Farmers Knowledge of Anthracnose Disease of Cassava and Yam in Four Ecological Zones in Ghana

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ABSTRACT

During surveys on anthracnose disease of cassava and yam, farmers were interviewed through questionnaire to seek their knowledge of the disease in four ecological zones in Ghana (Forest, Transition, Guinea Savannah and Coastal Savannah). Results analysed indicated that over 61% of the yam farmers and 79% of cassava farmers have good knowledge of anthracnose diseases. The farmers were aware that the disease occurs on the leaves and stems of cassava and also on the leaves and vines of yam. More than 50% of the farmers said that wet seasons are the period where the disease spread most. In all the ecological zones, more than 55% of the farmers indicated that the disease has negative effect on their produce yet more than 60% of the farmers did not have any idea as to the causes of the disease and do not undertake any control method to manage the disease. The work has revealed that farmers may know about diseases due to long periods of farming, their knowledge on the causes and control of cassava and yam anthracnose disease is inadequate and therefore need more education.

Key words: Anthracnose, Cassava, Yam, Control method.

INTRODUCTION

Yam and cassava are valuable sources of carbohydrates to most people in the tropics and subtropics (African Food Staples, 2002). Production of these important root and tuber crops in Ghana forms an integral part of the national goal of ensuring food security. Diseases affect these crops right from the planting stage to harvesting and storage of the produce; they are among the major constraints that prevent optimum yields from being achieved.

Anthracnose disease of cassava and yam causes losses that range between 30 – 70% (Hesselberg and Yaro, 2006; Moses and Lamptey, 2001). Reducing anthracnose disease of these crops to achieve higher yield would contribute to food security particularly in the rural communities where families depend greatly on these crops for food and income.

Farmers are major stakeholders in crop production systems. Their knowledge on diseases affecting cassava and yam and how the diseases are managed can be a tool in the bid to reduce diseases in the fields. This study was therefore conducted to document farmers’ knowledge and perception of anthracnose disease of cassava and yam across four agro-ecological zones of Ghana.

MATERIALS AND METHODS

Administration of questionnaires

Visits were made to cassava and yam farmers in the Forest, Transition, Guinea Savannah and Coastal Savannah Zones to survey farmers’ cassava and yam growing fields (Figure 1). At each ecological zone, one district was visited and in each district, three different locations were visited. The distance between two nearest locations of sample collection was 20-30 km apart. At each ecological zone, forty-five (45) structured questionnaires on anthracnose diseases of cassava and yam were administered to farmers; to gather information on their perception on the disease.

Information such as age, gender, level of education, period of farming and farming systems practice (Intercrop, monocrop) were documented. In addition, the farmers were interviewed on their awareness of the disease, weather conditions that promote the spread of the disease, effect of the disease on the size their produce, effect on yield, perception of the causes of the disease and control measures that are used to manage the disease.

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Statistical Analysis

Raw data from the survey were analysed using the Statistical Package for Social Science Students (SPSS).

Figure 1: Map of Ghana showing the ecological zones and the sampling sites

RESULTS AND DISCUSSION

Biodata

Results analysed indicated that the ages of the farmers interviewed were between 21 to 80 years, 62.0% of them were male and 38.0% female. On formal education; 26.0% of them had finished either middle school or Junior Secondary School and 74.0% have not had any formal education. The period that the farmers had engaged in farming activities ranged from 1 year up to more than 40 years. Majority of farmers in Ghana being illiterate was reported by Asante et al., (2007). However, this could be the reason why they have hang out on farming for longer periods.

Farming systems practiced by yam and cassava farmers

Yam is planted as intercrop by 76%, 75%, 65% and 93% of farmers from the Forest, Transition, Guinea and Coastal savannah zones respectively (Fig. 2a). Intercropping cassava is practiced by 65%, 66%, 73% and 70% of farmers from the Forest, Transition, Guinea and Coastal savannah zones respectively (Fig. 2b). From the four ecological zones, monocropping was practiced by 7%-32% yam farmers and by 23%-35% of the cassava farmers.
Yam and cassava being grown in association with several other crops as indicated by over 65% of the farmers interviewed also agrees with some established facts that in Ghana and some parts of Africa, yam and cassava intercrop and in mixtures with other crops are common (Kurt, 1984). Though intercropping has a number of known advantages, in some cases it has been shown that intercropping may intensify disease incidence and severity when some crops in the intercrop serve as alternative hosts for the disease causal agent.

![Graph showing farming systems practiced by yam and cassava farmers](image)

**Figure 2: Farming systems practiced by yam (2a) and cassava (2b) farmers**

### Awareness of anthracnose disease

The results also showed that 61.5% of the yam farmers and 79.5% of the cassava farmers were aware of the presence of anthracnose disease on their farms (Table 1). Sixty-two point three percent (62.3%) and 45.8% of those who cultivate yam had noticed anthracnose disease occurring on the leaves and vines respectively. Also 43.7% of the cassava farmers had noticed the disease occurring on the leaves whiles 68.0% were aware of the disease occurring on stems. This is an indication that most farmers are aware of anthracnose disease in their farms and also knows parts of the crops that the disease attacked. In a related work by Asante et al., (2007) and Braimah et al., (2007), it was revealed that farmers know of diseases attacking their crops and have identified it as one of the major production constraints.

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Awareness of anthracnose disease on Farm</th>
<th>Awareness of anthracnose disease on leaves</th>
<th>Awareness of anthracnose disease on vine</th>
<th>Awareness of anthracnose disease on Farm</th>
<th>Awareness of anthracnose disease on leaves</th>
<th>Awareness of anthracnose disease on stem</th>
<th>Awareness of anthracnose disease on Wet weather favouring the spread of anthracnose disease in Yam field</th>
<th>Awareness of anthracnose disease on Wet weather favouring the spread of anthracnose disease in Cassava fields</th>
<th>Effect of anthracnose disease on Yam tubers</th>
<th>Effect of anthracnose disease on Cassava roots</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aware</td>
<td>61.5</td>
<td>62.3</td>
<td>45.8</td>
<td>79.5</td>
<td>43.7</td>
<td>68.0</td>
<td>50.2</td>
<td>52.6</td>
<td>69.0</td>
<td>75.3</td>
</tr>
<tr>
<td>Not Aware</td>
<td>38.5</td>
<td>36.8</td>
<td>54.2</td>
<td>20.5</td>
<td>56.3</td>
<td>32.0</td>
<td>29.3</td>
<td>16.4</td>
<td>2.9</td>
<td>9.4</td>
</tr>
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<td></td>
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<tr>
<td>Reduced (smaller/slender)</td>
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<td>75.3</td>
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</table>

### Table 1: Farmers knowledge on Anthracnose Disease (Mean percentage of respondents)
Weather condition favouring the spread of anthracnose disease

According to 50.2% and 52.6% of yam and cassava farmers respectively, wet weather conditions promote the spread of anthracnose (Table 1). More than 40% of both cassava and yam farmers indicated that rainy seasons are the periods when anthracnose disease usually spreads most. This is a confirmation of earlier report by cassava biz (2014) which established that new shoots appearing during the rainy season are the most likely targets of the anthracnose disease pathogen hence the high spread incidence observed in the wet season.

Effect of anthracnose disease on cassava roots and yam tubers

Again, 69.0% and 75.3% of yam and cassava farmers respectively had noticed reduction in the sizes of their yam tubers and roots of cassava as a result of the disease (Table 1). According to the farmers, the disease causes their produce to become smaller and slender.

Effect of anthracnose disease on yield of yam and cassava

On yield, 57.2%, 94.6%, 68.3% and 56.8% of yam farmers interviewed from the Forest, Transition, Guinea and Coastal savannah zones respectively acknowledged a reduction in yield (Fig.3a). Also, 54.3%, 65.7%, 85.4% and 87.2% of those who cultivate cassava from the Forest, Transition, Guinea and Coastal savannah zones respectively acknowledged a reduction in yield (Fig. 3b). However, they could not give the specific quantities that are usually lost due to the disease.

Farmers’ perception of the cause(s) of anthracnose

About 60% of yam and cassava farmers interviewed from the four ecological zones did not have any idea about the cause(s) of anthracnose disease (Fig. 4). Eleven percent (11%) of them attributed the disease to poor soil, 1% to intercropping, 10% to heavy rains, 1% to weeds and only 10% attributed the disease to pathogens. Farmers are aware of anthracnose disease but interestingly they do not know what causes it; this implies that farmers to not have adequate knowledge on the disease and therefore need education.
Control measures practised by farmers

Also, 86% of the respondents did not take any control measures against anthracnose disease. Out of the few farmers who try to control the disease, 2% clear weeds, 5% remove affected plants while 7% of them change planting materials (Fig. 5). The fact that farmers do not have much knowledge of the disease could be the reason why they don’t control it. Moses and Lamptey (2001) reported that despite the conspicuous presence of diseases and their effects on production, majority of farmers in Ghana and most parts of Africa do very little or nothing at all to control diseases owing to lack of knowledge on their causes.
CONCLUSION

This study has revealed that over 70% of cassava and yam farmers have not been to school and have been involved in farming activities from early ages. They have knowledge of anthracnose disease and also know about parts of the crops that the disease affect. Even though the farmers could not quantify losses due to the disease, they are aware of the negative effect of the disease on the crops. In spite of their knowledge of the disease, about 90% of the farmers do not have any idea as to the actual causes of the disease and do nothing about it. The fact that the farmers did not have adequate knowledge on the causes of the disease could be the reason why majority of them did not take any control intervention against the disease. Cassava and yam farmers therefore need more education on anthracnose diseases.

REFERENCE
