



## Novel herbicide formulations for effective control of Passali kodi and Getakola

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Getakola (*Sparmacoce hispida*) and Passali kodi (*Androdera cordifolia*) are the two most problematic weeds found in high- and mid-grown tea. Manual or chemical control of these weeds is very difficult due to their specific morphological characteristics, aggressive nature of growth and ability to proliferate quickly. As they cannot be controlled by presently available herbicides, preliminary investigations were carried out with two new herbicide formulations, *Glyphosate Isopropylamine* ( $390 \text{ g L}^{-1}$ ) [39%] + *MCPA Isopropylamine* ( $75 \text{ g L}^{-1}$ ) [7.5%] (**Formulation 1**) and *Carfentrazone-Ethyl* [20.5%] ME + *Glyphosate Isopropylamine* [20%] (**Formulation 2**) at different locations.

The **Formulation 1** was more effective in the control of both Passali kodi and Getakola at their seedling stage when applied at 3.3-4.4 L/ha with a surfactant *Activator* (@ 0.55 L/ha), in 550 L of water. **Formulation 1** is a safe alternative to use in lower active ingredients (a.i) instead of higher a.i. s that is normally applied as a tank mixture of Glyphosate and MCPA.

**Formulation 2**, given at 1.0% [ $5.5 \text{ L ha}^{-1}$ ] incorporated with ammonium sulphate salt (AMS) (@  $2.2 \text{ kg ha}^{-1}$ ) effectively controlled Passali kodi weed. However, Getakola was controlled when the same formulation was applied at  $6.6 \text{ L ha}^{-1}$  incorporated with AMS or urea (@  $2.2 \text{ kg ha}^{-1}$ ) or Latron (@  $1.1 \text{ L ha}^{-1}$ ). The **formulation 2** contains 0.5% Carfentrazone Ethyl and 20% Glyphosate Isopropyl amine, both of which have *contact* and *systemic* effects. It is a micro encapsulated (ME) formulation, where the very minute particles of a.i. have been encapsulated and retained in a suspension. With this technology, a.i. is gradually released in minute quantities and only the target weed is killed.

The major advantage of such formulations is that a proper control of two weeds could be achieved with lower amount of each a.i. ( $1.34\text{-}1.56 \text{ kg a.i. of Formulation 01}$  and  $<1.127 \text{ kg a.i. of Formulation 02 ha}^{-1}$ ) than that of tank-mixture of Glyphosate (36%) @  $1.008 \text{ kg a.i.} + \text{Diuron (80\%)} 0.96 \text{ kg a.i. ha}^{-1}$ , which is presently recommended. Further experiments are in progress to improve the efficacy of the two formulations.

Since both formulations are phytotoxic to tea, care should be taken to spray the herbicide only on to the Passali seedlings found in tea inter rows. The bulbils found underneath the tea bushes with the litter, should be pulled towards the inter-row at least a month before application so that majority of bulbils could be treated by the chemical following germination. However, Passali shoots that are found on tea canopy **should not be sprayed** with herbicides at anytime. Repeated application is necessary when there is regeneration.