Common weeds in rubber plantations in West Bengal

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Introduction

Study records the occurrence of a noxious weed, *Ichnocarpus frutescens* (L.) W.T. Aiton, and two other dominated species of weeds (*Dioscorea bulbifrea* and *Diplazium esculentum*) in natural rubber (NR) plantations in non-traditional region. *Ichnocarpus frutescens* (L.) W.T. Aiton is a laticiferous evergreen woody climber which hinders crop management and harvesting operations and competes with rubber for water and nutrients. Whole creeper or bark of this species is used to make ropes by local tribe communities. The other two species of weeds are used in curries and salads. The Nagarakatta regional experiment station is situated in Sun Himalayan West Bengal and lies between the longitude 88° 25' E and latitude 26° 54' E at 69 MSL altitude.

Weeds are one of the major problems in rubber plantations as they compete with the

Fig 1.Vigrous growth of *Ichnocarpus frutescens* in natural rubber plantation

crop for light, water and nutrients. The weed management operations are to be planned by taking in to consideration of the dominant weed flora of rubber plantations of a particular region (Abraham and Abraham, 2000).

Rubber is a recently introduced and emerging crop in this traditionally tea growing area (i.e. Terai and Dooars of West Bengal). In traditional rubber growing area, establishing cover crops is a common practice. But in this area it is not in practice and is the reason for getting chances for the weeds to grow and creat problems for routine cultural operations. in addition to competing with rubber for nutrition. Bhaskaran Nair (1967) reported *Mikania cordata*, a new alien weed in rubber plantation to South India which contain growth inhibitory substances and depress the growth of *Hevea* (Wong, 1964). Detailed information on the weeds of rubber plantation for this region is not available. Chowdhury and Das (2011) reported that the natural herb layer is very rich in natural forest but the richness of herb layer become poorer or sometimes found to be almost missing in rubber (*Hevea brasiliensis*) plantations in Terai and Dooars area of West Bengal.

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The similar conditions have been observed in mature rubber plantation at Regional Experiment Station (RES), Nagrakata, Jalpaiguri, West Bengal especially under 400 series, in Genome and Environment interaction trial. However, in wild germplasm where some species of weeds and grasses were growing owing to open or small canopy where sun light is available in scattered patches. But *Ichnocarpus frutescens*(Family: Apocynaceae) is vigorously growing and dominant in NR plantations (Fig 1). Plant specimen collected from NR plantations are kept in Herbarium (Accession No 09662) in Department of Botany, North Bengal University, Darjling, West Bengal.Two other dominant species of weeds found in Clone Blend Trail (CTB), Clone Trail I, II, III and Fertilizers trial (1989) are *Dioscorea bulbifrea* L. (Family: Dioscoreaceae) and ferns *Diplazium esculentum* (Retz). Sw (Family: Athyriaceae). The weeds are spreading in most of the experimental trials.

Fig 2. Autolysis or natural control of weed

Initially we have tried to control the weeds with herbicides but no effect was observed. Therefore, we were forced to do manual weeding in plantation strips for the effective management of weeds. However, autolysis of weed was observed in patches at several places which need to be further investigation (Fig 2). It may be a microbial disease to weeds or by some other reasons

Ichnocarpus frutescens

Ichnocarpus frutescens, commonly known as 'black creeper' in English, 'Shymolata' in Bengali, 'Paalvally' in Malayam, 'Kalidudhi' in Hindi and 'Sariva' in Sanskrit. It is a laticiferous evergreen woody creeper with rusty red tomentose appearance. Stem is strong, twining, thickened at the nodes and sprawling 9 to 12 m or even more in length. Creamy white sap is present in bark. Leaves are simple, opposite, short petioled, elliptic-oblong to linear- lanceolate, softly tomentose beneath and glabrous above. The leaves are variable, 3 to 4 cm wide and 7 to 9 cm long. Flowering of this weed is not reported in NR plantation in RES, Nagrakata. The roots are reddish or purple in colour.

Local tribes communities inhibiting in nearby area not using any part of thnis weed as medicine. But whole creeper or bark is used to make ropes. However, ethno-botanical applications of this plant were reported by several workers (Ambasta, 1999; Chatterjee and Pakrashi, 2003) and is used as a substitute of 'Indian Sarsaparilla' (*Hemidesmus indicus*) by some tribes for the treatment of various diseases (Singh and Singh, 2012). The roots are reported to use for the treatment of fever, dyspepsia, skin disease. The

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Fig 2. *Dioscorea buibifera*

whole plant is used as tribal medicine in atrophy, bleeding gums, cough, dysentery, measles, night blindness, insect bites, etc., abdominal and glandular tumors (Choudhary *et al.*, 2012), lower fasting glucose, improving glucose tolerance in diabetes. It is reported that this weed is having and anti-inflammatory (Singh *et al.*, 2012), and anti¬pyretic (Pandurangane *et al.*, 2009), and antimicrobial (Malathy and Sini, 2009) properties.

Phytochemical investigations indicate that 28 compounds belonging to various categories are present in this plant. Pharmacological activities of different plant parts evaluated by Sing and Singh (2012) have indicated antiurolithiatic, hepatoprotective, antioxidant, analgesic, antipyretic, anti-inflammatory, anti-diabetic, anti-hyperlipidemic and antitumor activities. Recently, Singha et al. (2013) reported the antibacterial, antioxidant and anti-diabetic potential of phytochemical isolated from *I. frutescens*. The enthanolic extracts of *I. frutescens* was evaluated by Starline et al. (2013) for its anticancer activity against 4-vinylcyclohexane induced ovarian cancer which is an occupational chemical released during the manufacture of rubber tyres, plasticizers and pesticides.

D. bulbifrea* and *D.esculentum

Dioscorea bulbifrea is also a broad leaved, quick-growing perennial climber, commonly known as air potato (Varahi in Sanskrit, Mekaachil in Malayalam) is a true yam species and spreads tenaciously. It is an invasive weed species which is a native to Africa and Asia. New plants develop from bulbils (Photo plate 2) and have a tendency to take over native flora. The bulbils are edible, but generally not eaten due to bitter taste and sedative effect. It become edible after only after proper cooking (need to be put it in running water for one or two days after boiling). Old age local tribes inhibiting in nearby area informed that they used to eat this wild potato at the time of famous Bengal famine (1943), when nothing was available to eat.

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Diplazium esculentum is an edible fern and most commonly consumed as leafy vegetable by all local tribe communities. Young fronds are used to make green vegetable or used as salads.

Ageratum conyzoides Linn., *Ecliptaprostrata*(L.) Linn., *Crassocephalum crepidioides* (Benth.S. Moore (Asteraceae), *Lantana camara* Linn., *Stachytarpheta jamaicensis*(L.)Nahl., *Clerodendrum viscosum* Nent. (Verbinaceae), *Commelina diffusa* BmxnE. (Commelinaceae), *Solanum nigram* L., *Solanum torvum* Sw., *Physalis minima* L. (Solanaceae), *and Urena lobata* L., *SidaacutaBmm. f. (Malvaceae)* are the major weeds in young rubber plantation along with *Hedyotis corymbosa* Linn. (Rubiaceae), Sennatora (L.)Roxb.(Caesalpinaceae), *Mimosa pudica* L. (Fabaceae), *Cyprus rotundus* L., *Cyanadon dactylon* (L.)Pers (Poaceae), *Phyllanthus fraternus* Webs.(Euphorbiaceae) and *Scoparia dulcis* L. (Scrophulariaceae).

But the dominated weeds in mature plantations are *I. Frutescens* along with *D. bulbifrea* and *D. esculentum.*

Control weeding is now encouraged in rubber plantations and emphasis is given for strip weeding.*Ichnocarpus frutescens* wellestablished and vigorously growing under the natural rubber plantation in Regional Experimental Station, Nagrakata and emerging a major problem for crop management and harvesting operations in rubber plantations.

Acknowledgement

Authors are highly grateful to Dr. D. Choudhury, Project Coordinator Retd., RRS, Guwahati for encouragement and Prof. A.P. Das and Dr A. Choudhury, Department of Botany, NBU, Darjling for identification of weeds.

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