55 % E.C.(w/v) (liquid)	Translocated Selective Post-emergence	1.7-2.8 l /ha or 0.7-1.2 l /ac or 45-80 ml/ 15 l tank	To control weeds such as Morning glory, Amalai, Arunadevi and <i>Mikania</i> , <i>Polygonum spp. etc.</i>
	73% amine salt (w/v) (liquid) or 73% sodium salt (w/v) (powder)	-do-	1-2 l /ha or 0.45-0.82 l /ac or 30-55 ml/15 l tank	-do-
7. MCPA	40 % & 60% E.C (w/v) (liquid)	Translocated Selective Post-emergence	1.75 -3.00 l /ha or 0.72 -1.23 l/ac or 45-81 ml /15 l tank	To control weeds such as Amalai,, <i>Borreria</i> and <i>Mikania</i>

* Spray Volume requirement: 550 l / ha or 50 gl /ac

Management of Problem Weeds

Weed	Herbicide/ Mixture	Dosage per Hectare	Remarks
Rhizomatoes weeds			
1. Couch (<i>Panicum repens</i>)	Glyphosate	11 l in 550 l water	Dislodge & laid down the couch growing within the frame before spraying.
-do-	Glyphosate + Kaolin	5.5 l in 550 l water + 3.4 kg of kaolin	Tea should not be plucked until 2 weeks after spraying.
2. Illuk (<i>Imperata cylindrica</i>)	Glyphosate	5.5 l in 550 l water	-do-
Other weeds			
3. Borreria (<i>Borreria latifolia</i>)	MCPA (60% E.C) @ 1.2 l + Paraquat (20% a.i) @ 1.1 l in 550 l water/ha		As spot application
4. Getakola (<i>Spermacoce hispida</i>)	Diuron (80% WP) @ 1.1 kg + Glyphosate (36%) 2.8 l in 550 l water/ha Diuron (80% WP) @ 1.4 kg + 2, 4-D (55% E.C) or MCPA 60% @ 1.2 l in 550 l water/ha Diuron (80% WP) @ 1.1 kg + Paraquat (20%) 1.1 l in 550 l water/ha Glyphosate (36%) @ 3.5 l + Ammonium Sulphate 2.8 kg in 550 l water/ha		-do-
5. Arunadevi (<i>Wedelia trilobata</i>)	MCPA (60% E.C) @ 1.5 l + Glyphosate (36% a.e.) 3.6 l in 550 l water /ha MCPA (60% E.C) alone @ 2.2 l in 550 l water/ha		-do-

Other Compatible Cocktail Mixtures:

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|------------------------------|--|---------------------------------|
| 1. Paraquat + Oxyfluorfen, | 2. Glufosinate Ammonium + Oxyfluorfen, | 3. Glyphosate + 2, 4-D or MCPA, |
| 4. Glyphosate + Oxyfluorfen, | 5. Glufosinate Ammonium + Diuron. | |

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