

CONSORTIUM OF ENDOPHYTIC BACTERIA AS BIOLOGICAL CONTROL FOR BACTERIAL LEAF BLIGHT DISEASE AND PLANT GROWTH PROMOTION OF RICE (ORYZA SATIVA.L)



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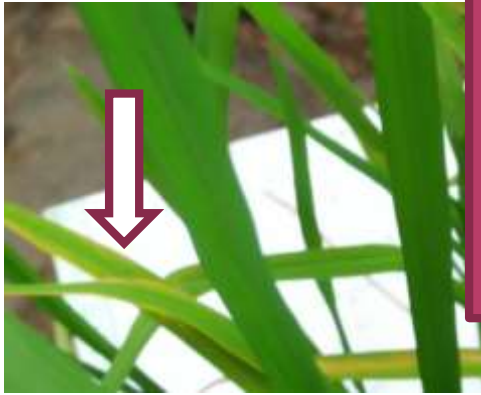
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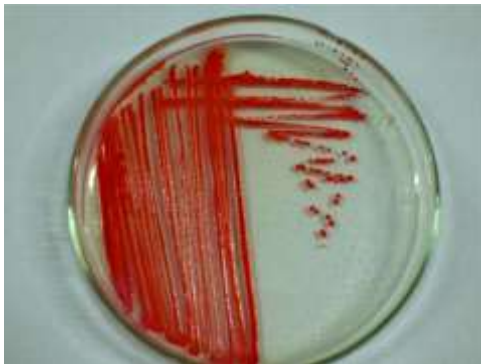
- Rice is the staple food of almost half of the world's population



- one of the important diseases in rice is bacterial leaf blight (*Xanthomonas oryzae* pv. *oryzae*)



- Bacterial leaf blight is reported to have reduced rice production by as much as 60%.



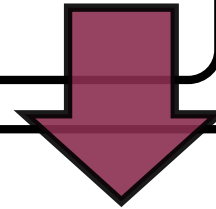
- Endophytic bacteria consortium can provide various control mechanisms (competition, antibiotics, induction of resistance etc.) simultaneously, so that it will be more effective in controlling pathogens

RESEARCH OBJECTIVES

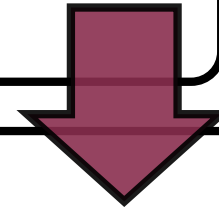
To obtain a consortium of endophytic bacteria that is able to control bacterial leaf blight disease and promote rice growth.

METHOD

Testing the ability of the consortium to increase seedling growth



Testing the ability of the consortium to suppress the development of BLB disease



Testing the ability of the consortium to increase the growth of rice plants

ENDOPHYTIC BACTERIA CONSORTIA

A : Control (without consortia)

B : *S. marcescens* isolate ULG1E4 + *S.marcescens* isolate JB1E3

C ; *Bacillus* sp SJI + *Bacillus* sp HI

D ; *Bacillus* sp SJI + *S.marcescens* isolate JB1E3

E ; *Bacillus* sp SJI + *Bacillus* sp HI + *S.marcescens* isolate JB1E3

F ; *S. marcescens* isolate ULG1E4 + *S.marcescens* isolate JB1E3 + *Bacillus* sp HI

Growth of Rice Seedlings

Consortium
of
endophytic
bacteria

Growth of rice seedlings

	Height, (cm)	number of leaves	root length (Cm)	Fresh weight (g)	Dry weight (g)
A	53.600 ab	11.267 a	14.667 a	2.473 ab	0.407 cd
B	50.467 b	8.867 b	11.867 b	1.926 bc	0.267 e
C	52.600 ab	11.733 a	12.467 ab	2.340 ab	0.607 a
D	55.400 a	10.533 ab	13.267 ab	2.720 a	0.467 bc
E	51.200 b	10.733 ab	13.133 ab	2.773 a	0.560 ab
F	50.667 b	10.333 ab	11.133 b	1.540 c	0.353 de

The numbers followed by the same lowercase letters are not significantly different according to LSD 5%



Rice Seedlings

Incidency and Severity of Bacterial Leaf Blight Diseases in Rice

Consortium of endophytic bacteria	Diseases Incidency (%)	Diseases Severity (%)
A	13.91 ab	17.45 a
B	15.20 a	11.65 b
C	9.41 c	6.78 c
D	10.42 bc	7.86 c
E	9.77 bc	7.83 c
F	11.48 abc	7.71 c

The numbers followed by the same lowercase letters are not significantly different according to LSD 5%

The Symptom of Bacterial Leaf Blight Disease



The Growth of Rice

Consortium of endophytic bacteria	Growth of Rice		
	Plant height (cm)	Number of leaves	Number of tillers
A	74.80 b	147.40 b	44.29 b
B	84.00 a	165.80 ab	50.40 ab
C	82.90 a	157.80 ab	45.00 ab
D	82.70 a	170.40 a	51.80 a
E	83.90 a	158.20 ab	47.40 ab
F	78.60 ab	170.80 a	50.40 ab

The numbers followed by the same lowercase letters are not significantly different according to LSD 5%

The Growth of Rice



Control

Comsortium

CONCLUSION

The best endophytic bacteria consortium in controlling bacterial leaf blight and increasing seedling and rice growth are consortia C (*Bacillus* sp SJI + *Bacillus* sp HI) and D (*Bacillus* sp SJI + *S.marcescens* isolate JB1E3)

LUARAN PENELITIAN

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Certificate of Participation

This is to certify that

Zurai Resti

has Presented a paper titled

Consortium of Endophytic Bacteria as Biological Control of Disease and Plant Growth Promotion Of Rice (*Oryza sativa. L*)

at The 2nd International Conference on

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