SCITEPRESS
DIGITAL LIBRARY

- Science and Technology Publications, Lda.

ISBN 978-989-758-437-4

Editors: Nurhayati Nurhayati [1]; Syeik Aftab Udin [2]; Muhammad Asaad [1]; Madya Fatimah Hassan [3]; Sirichai Mongkolkiastri [4]; Marzuki Lubis [1] and Ghassan H. Mardini [5]

Affiliations: [1] Universitas Islam Sumatera Utara, Indonesia ; [2] University Chittagong, Bangladesh ; [3] Penerbit Universiti Sains, Malaysia ; [4] Bangkok University, Thailand ; [5] Qatar University, Qatar

ISBN: 978-989-758-437-4

Conference Link: http://icmr.uisu.ac.id/

Foreword: I am, Professor Dr Ir. Nurhayati, as the chair of the 7th ICMR 2018 would like to express our gratitude to keynote speakers, international reviewers, and committee members of this conference. First, we have achieved the primary goal of the 7th ICMR 2018 which aimed at organizing international event to promote multidisciplinary understanding of the latest research and innovations through discussion, exchange, and sharing among researchers, practitioners, and academicians. Secondly, the conference has been held on September 5-6, 2018, in Medan, North Sumatra Province, Indonesia and hosted by Universitas Islam Sumatera Utara (UISU) the largest and the oldest national university in North Sumatra. The conference is co-organized by Universiti Sains Malaysia, Universitas Syiah Kuala, Universitas Hasanuddin. As you know the ICMR is an annual event which has been jointly organized by, Universitas Syiah Kuala, Universiti Sains Malaysia, Universitas Islam Sumatera Utara and Universitas Hasanuddin, and it was firstly held in 2012. The 7th ICMR 2018 already provided an excellent forum for sharing knowledge and research findings among academicians, professionals, and governments. Speakers had cover all theoretical and practical aspects of Sciences Engineering, Health and Life Science and Social Sciences. Finally, I am happy to say that the 7th ICMR 2018 has made hundred speakers to share and enjoy the mixed culture of North Sumatera with international collaboration. We will meet again in the 8th ICMR 2019 in Universiti of Sains Malaysia, Pulau Pinang, Malaysia. Wish you have the best of you. Medan, September 6th 2018 Prof Dr Ir Nurhayati

Volumes:

Vol. 1 - 978-989-758-437-4

Show 50 papers

The Effect of Heating, Boiling and Acidification Techniques on the Total and Exchangeable Contents of K, Ca, and Mg in Volcanic Ash of Sinabung of North Sumatra
P. 19 - 25
Basyaruddin , Khusrizal and A. Malik
DOI:10.5220/0008881700190025

- **Study of Kaliandra Tree as Source of Primary Energy**
P. 26 - 30
Surya Tarmizi Kasim , Riki Ananda and Fahmi
DOI:10.5220/0008881800260030

- **Image Analysis of Concrete to Detect the Potential of a Sequential Rift**
P. 31 - 35
Fahmi , Suherman and Jhoni Hidayat
DOI:10.5220/0008881900310035

- **Analysis and Design of Wireless Power Transfer**
P. 36 - 40
Syiska Yana , Fahmi and Emil Sinaga
DOI:10.5220/0008882000360040

- **Compares Design of the 3 KW with 350 Watt Electric Motor Cycle**
P. 41 - 45
H. Helmi Rangkuti , Suherman , R. Harahap and Yusmartato
DOI:10.5220/0008882100410045

- **Model of 1d Photonic Crystal Silicon Waveguides by Varying the Lattice Constant in Their Geometry Stucture via Fdtd Method, in the Field of Communication Photonics for Telco Purpose**
P. 46 - 51
Jamilah Husna , Yusniati , Azmi Rizki Lubis , Ahmad Rifqi Md. Zain and Mohd Ambri Mohamed
DOI:10.5220/0008882200460051

-

Analysis Characteristics of Silicon Aluminum Material based on Fracture Period in Torque Test
P. 52 - 56
Junaidi , Soni Hestukoro , Fadly Ahmad Kurniawan , Ahmad Bakhori and Edi Sarman Hasibuan
DOI:10.5220/0008882300520056

- **Effect of Addition Silica Gel from Volcanic Ash of Sinabung Mountains to Tensile Strength on Chitosan Composite Membrane**
P. 57 - 61
Maulida , Lilis Sukeksi , Mara Bangun Harahap , Melva Ginting , Herlinawati Wici and Ghendis Ekawati Ayu
DOI:10.5220/0008886500570061

- **Effect of Mesh Size on Ganoderma Boninense Composite against Tensile Strength, Modulus of Elasticity, and Fractography**
P. 62 - 66
Muhammad Rafiq Yanhar , Ahmad Bakhori , Siti Rahmah Sibuea and Abdul Haris Nasution
DOI:10.5220/0008886600620066

- **Optimization Process for NGL Production in Indonesian Oil and Gas Field**
P. 67 - 72
Sanggono Adisasmito and Ekawati
DOI:10.5220/0008886700670072

- **Evaluation Susceptibility of Equipment against Voltage Sags: Lamp, Contactor and Variable Speed Drive**
P. 73 - 78
Surya Hardi , R. Harahap , Rohana and S. Achmad
DOI:10.5220/0008886800730078

- **Stability Analysis of the SIRS Epidemic Model using the Fifth-order Runge Kutta Method**
P. 79 - 84
Tulus , T. J. Marpaung , D. Destawandi , M. R. Syahputra and Suriati
DOI:10.5220/0008886900790084

-

- **Effect of Types and Application of Organic Ingredients against Soybean Results (Glycine max (L.) Merrill) on Peat Planting medium**
  P. 159 - 164
  Hapsoh , Isna Rahma Dini , Wawan and Nuranti
  DOI:10.5220/0008883501590164

- **The Effectiveness of Bio-decomposer EM-4 on Macro Nutrients in Water Hyacinth Compost (Euchornia Crassipes)**
  P. 165 - 170
  Hikma Yani and Nisrina
  DOI:10.5220/0008883601650170

- **The Cytotoxicity of Paclitaxel Was Smaller than Doxorubicin in T47D Breast Cancer Cell**
  P. 171 - 176
  Irma Yanti Rangkuti
  DOI:10.5220/0010061801710176

- **Factors Affecting the Implementation of Rice-Livestock Integrated Farming System (RLIFS)**
  P. 177 - 181
  Linda Wati , Muhammad Asa'ad , Desi Novita and Muhammad Ilham Riyadh
  DOI:10.5220/0008883801770181

- **Institutional Analysis of Agribusiness Marketing in North Sumatra Agriculture Production Center**
  P. 182 - 187
  Muhammad Ilham Riyadh
  DOI:10.5220/0008887101820187

- **Institutional System and Rice Seed Group Problems in North Sumatra Province**
  P. 188 - 193
  Muhammad Asa'ad , Tri Martial , Surya Dharma and Desi Novita
  DOI:10.5220/0008887201880193

-

P. 268 - 272
Nurin Syakirin Jantan , Zunita Zakaria , Saleha Abdul Aziz and Fuad Matori
DOI:10.5220/0008888602680272

- **Thoughts and Da'wah Activities of Female Islamic Preachers in Medan, Indonesia**
  P. 277 - 283
  Abdullah , Mohammad Hatta , Mukhtaruddin , Muaz Tanjung and Rahmah Fithriani
  DOI:10.5220/0008883902770283

- **Antecedents of Employee Performance of Conventional Taxi Driver in Medan**
  P. 284 - 290
  Anggia Sari Lubis and Sari Wulandari
  DOI:10.5220/0008884002840290

- **Optimizing the Concept of Welfare State and Good Governance in the Prevention of Social Conflict**
  P. 291 - 296
  Arie Kartika , Dessy Agustina Harahap and Boy Iskandar
  DOI:10.5220/0008884102910296

- **Characterization in Andrea Hirata's Novel Sirkus Pohon**
  P. 297 - 303
  Asnani , Pardi , Devy Pratiwy , Safitri Hariani and Sri Wulan
  DOI:10.5220/0008884202970303

- **The Relationship between Money Laundering Law and Criminal Act of Corruption**
  P. 304 - 309
  Budi Bahreisy , Ediwarman and Bismar Nasution
  DOI:10.5220/0008884303040309

-

Exploitation System Model of *Slow and Quick Starter* Clones under *Oldeman* Climate Type

Yayuk Purwaningrum[1], Yenni Asbur[1] and Chairani Hanum[2]
[1]*Department of Agrotechnology, Faculty of Agriculture, Universitas Islam Sumatera Utara, Jalan Karya Wisata Gedung Johor, Medan 20144, Indonesia.*
[2]*Department of Agroecotechnology, Faculty of Agriculture, University Sumatera Utara. Jalan Prof.A.Sofyan No.3 Kampus USU Medan – 2015*

Keywords: Exploitation System, *Oldeman* Climate, *Hevea Brasiliensis*.

Abstract: Slow and quick starter clones were used for long-term productivity stability on rubber plantation. Each clone has different characteristics. Therefore, it is necessary to conduct research on exploitation system according to *Oldeman* climate type in order to increase the latex productivity. The research was conducted in two locations, namely Sungai Putih Experimental Farm, Rubber Research Centre and Sungai Putih Farm, PT. Perkebunan Nusantara III (Persero). Both locations are located in District of Galang, Regency of Deli Serdang on 25 m above sea level with *Ultisol* soil type. Rubber tree material are planting in the year of 1999, with spacing of 2.5m x 5m, clones representing Quick starter K_1 (PB 260) and Slow starter K_2 (BPM1). This research uses primary and secondary data. Primary data is field experiment using Nested Design. Secondary data was obtained from PTPN III Sungai Putih that has the average of monthly rainfall data for 13 years (2002 - 2015). Tapping system was consisted of 2 treatments namely half-spiral downward tapping system (S/2) and upward tapping system (S/2U). The treatments consisted of two levels: P1: *ethepon* 2.5% applied once for 15 days (ET / 15d), P2: gas stimulant applied once and once for 27 days (ETG 27d). Every treatment used 75 trees with girth 65 cm - 70 cm. The results showed that based on *Oldeman* climate type, tapping system S/2U d3 ET/15d is suitable for clone BPM 1 and S/2 d3 ET/15d for clone PB 260.

1 INTRODUCTION

Generally, the area of rubber plantation in North Sumatra, Indonesia is dominated by small farm. The total area of rubber small farm in North Sumatera is 1,127,913.99 hectares, PTPN 375.404,07 hectares, Large National Private Plantation (PBSN) 435,518.90 hectares and Large Foreign Private Plantation (PBSA) is 202,403.60 hectares. The total is 2,141,240,58 hectares (BPS Sumatera Utara, 2017, http://www.sumutprov.go.id).

Generally, small farm still uses old rubber tree (15 years and over). Such condition certainly requires an effort to increase productivity through exploitation system technique.

Slow Starter (SS) clones is characterized by low to moderate metabolic clones where the rate of polyisoprene (latex) formation from carbohydrate (sucrose) from photosynthesis is slow to moderate, while Quick Starter (QS) clones are high metabolic clones in which the process of polyisoprene (latex) formation is faster than SS (Jacob, et al., 1989).

SS clones, among others BPM 1, were selected from crossbreeding between Avro 163 with Avro 308 by the Medan Plantation Research Center, and as recommended clone in 1937. These clones fit in humid to dry areas with relatively moderate growth from TBM to TM, and potentially as a timber producer (Field Handbook, 2005). SS clones have some specific properties such as responsiveness to stimulants, relatively more resistant to exploitation pressures and have a thick recovery bark (Woelan, Sayurandi, and Pasaribu, 2013).

PB clone is the result of crossbreeding selection between PB5/ 51 with PB 49. The most cultivated clones in North Sumatera are clones PB 260. These clones have advantages such as high potential yield, starting to tapped at 5 years. The peak latex

Purwaningrum, Y., Asbur, Y. and Hanum, C.
Exploitation System Model of Slow and Quick Starter Clones under Oldeman Climate Type.
DOI: 10.5220/0008888202500253
In *Proceedings of the 7th International Conference on Multidisciplinary Research (ICMR 2018)* - , pages 250-253
ISBN: 978-989-758-437-4

production for QS clones is at the beginning of tapping (7-9 years). The average of latex production can be achieved 2,700-2800 $kgha^{-1}$. In other hand, SS clones reach the peak latex production at 12-13 years after planting. Clone PB 260 have thinner bar than GT 1 and susceptible to Tapping Panel Dryness (Siregar et al., 2012).

Climate factor has important role to support the growth and production of plants. One of the important climatic factors is rainfall. (Estiningtyas, et al., 2000). In addition to sunlight, rainfall is determinant for latex productivity (Gireesh et al., 2011). Rainfall affects fall and flowering of the rubber clones. In the dry season, the rubber tree will fall the leaves. Leaf fall will affect the stability of latex productivity (Meenattoor et al., 1989; Soman, et al, 1995).

Exploitation intensity is mainly determined by the length of the incision, tapping frequency, and stimulants application. All these factors interact with clones, tree age and environment, so that each clone has a specific system of exploitation (Kuswanhadi et al., 2009; Sumarmadji et al., 2011).

The choice of exploitation system technique or as an evaluation tool for latex productivity is largely determined by rainfall (Sumarmadji, 2006, Siregar, 2014 and Junaidi, et al., 2015). The average rainfall for 13 years (2002-2015) in Deli Serdang, North Sumatra, according to *Oldeman* climate type is E1 which divided into three (3) criteria ie wet month (WM) with average rainfall > 200 mm on September - November, humid month (HM) with average rainfall 100-200mm in April-August-December and dry month (DM) with average rainfall < 100mm in January-March (Table 1).

Table 1: Average rainfall for 13 years (2002 -2015) in rubber plantation area in Deli Serdang North Sumatra according to Oldeman climate type.

No	Rainfall	Months	Criteria
1	>200 mm	September - November	WM
2	100-200mm	April - August - December	HM
3	<100 mm	January - March	DM

The aim of this study is to obtain suitable exploitation system under *Oldeman* climate type which can improve productivity of slow starter (BPM 1) and quick starter (PB 260) clones.

2 MATERIALS AND METHODS

The research was conducted in two locations, namely Sungai Putih Experimental Farm, Rubber Research Centre and Sungai Putih Farm, PT. Perkebunan Nusantara III (Persero). Both locations are located in District of Galang, Regency of Deli Serdang on 25 m above sea level with Ultisol soil type. Rubber tree material are planting year 1999, with spacing of 2.5m x 5m, clones representing Quick stater K_1 (PB 260) and Slow starter K_2 (BPM1).

This research uses primary and secondary data. Primary data is field experiment using Nested Design (Suhendry 1998). Secondary data was obtained from PTPN III Sungai Putih that is average of monthly rainfall data for 13 years (2002 - 2015). *Oldeman* classification used to establish wet, dry and humid months. The amount of rainfall in the wet month is > 200mm, humid month is 100-200mm, and dry month is <100.

Tapping system was consisted of 2 treatments namely half-spiral downward tapping system (S/2) and upward tapping system (S/2U).

The treatments consisted of two levels namely P_1 *ethepon* 2.5% applied once for 15 days (ET2.5 15d), P_2 gas stimulant applied once and once for 27 days (ETG 27d). Every treatment used 75 trees with girth 65 cm - 70 cm.

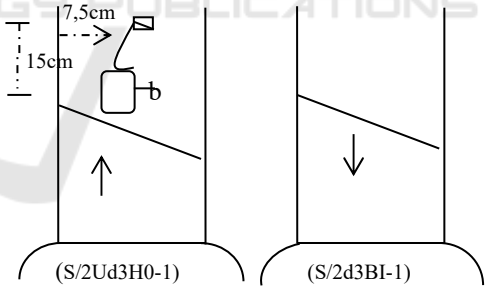

Figure 1: Gas stimulant applicator layout on each tapping system.

3 RESULTS AND DISCUSSION

According to the results of latex production and physiology analysis, the treatment of exploitation system on clone BPM 1 and PB 260 is different both in wet, humid and dry months. The sucrose content of BPM 1 was higher in humid month and higher than PB 260 (Table 2). This is due to different characteristics of each clone (Sumarmadji, 2006).

Clone BPM 1 is SS with slow –moderate metabolism with the peak of latex yield at 12-14 years old (at the time of the study). Such condition causes the latex sucrose of BPM 1 is higher. Clones PB 260 is QS which classified as fast metabolism clones. The peak of latex yield is at the age of 6 - 8 years and at the time of the research has decreased (Sumarmadji, 2008). This is what causes BPM 1 has higher latex sucrose. Herlinawati and Kuswanhadi, (Herlinawati and Kuswanhadi, 2017) state that high production of latex is due to increased plant metabolism such as latex physiology, sucrose content and Pi levels (Table 2).

Rainfall data in Sei Putih farm PTPN III shows that the average rainfall in humid month is 152.04 mm/month with the number of rainy days is 5 days/month. This indicates that the rubber tree in humid months is in sufficient water condition. In humid months, the rubber tree show good ability to photosynthesize, especially in the canopy and leaf (Gunasekera et al., 2013). Kumari and Asthir (Kumari and Asthir, 2016) confirm that the sucrose content and Pi (bioactivity of sucrose) is increases. In sufficient water conditions, the leaves have formed perfectly, the sucrose will be immediately transported elsewhere, and not disturb the balance of sucrose in plant body. Adequate water content leads to an osmotic equilibrium in rubber cells, which imply to the size of plant turgor pressure (Chantuma, et al., 2009). The process of plant metabolism highly depends on the turgor pressure and the process will take place at the maximum turgor pressure. Changes in turgor pressure to minimal (with low water content in the plant body) result in decreased rate of metabolism (Jacob et al., 1989). This study found that the average of sucrose level is higher in BPM 1 than PB 260, either in wet, dry and humid months. This is due to the increase of Pi content as shown by high Pi content in PB 260 (Table 2) which consistent with low levels of sucrose. PB 260 is QS clone with high metabolism so the sucrose content is lower than BPM 1. This is due to active Pi level as energy to converts sucrose to latex. Pi level is low because already used to support the process of metabolism which is related to latex formation (Herlinawaty and Kuswanhadi, 2017). In contrast, BPM 1 is SS with low metabolism, high sucrose and Pi levels. The clones are slow to process sucrose to latex so have high sucrose content and Pi. This finding confirmed by Kuswanhadi, Sumarmadji, Karyudi, and Siregar, THS (Kuswanhadi, Sumarmadji, Karyudi, and Siregar, THS, 2009) which states that the SS clones has firm stems growth and thick recovery bark.

4 CONCLUSIONS

Suitable exploitation systems under *Oldeman* climate type for PB 260 in wet, humid and dry months is S2 d3 ET/15d and BPM 1 is S2U d3 ET/15d. During one year of testing, all treatments of exploitation system on PB 260 and BPM 1 have not shown excessive stress as indicated by thiol levels in the range 0.30 - 0.48.

ACKNOWLEDGEMENTS

The research was funded by the Ministry of Research, Technology and Higher Education, the Republic of Indonesia through National Competitive Grant Research, Ministry of Research, Technology and Higher Education. The authors would like to thank to the Sungei Putih Research Centre, Rubber Research Centre and PT. Perkebunan Nusantara III (Persero).

REFERENCES

(BPS Sumatera Utara, 2017 http://www.sumutprov.go.id).

Boerhendhy, I dan K. Amypalupy, 2010. Optimalisasi produktivitas karet melalui penggunaan bahan tanaman, pemeliharaan, sistem eksploitasi dan peremajaan tanaman. Jurnal Litbang Pertanian, 30(1):27.

Dische, Z.M. 1972. Carbohydrate Chem. Acad.Press. 1:488.

Estiningtyas, W. G. Irianto, dan I. Amin. 2000. Perhitungan Neraca Air Tanah Dengan Model SARRA di Nusa Tenggara Barat. Jurnal Ilmu -Ilmu Pertanian 1(1): 60 - 69.

Gireesh, T., S. Raj., Kavita, K. Midin., and V. C. Mercykutty. 2011. Rubber yield of certain clones of hevea brasiliensis and its relationship with climate variables. Nat.Rubb Res. 24(1): 54 - 60.

Gunasekera, H.K.L., W.A.J.M. De Costas and A. Nugawela. 2013. Canopy photosynthetic capacity and light response paramter of *Rubber Hevea Brasiliensis* with rerence *to explotation.Curr.Agri.Res.J. 1 (1):1-12.*

Jacob, J.L., Prevot, J.C. dan Kekwick, R.G.O. 1989. General metabolism of *Hevea brasiliensis* latex (With the Exception of Isoprenoid Anabolism). Plant Physiolgy of Rubber Tree Latex. Boca Raton, CRC Press 3(1): 102 – 134.

Junaidi, Yan Riska V Sembiring dan Tumpal HS Siregar, 2015. Pengaruh perbedaan letak geografi terhadappola produksi tahunan tanaman karet:faktor penyebab perbedaan pola produksi tahunan tanaman karet. Warta Perkaretan 2015, 34 (2), 137-146.

Kumari, M dan Asthir, B. 2016. Transformation of sucrose to starch and protein in rice leaves and grain under two establishmnet methods. Science Direct. Rice Science 2016. 23 (5):255-256.

Kuswanhadi., Sumarmadji., Karyudi., dan Siregar, THS (2009). Optimasi produksi klon karet melalui sistem eksploitasi berdasarkan metabolisme lateks. *Lokakarya nasional pemuliaan Tanaman Karet 2009*. Batam Indonesia: Pusat Penelitian Karet.

Leaflet Pegangan untuk di Lapangan, 2005. Smallholder Rubber Agroforestry System.

Meenattoor, R.J., Krishnakumar, A.K., Sinha, R.R., and Poty, S.N. (1989). Flowering pattern of Hevea clones in Tripura. *Indian Journal of Natural Rubber Research*, 2(2), 139-142.

McMullen, A.I.1960. Thiols of low molecular weight in *Hevea brasiliesnsis* latex. Biochem.Biophys. Acta 41: 152-154.

Siregar, T.H.S., Junaidi, U., Sumardji. 2012. Perkembangan Implementasi Sistem Eksploitasi Tanaman Karet Tipologi Klonal di Perusahaan Besar Negara. Balai *Warta Pusat Penelitian karet.*

Siregar, THS, 2014. Seasonal Patterns of Yield and Shed Leaves of PB 260 and RRIC 100 Clones. Indonesian J. Nat. Rubb. Res. 2014, 32 (2): 88 – 97.

Soman, T.A., Nazeer, M.A., Annamma, Y., Varghese, Licy, J., and Sethuraj, M.R. (1995). *Wintering pattern and floral biology of Hevea clone. Indian Journal of natural Rubber Reseach, 8 (2), 4-99.*

Sumarmadji, Karyudi, dan Siregar., T.H.S. 2006. Rekomendasi Sistem Eksploitasi pada Klon *Quick Starter* dan *Slow Starter* serta Penggunaan Irisan Ganda untuk Meningkatkan Produktivitas Tanaman Karet. Prosiding Lokakarya Nasional Budi Daya Tanaman Karet, Medan 4−6 September 2006. Balai Penelitian Sungei Putih, Pusat Penelitian Karet, Medan. hlm. 169−18.

Sumarmadji, Atminingsih dan Karyudi. 2008. Konsep penyadapan klon *slow stater* dengan stimulan gas etilen dan irisan pendek ke arah atas sejak awal sadap. Prosiding Lokakarya Agribisnis Karet 2008, Yogyakarta 20 – 21 Agustus 2008. Balai Penelitian Sungei Putih, Pusat Penelitian Karet, Medan. hlm. 1375 - 386.

Sumarmadji. 2011. Sistem Eksploitasi Tanaman berdasarkan Tipologi Klon (QS dan SS) dan Alternatif Sistem Eksploitasi lainnya (Expex-315 dan SS-CUT). Workshop Penggunaan Klon Unggul Baru dan Sistem Eksploitasi Tanaman Karet yang Tepat dalam Menghadapi Peningkatan Ka*et al*am Dunia. Medan 6 – 9 Desember 2011.

Taussky, H.H. dan Shorr , E.1953. A micro colorimetric methods for the determination of inorganic phosphorus. Jurnal Biochemycal. 202: 675-685.

Woelan, S., Sayurandi, dan S. A. Pasaribu. 2013. Karakter fisiologi, anatomi, pertumbuhan dan hasil lateks klon IRR Seri 300. Jurnal Penelitian Karet 31(1): 1-12.

APPENDIX

Table 2: Latex Production and Physiology of clones BPM 1 and PB 260 with treatment of exploitation system by wet month (WM), dry month (DM) and Humid month (HM).

Treatment	Month											
	Sucrose (mm)			Pi (mm)			Thiol (mm)			Production (g/p/s)		
	BB	BL	BK	BB	BL	BK	BB	BL	BK	BB	BL	BK
BPM1 S/2d3 ET/15d	6.75 c	6.49 b	6.72 a	21.85 c	21.03 bc	20.34 de	0.28 b	0.31 b	0.36 d	30.72 c	13.96 b	21.79 c
BPM1 S/2d3 ETG/27d	9.18 ab	6.58 b	4.37 b	28.02 b	25.24 a	18.99 e	0.34 b	0.41 ab	0.46 b	29.18 c	13.59 b	22.20 c
BPM1 S/2U d3 ET/15d	7.91 bc	9.60 a	7.41 a	27.86 b	23.14 ab	24.63 bc	0.29 b	0.35 b	0.41 c	72.35 a	27.83 a	51.75 a
BPM1 S/2Ud3 ETG/27d	9.43 a	10.2 3 a	7.61 a	31.35 a	23.65 ab	28.11 a	0.32 b	0.42 ab	0.46 b	56.28 b	26.50 a	41.79 b
PB260 S/2d3 ET/15d	3.82 d	7.71 b	2.62 cd	23.68 c	23.76 ab	26.05 ab	0.46 b	0.49 a	0.52 a	72.53 a	27.83 a	51.75 a
PB260 S/2d3 ETG/27d	3.39 de	2.96 c	1.49 d	26.83 b	24.84 a	25.53 abc	0.45 b	0.50 a	0.48 b	56.28 b	26.50 a	41.79 b
PB260 S/2U d3 ET/15d	2.03 e	2.87 c	2.18 cd	23.73 c	19.22 c	26.05 ab	0.47 b	0.48 a	0.47 b	29.18 c	13.59 b	22.20 c
PB260 S/2Ud3 ETG/27d	3.06 de	3.59 c	3.62 bc	21.35 c	19.44 c	17.83 e	0.78 a	0.47 a	0.42 c	30.18 c	13.96 b	21.79 c