Cite this as: Yu-tao HUANG, Wei WU, Wen-xiong ZOU, Hua-ping WU, Dong-dong CAO, 2020. Drying temperature affects rice seed vigor via gibberellin, abscisic acid, and antioxidant enzyme metabolism. *Journal of Zhejiang University-Science B (Biomedicine & Biotechnology)*, **21**(10):796-810.
http://doi.org/10.1631/jzus.B2000297

Drying temperature affects rice seed vigor via gibberellin, abscisic acid, and antioxidant enzyme metabolism

Key words: **Drying temperature, Rice, Seed vigor, Gibberellin acid, Abscisic acid, Antioxidant enzyme**

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Fig.1

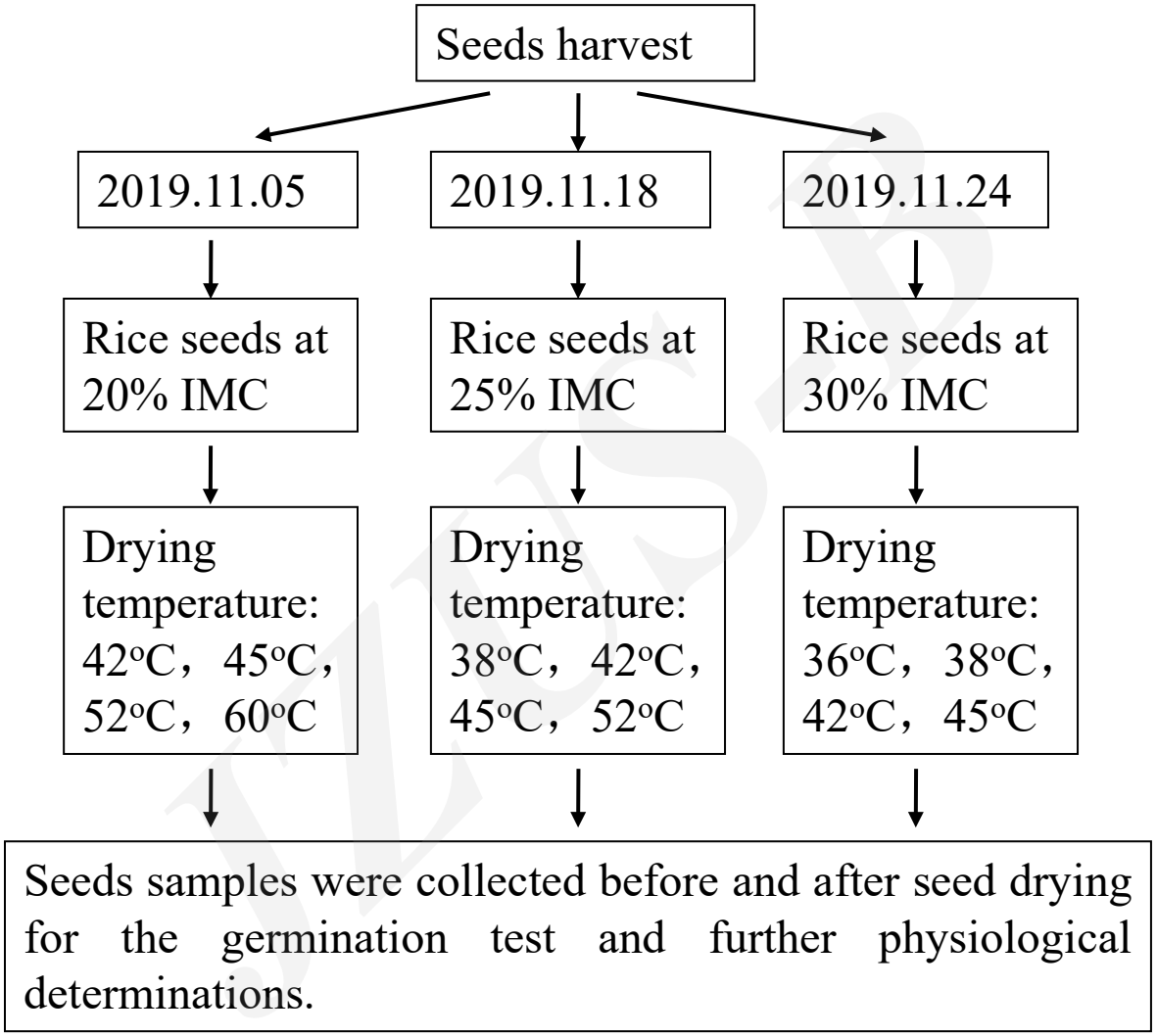

Seeds harvest
2019.11.05
2019.11.18
2019.11.24
Rice seeds at 20% IMC
Rice seeds at 25% IMC
Rice seeds at 30% IMC
Drying temperature: 42°C，45°C，52°C，60°C
Drying temperature: 38°C，42°C，45°C，52°C
Drying temperature: 36°C，38°C，42°C，45°C
Seeds samples were collected before and after seed drying for the germination test and further physiological determinations.

Fig.2

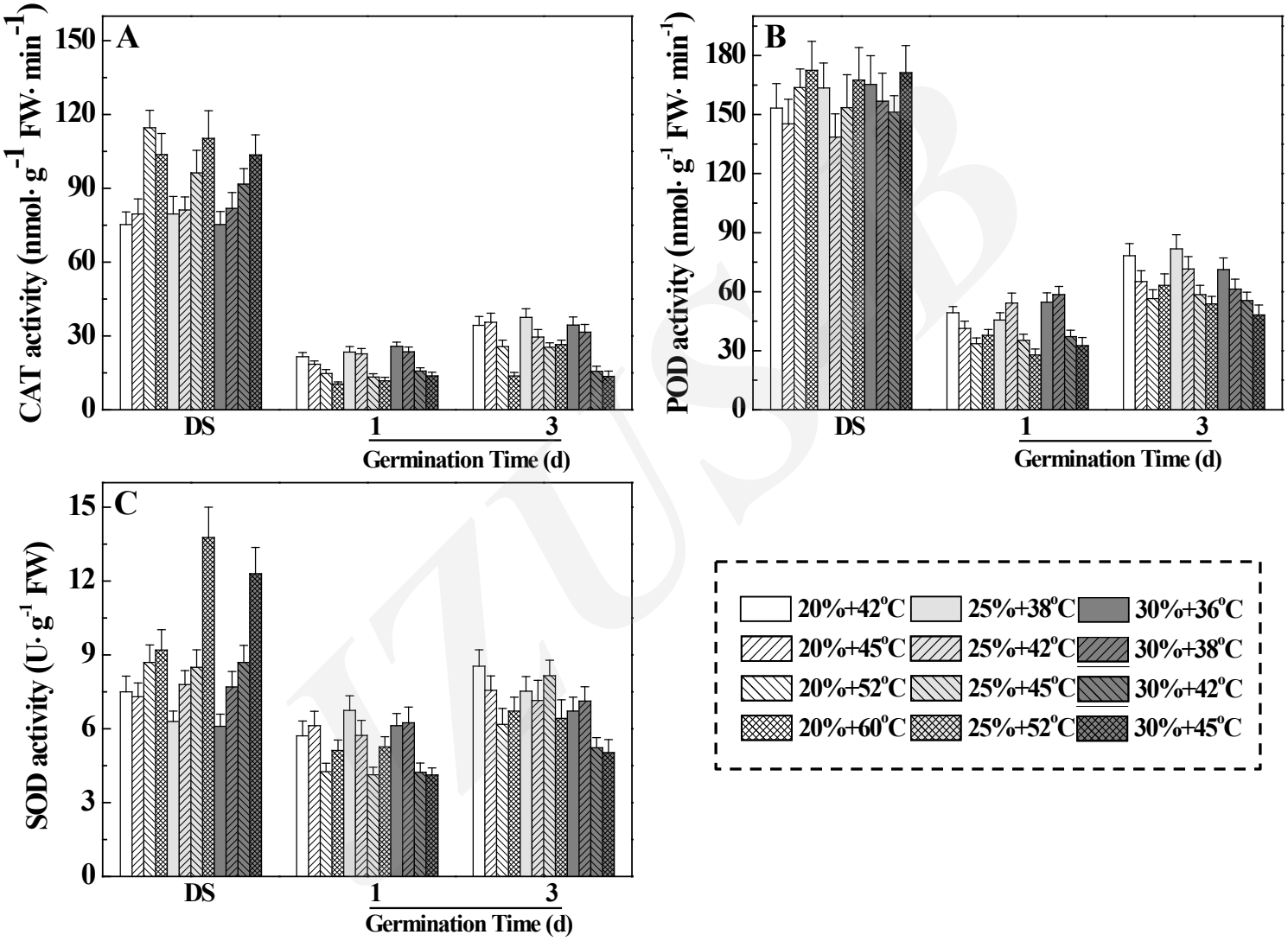

A
CAT activity (nmol· g-1 FW· min-1)
150
120
90
60
30
0
DS
1
3
Germination Time (d)
B
POD activity (nmol· g-1 FW· min-1)
180
150
120
90
60
30
0
DS
1
3
Germination Time (d)
C
SOD activity (U· g-1 FW)
15
12
9
6
3
0
DS
1
3
Germination Time (d)
20%+42°C
25%+38°C
30%+36°C
20%+45°C
25%+42°C
30%+38°C
20%+52°C
25%+45°C
30%+42°C
20%+60°C
25%+52°C
30%+45°C

Fig.3

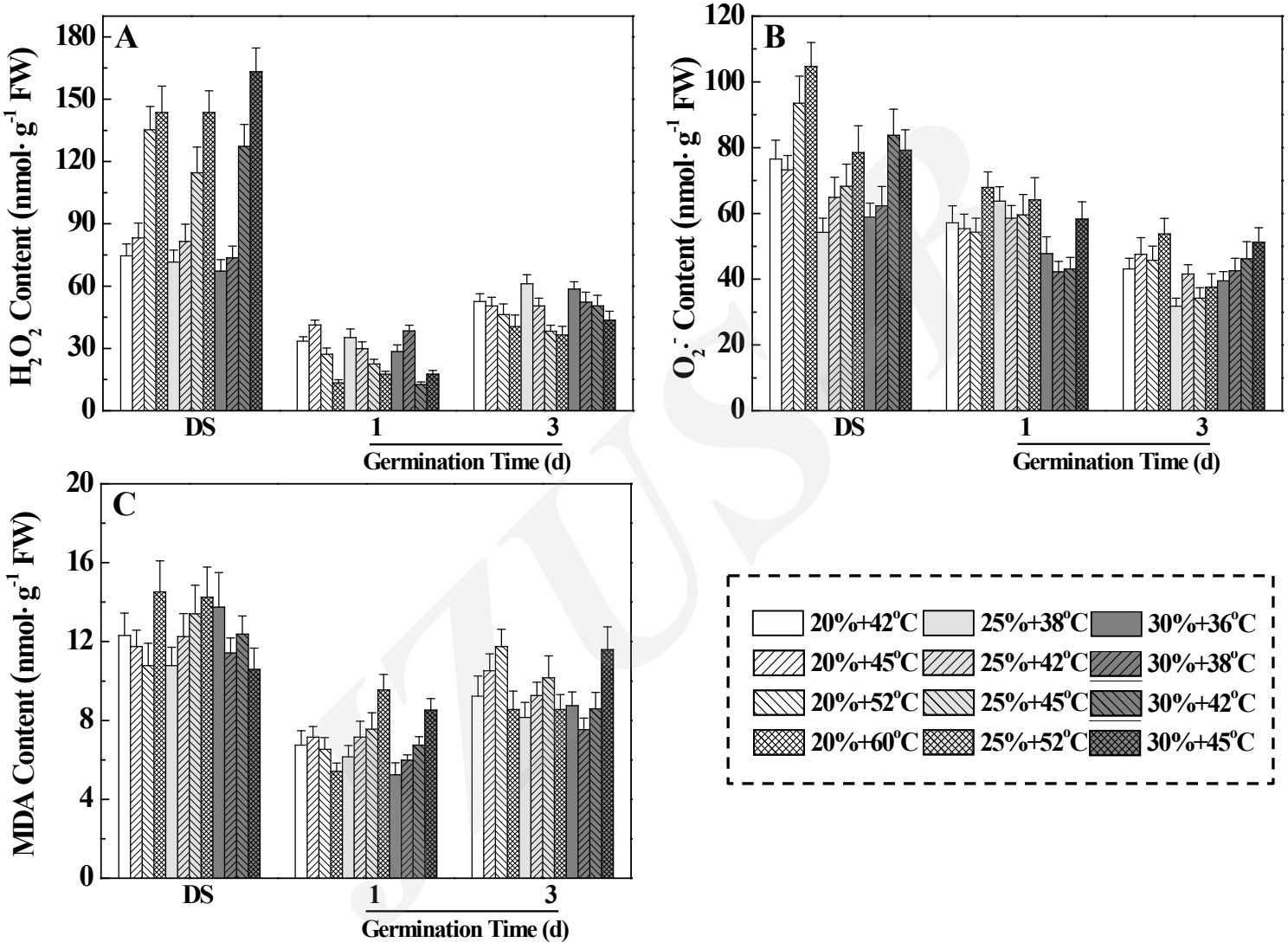

A
H_2O_2 Content (nmol· g^{-1} FW)
180
150
120
90
60
30
0
DS
1
3
Germination Time (d)
B
$O_2^{\cdot-}$ Content (nmol· g^{-1} FW)
120
100
80
60
40
20
0
DS
1
3
Germination Time (d)
C
MDA Content (nmol· g^{-1} FW)
20
16
12
8
4
0
DS
1
3
Germination Time (d)
20%+42°C
25%+38°C
30%+36°C
20%+45°C
25%+42°C
30%+38°C
20%+52°C
25%+45°C
30%+42°C
20%+60°C
25%+52°C
30%+45°C

Fig.4

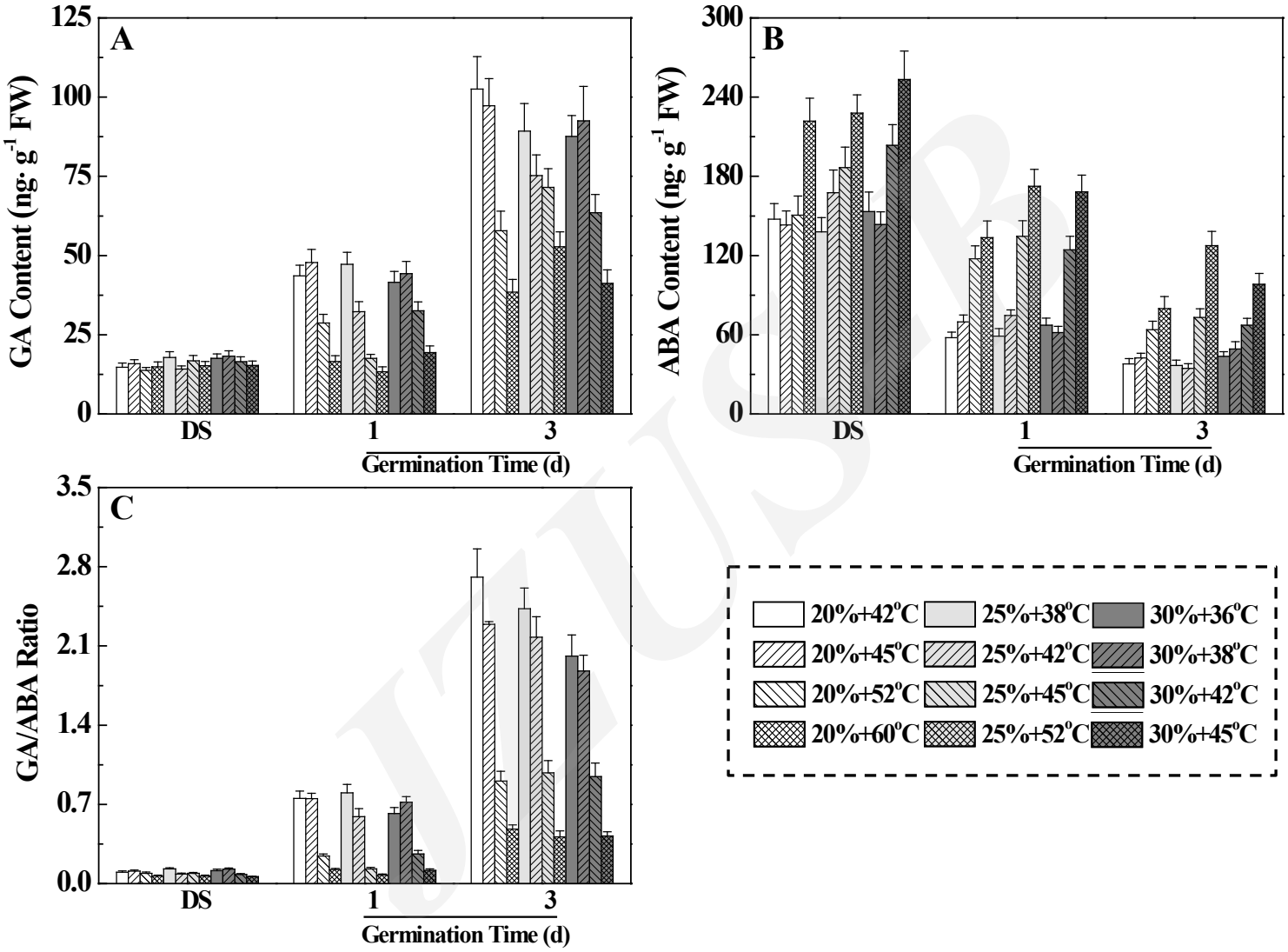
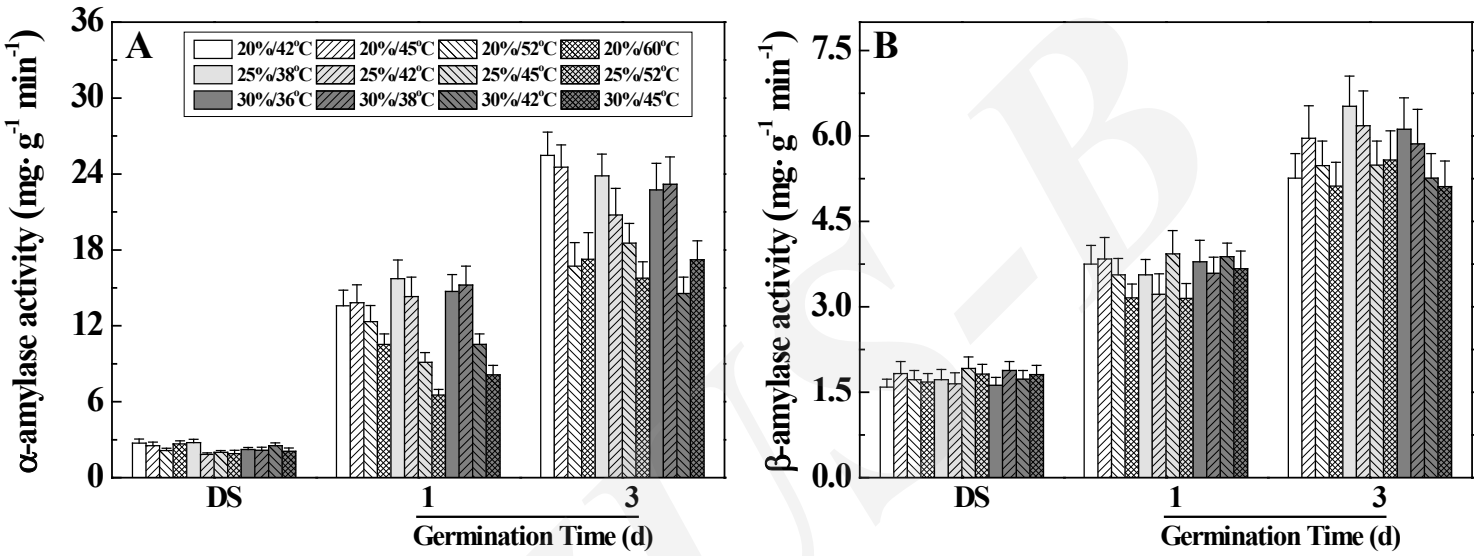

A
GA Content (ng· g-1 FW)
125
100
75
50
25
0
DS
1
3
Germination Time (d)
B
ABA Content (ng· g-1 FW)
300
240
180
120
60
0
DS
1
3
Germination Time (d)
C
GA/ABA Ratio
3.5
2.8
2.1
1.4
0.7
0.0
DS
1
3
Germination Time (d)
20%+42°C
25%+38°C
30%+36°C
20%+45°C
25%+42°C
30%+38°C
20%+52°C
25%+45°C
30%+42°C
20%+60°C
25%+52°C
30%+45°C

Fig.5


A
20%/42°C
20%/45°C
20%/52°C
20%/60°C
25%/38°C
25%/42°C
25%/45°C
25%/52°C
30%/36°C
30%/38°C
30%/42°C
30%/45°C
α-amylase activity (mg· g-1 min-1)
36
30
24
18
12
6
0
DS
1
3
Germination Time (d)
B
β-amylase activity (mg· g-1 min-1)
7.5
6.0
4.5
3.0
1.5
0.0
DS
1
3
Germination Time (d)

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