Fig 1: Arabica coffee showing symptoms of CBD and leaf rust

Coffee Berry Disease

Finding an affordable solution

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Introduction

Coffee plays a significant role in the economy of Uganda by contributing between 20 - 30% of the foreign exchange earnings considering the vigorous efforts by Government to diversify the economy. Arabica coffee accounts for 13.7% of the total coffee exports (UCDA, 2008). Arabica coffee production is still entirely a "preserve" of smallholder farmers, 90 percent of whose average farm size ranges from less than 0.5 to 2.5 hectares. Average yield ranges from 750 – 960 kilos of parchment per hectare per year which is below a potential yield of at least 1.5t/ha/yr. Average yield per coffee tree in Mt Elgon areas is at present very low in comparison to high performance farming. The average yield can be estimated to be about 0.5 kg of clean parchment per tree.. Limiting factors of coffee production include major diseases, such as the coffee leaf rust and the coffee berry disease (CBD). CBD infect all stages of the crop from flowers to ripe fruits and occasionally leaves, but maximum crop losses occur following infection of green berries with the formation of dark sunken lesions with sporulation, causing their premature dropping and mummification. This disease, first reported in Kenya in1922 (McDonald, 1926) may cause up to 70-80 % of losses if no control measures are adopted. At BugiZARDI we are searching for applicable means of managing coffee berry disease, Bacterial blight of coffee and Coffee leaf rust of Arabica Coffee for the farmers in the Mt. Elgon area.

Methodology

A 15 yr old field of arabica coffee variety SL14 with a spacing of 2.5m by 2.5m between trees was pruned back and plots selected to apply treatments. Plots containing 16 trees in a square were selected as plots. Two rows of coffee trees were left in between plots as guard rows. Treatments were different fungicide compounds and a control. The treatments were applied in a RCBD with 4 replications.

Table 1: Treatments applied and their schedule

	Rates	Application / Ha	Interval
Copper Oxychloride	90gm / 15 Lts water	7Kg /ha	4 Weeks
Kocide 101	140gm / 15 lts of water	7 Kg/ha	4Weeks
Copper Nordox 75%	53gm / 15lts of Water	3.8kg/ha	4weeks
Daconil	50ml/ 15Lts of Water	3.5lts	4weeks
Orius	80 ML / 15lts of	3.8 lts	4weeks
Bio-Fungicide	15 lts	3.75Lts/ ha	4weeks

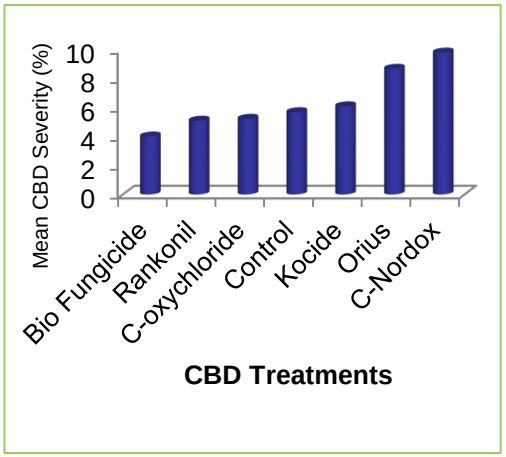

Fig 2: Effect of treatments on severity of CBD at Buginyanya

Preliminary Results

The incidence of CBD within treatments and at time of recoding was significantly different for time of recording ($P>0.05$). ANOVA shows that time of recording and treatment were also significantly different for severity (0.0001) of CBD whereas their interaction was not significant. Incidence of CBD was highest in the 3rd recording which corresponded to highest mean severity (9.34%). The incidence was not significantly different among treatments under test although the severity varied significantly. Severity was generally below 10% of total berries on the primaries. Bio-fungicide, Rankonil and Copper oxychloride recorded the lowest CBD severity on berries on sampled primaries. Copper Nordox and Orius however recorded the highest CBD severity.

Fig 3: Coffee trees at various stages of CBD attack

Way Forward: The results will be used to devise a better spray regime that will cause response to CBD, also a program to include management of coffee leaf rust has been designed for the next season. These trials will be evaluated with farmer groups then tried on farm starting 2011.