

()

ACC (IAA)

*

(// : // :)

× cfu.ml⁻¹
 () (IAA)
 () IAA+++ ACC
 IAA+++ ACC+++

(P<0.001)

Sm Rlv Rlp IAA Bj Rlt IAA
 -ACC+++ و IAA+++

(-ACC⁻⁻⁻) IAA+++

(P<0.001)

()

ACC (IAA) PGPR :

()

(mg kg-1)

()

PGPR

()

()

()

()

Auxin

IAA

(PGPs)

(IAA)

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) .(

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

× cfu ml

() (IAA)
(CD) (HD)³

(HD/CD)

(.) IAA

IAA

(/ / / / /)

IAA

IAA

()

/ × /

()

IAA

LB

) IAA LB

(

IAA

)

(

IAA

()

mM

LB

(L-TRP)

)

(× cfu ml⁻¹)

(LB)

(°C)

mm

LB

IAA

μl

(/)

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 l
 (N.C) ()
) P1B0 μ l 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)

() ACC
 :

()

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)

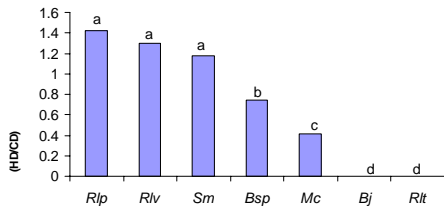
ACC

... ACC (IAA) :

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

		(P<0.001)	***



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+++
()
(

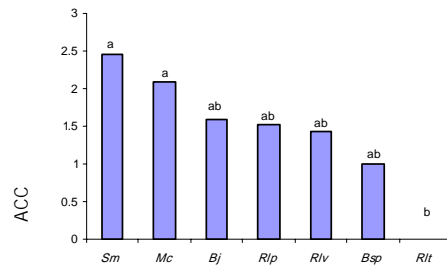
ACC
Bsp
()

(P<0.05)

B3

B3

(B3)



ACC

) (%

B3

ACC
/

ACC+++

B1

B3()

RMM-

B1

(RMM-NH4Cl)

()

ACC

B3

IAA

B3

B3

(ACC) IAA+++

ACC +++

B6

L-

()

IAA

(/ ×) TRP

(mg/kg)

(P<0.05)

ACC

.()

(PGPR)

.()

PGPR

)

(" "

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