THE TEA QUARTERLY

VOLUME XXV JUNE, 1954 PART II

EUPATORIUM RIPARIUM Benth. (Compositae.)

A COMMON WEED UP-COUNTRY

F. H. Kehl and E. S. Rajiah

The genus *Eupatorium* is a very large one containing over 600 species, dispersed chiefly throughout tropical South America, Mexico and the West Indies. The genus consists mostly of perennial herbs, but a few species are annual. Many of the tropical ones are shrubby or even arborescent.

Eupatorium riparium—a native of Mexico—was introduced into Ceylon about 1918. It has been known in the Dimbula district since 1932. About 1940-1944 it spread very rapidly in this district, mainly along river banks, roadsides and in ravines. Since then it has adapted itself to a wide range of conditions and is now very common on most estates in the Dimbula and Dickoya districts and on many tea estates in the Uva province.

The plant is somewhat shrubby with a loosely spreading habit and grows to a height of 2 - 3 ft. The stems, which are usually reddish, are minutely covered with short hairs; they are woody at the base but tender at the apex. The leaves, which are opposite, are long lance shaped, tapering into a petiole and 3-ribbed. The closely compacted white flower heads are very like those of "pum-pillu" (*Ageratum conyzoides*) and are borne in clusters on long stalks. Flowering commences at the beginning of the dry weather and continues for several weeks. A large quantity of viable seed is produced. The plant is fairly deep rooted, but the depth to which the roots may penetrate depends largely upon the texture of the soil.

The seed can be carried by even a light breeze and wind is undoubtedly the chief agent by which seeds are dispersed. Some seeds are carried by water and may be taken many miles down-stream.

The seedlings establish themselves readily wherever conditions favour their growth, such as exposed banks of rivers, sides of roads and ravines. From the beginning the plants grow rapidly.

Eupatorium riparium is too strongly growing a plant to be allowed to spread into the tea. Though it is not likely to become a major menace in old tea, due to its intolerance of heavy shade, the possibility of it invading new clearings, pruned fields, and nurseries must be considered. Control measures should therefore be taken where necessary. Complete eradication of this weed cannot now be attempted as it has become far too widespread. Where, however, infestations are limited, eradication is not only desirable but practicable, since the application of sodium chlorate gives a complete control. This weedkiller is harmful to the tea itself and should on no account therefore be used in standing tea, but can be safely used to control *Eupatorium riparium* growing along roadsides and in ravines.

Sodium chlorate is a white crystalline salt, readily soluble in water. It is a very strong oxidising agent and therefore liable to ignite anything inflammable with which it comes into contact. When formulated as a weedkiller however, a fire depressant is added which reduces the risk of fire. It is not ordinarily poisonous to human beings and animals, but can cause nausea and should not, therefore, be taken in large quantities. It is considered that there will be no danger of polluting water supplies if sodium chlorate is used as recommended. The substance is safe to handle but must not come in contact with open wounds. It absorbs moisture and should, therefore, be stored in air-tight tins.

The minimum effective concentration is 2 per cent in water, *i.e.* 2 lbs. of sodium chlorate in 10 gallons water. For satisfactory results it is necessary that the spray

must completely cover and wet all the leaves. After application a fairly dry period of at least 12 - 18 hours is necessary to allow absorption. A heavy and continuous downpour will wash off the chemical, but a very light drizzle may not impair its efficiency.

The amount of chlorate solution required to kill a given infestation will vary from about 100 to 200 gallons per acre, depending on the growth of the plants. Younger plants require less than older plants. Scorching takes place within a few hours after application and ultimately the treated plant dies in about 2 - 3 weeks.

The addition of an auxiliary substance to facilitate wetting is a useful method of increasing the efficiency of weedkillers. Such substances are commonly known as "spreaders" or "wetting agents" and many are now available on the market. "Teepol", a Shell product, has proved to be quite satisfactory for use with sodium chlorate. About 1 cigarette tin full of "Teepol" is added to each 10 gallons of the chlorate solution.

The most efficient and economic method of application is by means of knapsack sprayers—the types that are in use for blister blight control work, but fitted with nozzles, such as lime washing nozzles, capable of high volume spraying of about 30 - 40 gallons per hour. Machines used for applying sodium chlorate, if washed thoroughly with soap and water afterwards, can subsequently be safely used for spraying fungicides.

Sodium chlorate, like most weedkillers, has no effect on the viability of seed. It is accordingly a decided advantage to treat the plants before flowering, for one of the principal aims in the control of any weed should be the prevention of spread by seed. Where plants are treated after seeding, any seeds remaining can be destroyed by setting fire to the plants after they have been scorched by the chlorate.

A considerable reduction in the amount of chemical required may be effected by cutting the plants to within a few inches from ground level a day or two before the application is made.

When growth is scattered and in very limited areas it is probably more satisfactory to fork the plants out. With rising costs of labour, this method is, however, not practicable where infestations are widespread. Furthermore, the loosening of soil by forking, especially on the edges of banks, may probably do harm by way of erosion.

Another method of control that does not seem to find favour in Ceylon is the use of smother crops. A quick growing plant like Guatemala grass (*Tripsacum laxum*), if cultivated, will not only smother the *Eupatorium riparium* and other weeds but also provide useful material for thatching tea fields.

In Java, where this weed has spread considerably in recent years, it has been reported on favourably as a source of green material for compost. The cut tops can also be used as a thatch, provided the cutting is done before flowering. In gum plantations it forms a useful cover, the dense growth produced protecting the soil from the impact of heavy rain and insolation. Considerable amounts of humus are added to the soil by the decomposing leaves and stems and on steep slopes erosion is checked.

Since the above was written it has been discovered by Webster that *Eupatorium riparium* is an alternative host of the capsid bug *Lygus viridanus*, which he has recently shown to be the cause of the "corroded flush" symptoms on tea in plucking formerly attributed to the "Cercosporella" disease[1]. This affords a further reason for controlling this weed along jungle boundaries adjoining tea, at the higher elevations where *Lygus viridanus* is known to occur.

Reference

1. Webster, B. N.—Notes on Pathological Matters. The "Cercosporella" Disease. *Tea Quarterly* Vol. XXV Part (I) 18, 1954.