

Effect of fungicide Frequencies and Sowing date for management of Chocolate spot (*Botrytis fabae* Sard.) of Faba bean Sodo Zuria District Southern Ethiopia

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Abstract

Faba bean (*Vicia faba* L.) is a cool legume crop grown in the highlands of Ethiopia, and chocolate spot disease (*Botrytis fabae* Sard.) occurs in wide areas. Chocolate spot is a serious disease that cause yield reduction on faba bean crop, thus, effective management is essential. Thus the objectives of this study were to assess the influence of sowing dates and the frequency of foliar fungicide (mancozeb) application for the management of chocolate spots and determine the association of sowing dates with chocolate spot disease occurrence. Field experiments were conducted at Sodo Zuria district of kokate research sites during 2014 and 2015 cropping seasons. Treatments were designed in RCBD factorial with three replications. The mean disease severity, AUDPC, and grain yield were found to be statistically significant differences ($P < 0.05$) among the treatments. A high disease severity, AUDPC and low grain yield were recorded from the unsprayed treatment. Four times applications of mancozeb spray on the first July sowing date have effectively reduced disease severity and significantly increased yield. However, cost-effective of these chemical and other faba diseases like rust are becoming economically important diseases is an issue that has to be further investigated.

Keywords: Sowing date; Fungicide; Faba bean; Chocolate spot; Yield

Introduction

Faba bean (*Vicia faba* L.) is a cool legume crop grown in the highlands of Ethiopia, and chocolate spot disease (*Botrytis fabae* Sard.) occurs in wide areas. Chocolate spot is a serious disease that cause yield reduction on faba bean crop, thus, effective management is essential. Thus the objectives of this study were to assess the influence of sowing dates and the frequency of foliar fungicide (mancozeb) application for the management of chocolate spots and determine the association of sowing dates with chocolate spot disease occurrence. Field experiments were conducted at Sodo Zuria district of kokate research sites during 2014 and 2015 cropping seasons. Treatments were designed in RCBD factorial with three replications. The mean disease severity, AUDPC, and grain yield were found to be statistically significant differences ($P < 0.05$) among the treatments. A high disease severity, AUDPC and low grain yield were recorded from the unsprayed treatment. Four times applications of mancozeb spray on the first July sowing date have effectively reduced disease severity and significantly increased yield. However, cost-effective of these chemical and other faba diseases like rust are becoming economically important diseases is an issue that has to be further investigated.

Materials and Methods

Study Area and Climate

The study was conducted at Sodo Zuria district, Southern Agricultural Research Institute (SARI), Ethiopia. The study area is located at 037° 06' 10" E and 06° 08' 28" N. The altitude is 2156 m above sea level. The climate is semi-arid with annual rainfall of 1126 mm. The mean monthly rainfall is 93.8 mm. The mean monthly temperature is 18.21°C. The mean monthly relative humidity is 0.92. The mean monthly wind speed is 1.2 m/s. The mean monthly solar radiation is 17.80 MJ/m². The mean monthly evapotranspiration is 1800-3000 mm. The mean monthly soil moisture is 1780-3000 mm. The mean monthly soil temperature is 18.21°C. The mean monthly soil pH is 5.25. The mean monthly soil organic carbon is 0.1%. The mean monthly soil total nitrogen is 0.04%. The mean monthly soil available phosphorus is 0.01%. The mean monthly soil available potassium is 0.01%.

Experimental Design and Treatments

The experiment was conducted in a Randomized Complete Block Design (RCBD) with three replications. The treatments were sowing date (F1, F2, F3) and fungicide frequency (F1, F2, F3). The sowing dates were 1st July, 15th July, and 30th July. The fungicide frequencies were 0, 1, 2, and 3 times applications of mancozeb spray. The treatments were arranged in a factorial design. The experiment was conducted during the 2014 and 2015 cropping seasons. The mean disease severity, AUDPC, and grain yield were found to be statistically significant differences ($P < 0.05$) among the treatments. A high disease severity, AUDPC and low grain yield were recorded from the unsprayed treatment. Four times applications of mancozeb spray on the first July sowing date have effectively reduced disease severity and significantly increased yield. However, cost-effective of these chemical and other faba diseases like rust are becoming economically important diseases is an issue that has to be further investigated.

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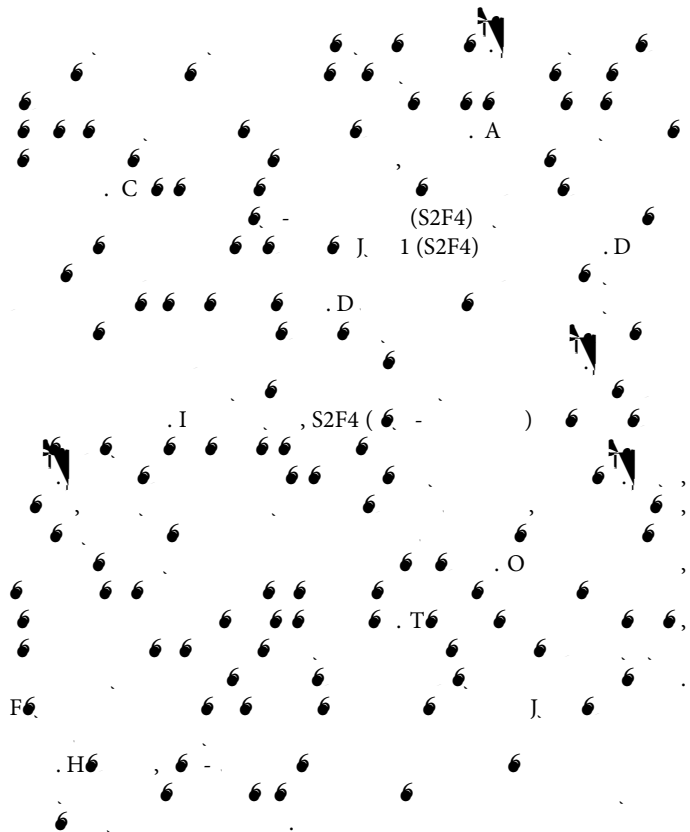
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C e i g I e e

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Ack nledge e

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