

()

ACC (IAA)

*

(// : // :)

× cfu.ml⁻¹

()
()
IAA+++

IAA+++

(IAA)

ACC

ACC+++

(P<0.001)

Sm Rlv Rlp

IAA

IAA

Bj Rlt

-ACC+++ و IAA+++

(-ACC)

IAA+++

(P<0.001)

()

ACC (IAA)

PGPR :

()

(mg kg-1)

()

PGPR

()

()

()

()

Auxin

IAA

IAA

(PGPs)

(.)

(IAA)

(L-TRP)

IAA

()

()

L-TRP

IAA

L-TRP

()

.... (IAA)

()

IAA

()

L-TRP

(C2H4)

(.)

/

()

(

L-TRP

()

(IAA)

()

()

L-TRP (/ × mg kg-1)

()

1. L-Triptophan

... ACC (IAA) :

PGPR

(ACC)

()

ACC .

()

(.)

:

(SAM) - -

SAM

- ACC

ACC (.)

ACC SAM

ACC

Bradyrhizobium, Rhizobium

(.)

Sinorhizobium Mesorhizobium

()

:

ACC

(PGPR)

YEMB

ml

°C

ACC ()

ACC

()

IAA

()

()

()

()

°C

(.)

(PGPR)

YEMB

ACC

(OD)

UnicoTM

)

(1100,USA;

)

(OD - CFU)

(.

× cfu ml

-
1. Aminocyclopropane-1-Carboxylic acid:ACC
 2. Yang Cycle
 3. Adenosyl-I-Methionine Synthetase: SAM-Synthetase

() (IAA)
(CD) (HD)³

(HD/CD)

IAA
IAA

(.) IAA

IAA

()

(/ / / / /)

/ × /

()

IAA

LB

mM

LB

) IAA LB

(L-TRP)

(
IAA

(× cfu ml-1

)

(LB)

(

IAA

()

(°C)

mm

LB

μl

IAA

(/)

mm

()

IAA

ACC

(.)

()

IAA

RMM

RMM

IAA

- 3. Hilo Diameter
- 4. Colony Diameter
- 5. Rhizobia Minimal Medium (RMM)

- 1. Luria – Bertani
- 2. Salkofski

... ACC (IAA) :

) p0B0 (P1,P0) (/ M) ACC μ 1
(N.C) ()
) P1B0 μ 1 RMM
((/ M) NH4Cl
(P.C)
B3 (PC)

-ACC- IAA+++ RMM
(NH4Cl) ACC)

B6 (NC)
IAA- _ACC+++

ACC	ACC	ACC
		()
		(+) +
		(++) +
		(+++)+
		(++++)+

°C
RMM + ACC
(RMM) (RMM + NH4Cl)

() :
()

PGPR

SC647

RCBD Contrast SAS V 6.12

(%)

(B6 B1)
(B5 B1)

IAA

-
- 1 .Positive Control(P.C)
 - 2 .Negative Control(N.C)

IAA (IAA)

LB

IAA (% /) PGPR

IAA+++ () IAA

IAA+++ IAA (%) LB-TRP

LB

/ NaCl

PGPR -

-PGPR							
ACC	P-Solubilization	Sid	IAA	HCN	%S.E		
						()	B0
+4		3			121	R125 Sm	B1
+2.7	403					R419 Mc	B2
-			2.7			R254 Rlp	B3
-				5		R340 Rlv	B4
+4	368	1.25	2.7			R320RIv	(Mixed) B5
+2	302	1.25	1.33			R307Rlp	
-	315.6	1.33	1.08	5		R375 Mc	
-		3.8	1.25			R490 Rlv	
+3					121	R164 Sm	B6

HCN

IAA

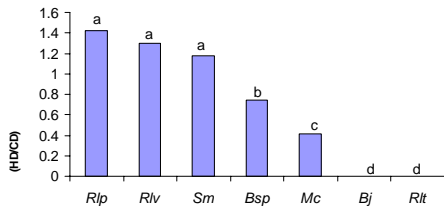
(mg l-1)

ACC

... ACC (IAA) :

LB-TRP		IAA		IAA			
()	LB	IAA+		0	1	2	3
		(%)					
R.leguminosarum	bv.phaseoli	/	/				
	bv.viciae	/	/				
	bv.trifolii	/	/				
Sinorhizobium meliloti	/	/					
Mesorhizobium ciceri (& M.mediterraneum)	/	/					
Bradyrhizobium japonicum	/	/					
B. spp(groundnut)	/	/					

IAA	LB-TRP	(MS)	(SOV)
	(DF)	/	***
		/	***
		/	***
		/	***



IAA (%)

Rlp ACC

IAA Sm Rlv

(HD/CD) IAA

IAA (P<0.001)

(HD/CD) IAA

%

HD/CD Rlp

³Sm ²Rlv

B.sp HD/CD

Rlv,Rlp

Mc (Sm

⁶Rlt ⁵Bj

IAA

1. R.leguminosarum bv.phaseoli(Rlp)
2. R.leguminosarum bv.viciae(Rlv)
3. Sinorhizobium meliloti(Sm)
4. Mesorhizobium ciceri(Mc)
5. Bradyrhizobium japonicum(Bj)
6. R.leguminosarum bv.trifolii(Rlt)

... ACC (IAA) :

) - ACC
(%)
Sm

, B3 ()
ACC IAA+++
()
(

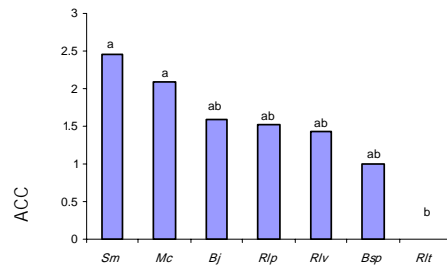
ACC
Bsp
()

(P<0.05)

B3

B3

(B3)



B3

ACC+++

B1 B3()

ACC

(%)

ACC

/

RMM-

ACC

B1

(RMM-NH4Cl)

()

B3

IAA

B3

B3

(ACC) IAA+++

ACC +++ B6

L-

()

IAA

(/ ×) TRP

(mg/kg)

(P<0.05)

Archive 01

ACC

()

(PGPR)

()

PGPR

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