

ISI KANDUNGAN

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LAPORAN PUSAT KECEMERLANGAN SMART FARMING TECHNOLOGY RESEARCH CENTRE (SFTRC)

1. PENGENALAN

1.1 Sejarah

SFTRC sebelum ini dikenali dengan nama Makmal Teknologi Perladangan Pintar yang merupakan salah sebuah makmal di Institut Teknologi Maju (ITMA, UPM). Penubuhan SFTRC telah dirasmikan pada bulan Januari 2012 di bawah naungan Fakulti Kejuruteraan, UPM selepas penstrukturan semula ITMA pada tahun 2011. Pegawai penyelidik SFTRC kebanyakannya adalah terdiri daripada ahli-ahli akademik dari Jabatan Kejuruteraan Biologi dan Pertanian, Fakulti Kejuruteraan, UPM. Hasil daripada kerja-kerja penyelidikan dan pembangunan oleh staf dan pelajar siswazah SFTRC telah diterbitkan dalam bentuk makalah jurnal, buku, prosiding persidangan, paten dan hak cipta.

1.2 Visi & Misi

Visi

- ✓ Untuk menghasilkan penyelidik Teknologi Perladangan Pintar yang berkualiti bagi negara membangun.

Misi

- ✓ Untuk menjadi peneraju serantau yang berpandangan jauh serta menyumbang kepada perkembangan bidang Perladangan Pintar.

1.3 Senarai Staf

Staf pentadbiran terdiri daripada tiga orang Pegawai Penyelidik (RO), seorang Felo Penyelidik, seorang juruteknik, dan sembilan orang penyelidik lain yang membantu kerja-kerja pentadbiran dan penyelidikan di SFTRC.

Bil.	Nama	Jawatan
1.	Prof Ir Dr Mohd Amin Mohd Soom (Soil and Water Engineering)	Ketua
2.	Ezrin Mohd Husin (Soil and Water Engineering)	Pegawai Penyelidik
3.	Muhamad Saufi Mohd Kassim (Agricultural Robotics)	Pegawai Penyelidik
4.	Azhareensyah Aman (Control Engineering)	Pegawai Penyelidik
5.	Azlan Othman	Juruteknik
6.	Prof Dr Md Abul Hossain Molla	Felo Penyelidik
7.	Prof Ir Dr Wan Ishak Wan Ismail (Agricultural Automation and Robotics)	Penyelidik
8.	Prof Ir Dr Desa Ahmad (Machine Design)	Penyelidik
9.	Assoc Professor Ir Dr Azmi Dato' Yahya (Machine Design)	Penyelidik
10.	Assoc Professor Dr Abdul Rashid Mohamed Shariff (GIS & Precision Farming)	Penyelidik
11.	Assoc Professor Dr Hasfalina Che Man (Environmental Eng)	Penyelidik
12.	Dr Aimrun Wayayok (Senior Lecturer, Precision Farming)	Penyelidik
13.	Dr Md Rowshon Kamal (Senior Lecturer, Irrigation Engineering)	Penyelidik
14.	Dr Siti Khairunniza Bejo (Senior Lecturer, Image Processing)	Penyelidik

1 5.	Dr Samsuzana Abdul Aziz (Senior Lecturer, Electronics in Agriculture)	Penyelidik
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2. PENYELIDIKAN & PERUNDINGAN

2.1 Senarai Penyelidik

Sebagai sebuah Centre of Excellence, SFTRC diterajui oleh lima orang Penyelidik Utama (*KeyResearchers*) iaitu

- 1) Prof Ir Dr Mohd Amin Mohd Soom (Soil and Water Engineering)
- 2) Prof Ir Dr Wan Ishak Wan Ismail (Agricultural Automation and Robotics)
- 3) Prof Ir Dr Desa Ahmad (Machine Design)
- 4) Dr Aimrun Wayayok (Senior Lecturer, Precision Farming)
- 5) Dr Md Rowshon Kamal (Senior Lecturer, Irrigation Engineering)

2.2 Senarai Geran Penyelidikan

Bil.	Ketua Penyelidik	Nama Geran Penyelidikan	Tempoh	Jenis Geran	Jumlah (RM)
1.	Prof. Ir. Dr. Desa Ahmad	Increased Production Efficiency in Smallholder Kenaf Production Systems for Specific Industrial Applications.	2009-2012	Common Fund for Commodities (CFC, Amsterdam, Netherlands)	435,413.60
2.	Prof. Ir. Dr. Desa Ahmad	Design and Development of an Integrated Rotary Slasher-Digger for Harvesting Sweetpotatos	2 Disember 2013 – 1 Disember 2015	GP-Pembangunan Inovasi	185,200
3.	Prof. Ir. Dr. Mohd Amin Mohd Soom	Estimating Consumptive Water Use in Paddy Field using Satellite Data	April 2011- Mac 2013	RUGS	15,000
4.	Prof. Ir. Dr. Mohd Amin Mohd Soom	Quantification of Mid-Season Nitrogen Status and Yield of Rice by Remotely Sensed Data	April 2011- Mac 2013	RUGS	15,000
5.	Prof. Ir. Dr. Mohd Amin Mohd Soom	Precision Farming of Oil Palm. In Collaboration with Japanese Space Exploration Agency (JAXA)	Januari 2012- Disember 2013	JAXA & RUGS	56,000
6.	Prof. Ir. Dr. Wan Ishak Wan Ismail	Development of Oil Palm Fresh Fruit Bunch (FFB) Growth Model to Support Site Specific Harvesting	Januari 2013- Januari 2015	RUGS	68,500
7.	Prof. Ir. Dr. Wan Ishak Wan Ismail	Development of Self Propel Rotary Cutter for Oil Palm Harvesting	Mac 2013- Februari 2015	United Malacca Plantation Berhad (Swasta)	190,500
8.	Prof. Ir. Dr. Wan Ishak Wan Ismail	Camera Vision Based Solution to Paddy Maturity Date, Yield and Loses	Januari 2012- Januari 2013	RUGS	15,000
9.	Prof. Ir. Dr. Wan Ishak Wan Ismail	Development of Automation Control System for Sea Cucumber Production	April 2011 - April 2013	RUGS	15,000
10.	Dr. Samsuzana	Dielectric Spectroscopy Measurement of	Disember	FRGS	20,500

	Abd. Aziz	Labisia Pumila (Kacip Fatimah) Water Content and Phytochemical Content	2013		
11.	Dr. Aimrun Wayayok	Design and Development of SRI Single Seedling Nursery Tray and Transplanter	September 2012- Ogos 2014	RUGS	87,000
12.	Dr. Aimrun Wayayok	Utilization of Optimum Potassium and Micronutrient Contents to Improve Kenaf Fiber Quality	November 2013 - Oktober 2015	GP-IPS	15,000
13	Dr. Aimrun Wayayok	Development of a Risk Map Model for Some Selected Pests in Rice Farming using Remote Sensing	September 2012- Ogos 2014	RUGS	15,000
14.	Dr. MD Rowshon Kamal	Development and Application of Climate-Smart DSS for on-Farm Real-Time Irrigation Scheduling and Water Allocation Strategies in Paddy	November 2013 - Oktober 2015	GP-Individu Berprestasi Tinggi	98,000
15.	Dr. MD Rowshon Kamal	Dry Spells Analysis for Water Shortage and Allocation Scenarios for Paddy with Climate Change	Disember 2013	FRGS	81,000
16.	Muhd Saufi Mohd Kassim	Vision System for Oil Palm Rows Recognition for Mobile Robot Guidance	Oktober 2012- September 2014	RUGS	28,000
17.	Ezrin Mohd Husin	Development of Rapid Fertilizer Application System for Oil Palm Plantation using Electrical Conductivity Sensor	September 2012- Ogos 2014	RUGS	58,000
18.	Ezrin Mohd Husin	Relationship of FFB Quality at the Gate against Its Soil Nutrient	Julai 2012- Jun 2017	LRGS	190,532
19.	Azhareensyah Aman	Development of a Model for Soil Organic Matter via Image Processing	April 2011- April 2014	RUGS	30,000
				Jumlah Keseluruhan (RM)	1,618,645.60

3. PENGLIBATAN DENGAN AGENSI LUAR

3.1 Kerjasama Dengan Sektor Awam

1. Bahagian Pengairan dan Saliran Pertanian (BPSP), Kementerian Pertanian dan Industri Asas Tani, Malaysia. Projek MOU UPM-BPSP. Projek : “Pengurusan Air Sawah Padi”. (2008-sekarang).
2. Bahagian Pengurusan Tanah, Kementerian Pertanian dan Industri Asas Tani, Malaysia. Projek Pertanian Presis Padi (2008-sekarang).
3. **Prof. Ir. Dr. Wan Ishak Wan Ismail:**
 - Kursus Pengendalian dan Penyelenggaraan Pam Air di Ladang- FELDA Technoplant.

3.2 Kerjasama Dengan Pihak Industri

1. PIDMAMS Smartfarming Sdn Bhd. Projek: “Demonstrator Application of Community-based Paddy Precision Farming using AgriGRID” (2010-2013)

3.3 Kerjasama Dengan Pihak Antarabangsa

1. Japan Aerospace Exploration Agency – Joint Experiment in AORWS on GNSS. (2012-2013)
2. **Prof. Madya Dr. Abdul Rashid M. Shariff:**
 - Agricultural Machinery Management Course- Royal Court, Oman
 - Organic Compost Processing Course- Royal Court, Oman

4. PENERBITAN

4.1 Jurnal

1. Abubakar Sadiq Abdullahi, Mohammad Amin Mohammad Soom, Desa Ahmad and Abdul Rashid Mohamed Shariff (2013). *Characterization Of rice (Oryza sativa) evapotranspiration Using Micro Paddy Lysimeter and Class “A” Pan in Tropical Environment. Australian Journal of Crop Science, AJCS 7 (5):650-658* Cited. *Impact Factor 1.632. (CIJ)*
2. Solomon Musa Dauda, Ahmad Desa, Khalina Abdan, Othman Jamarei (2013). *Performance evaluation of a tractor mounted kenaf harvesting machine. Academic Research Journal Vol.4, No.2, March 2013. Impact factor 0.257. (CIJ)*
3. Ahmad, D., Jamarei, O., Sulaiman, S., Fashina, A.B. and Akande, F.B. (2013). *Modeling of motion resistance ratios of pneumatic and rigid bicycle wheels. Pertanika J. Sci. & Technol. 21 (1):59-74. (CIJ)*
4. Amer N. N. Kakahy, D. Ahmad, MD. Akhir, S. Sulaiman and Ishak A. (2013). *Effects of feeding angles and cutting speeds of a mower knife with serrated edges on the pulverization of sweet potato vines. Advanced Materials Research Vol.626:260-264. (CIJ)*
5. A. S. Abdullahi, D. Ahmad, M. S. M. Amin and W. Aimrun (2013). *Spatial and temporal aspects of evapotranspiration in Tanjung Karang paddy field, Peninsular Malaysia. International Journal of Science,*

- Engineering and technology research (IJSETR), Volume 2, Issue 2. February, 2013:473-479. Impact factor 1.4. (CIJ)*
6. Noor Hasmiza Harun, Norhisam Misron, Roslina Mohd Sidek, Ishak Aris, Desa Ahmad, Hiroyuki Wakiwaka and Kuniyoshi Tashiro (2013). *Investigation on a novel inductive concept frequency technique for the grading of oil palm fresh fruit bunches. SENSORS, 13, 2013, 2254-2266 Impact factor 1.953. (CIJ)*
 7. Amer N. N. Kakahy, D. Ahmad, MD. Akhir, S. Sulaiman and A. Ishak (2013). *Effects of Cutting Speeds and Moisture Content on Grass Chopping (Pulverizing). Advanced Science Letters. Cited. Volume 19, issue 9, 2533-2535, Impact factor 1.253. (CIJ)*
 8. Amer N. N. Kakahy, D. Ahmad, , MD. Akhir, S. Sulaiman, Ishak A. (2013). *Effects of Knife Shapes and Cutting Speeds of a Mower on the Percentage Pulverization of Sweet Potato Vine. 2013 4th International Conference on Information Technology for Manufacturing Systems (ITMS 2013). August 28-29, 2013, Auckland, New Zealand. <http://www.itms-conf.net/>. Applied Mechanics and Materials Vol. 421 in 2013. Information Technology for Manufacturing Systems IV. (CIJ)*
 9. Muhamad Saufi Mohd Kassim, Wan Ishak Wan Ismail and Lim Ho Teik. (2013) *Oil Palm Fruit Classifications by using Near Infrared Images. Research Journal of Applied Sciences, Engineering and Technology, Maxwell Scientific Organization- Accepted 2013. (CIJ)*
 10. Shamshiri, R. and W.I.W. Ismail, 2013. *Exploring GPS data for operational analysis of farm machinery. Research Journal of Applied Sciences, Engineering and Technology. 5(12): 3281-3286. (CIJ)*
 11. Shamshiri, R. and W.I.W. Ismail, 2013. *Design and simulation of control systems for a field survey mobile robot platform. Research Journal of Applied Sciences, Engineering and Technology. 6(13): 2307-2315. (CIJ)*
 12. Shamshiri, R. and W.I.W. Ismail, 2013. *Design and analysis of full-state feedback controller for a tractor active suspension: implications for crop yield. Int. J. Agric. Biol., 15: 909-914. (CIJ)*
 13. Shamshiri, R. and W.I.W. Ismail, 2013. *Investigation of climate control techniques for tropical lowland greenhouses in Malaysia. Journal of Applied Sciences. 13(9): 1-6. DOI:10.3923/jas.2013. (CIJ)*
 14. Shamshiri, R., and W.I. Wan Ismail. 2013. *Implementation of Galerkin's method and modal analysis for unforced vibration response of a tractor suspension model. Research Journal of Applied Sciences, Engineering and Technology. In press, Vol. 7(1). (CIJ)*
 15. Shamshiri, R., and W.I. Wan Ismail. 2013. *A comprehensive comparison between wave propagation and heat distribution via analytical solutions and computer simulations. Research Journal of Applied Sciences, Engineering and Technology. In press, Vol. 7(1). (CIJ)*
 16. Shamshiri, R. and W.I.W. Ismail, 2013. *A Review of Greenhouse Climate Control and Automation Systems in Tropical Regions. Journal of Agricultural science and application. Vol. 2(3): 175-182. ISSN: 2227-6475. (CIJ)*
 17. Shamshiri, R., and W.I. Wan Ismail. 2013. *Data Acquisition for Monitoring Vapor Pressure Deficit in a Tropical lowland Shelter-house Plant Production. Research Journal of Applied Sciences, Engineering and Technology. Accepted on September 16, 2013. (CIJ)*
 18. Wan Ishak. W.I., R.M. Hudzari and M.Y.Tan. (2013). *Development of Automation and Control Design System for Lowland Tropical Greenhouses. Pertanika Journal of Science and Technology. ISSN: 0128-7680 2013 Universiti Putra Malaysia Press. 21(1): 357-366 (2013). (CIJ)*

19. Muhammad Rizuwan Yahya, Mohd Hudzari Hj Razali, Che Abdullah Abu Bakar, Wan Ishak Wan Ismail, Wan Musa Wan Muda, Nashriyah Mat and Abd. Jamil Zakaria. (2013). *Automatic Alkaloid Removal System*. *Pakistan Journal of Biological Sciences*, 2013. ISSN 1028 – 8880 /DOI: 10.3923/pjbs. 2013 © 2013. Asian Network for Scientific Information. Pg 1 – 5. (CIJ)
20. Mohd Hudzari Hj Razali, Wan Ishak Wan Ismail, Mohd Rokli Hizra Ramli, Muhamad Azhar A Wahid and Abdul Aziz Abdullah (2013). *Engine Revolution per Minute Estimation Conversion for Field Experiment in Farm Mechanization Training*. *Journal of Modeling, Simulation, Identification and Control*. 2013 1: 51-56. Columbia International Publishing. Doi:10.7726/jmsic.2013.1004. (CIJ)
21. Mohammed S. Nusari, Mohd A. M. Soom, Thamer A. Mohammad, Abdul H. Ghazali, Aimrun Wayayok and Mohamed A. M. Zawawi. 2013. *Assessment of seawater intrusion in Langat basin, Malaysia*. 2013. *Proceedings of the ICE - Water Management*. Volume 166 Issue 9: 501-515. ISSN : 1741-7589 (IF=0.602). (CIJ)
22. Saberioon M. M., M. S. M. Amin, W. Aimrun, A. R. Anuar and A. Gholizadeh. 2013. *Multi-Spectral Images Tetracam Agriculture Digital Camera to Estimate Nitrogen and Grain Yield of Rice at Different Growth Stages*. *The Philippine Agricultural Scientist*, 96(1), pp 108–112. ISSN: 0031-7454 (IF=0.333). (CIJ)
23. Hudzari R.M., W. Aimrun, M.A.H.A. Ssomad, M.S. Norazean. 2013. *Application of Geographical Information System for Farm Mechanization Education and Training*. *Scientific Journal of Pure and Applied Sciences*. Vol. 2(4): 196-203. ISSN 2322-2956. (CIJ)
- 24.** Mohammad Mehdi Saberioon, Mohd. Soom Mohd. Amin, Wayayok Aimrun, Asa Gholizadeh and Anuar Abd. Rahim Anuar. 2013. *Assessment of colour indices derived from conventional digital camera for determining nitrogen status in rice plants*. *Journal of Food, Agriculture & Environment Vol.11 (2)*, 655-662. WFL Publisher. ISSN: 1459-0255 (IF=0.517). (CIJ)
25. Ezrin Mohd Husin, Mohd Amin Mohd Soom, Aimrun Wayayok and Siti Khairuniza Bejo, 2013. *Development of On-The-Go Soil Nitrogen Mapping System for Site Specific Management*. *Journal of The Institution of Engineers, Malaysia*. June 2013. Vol. 74, No.1. (CIJ)
26. Ranya Elsheikh, Abdul Rashid B. Mohamed Shariff, Fazel Amiri, Noordin Ahmad, Siva Kumar Balasundram, Mohd Amin Mohd Soom, 2013. *Agriculture Land Suitability Evaluator (ALSE): A Decision and Planning Support Tool for Tropical and Subtropical Crops*. *Computers and Electronics in Agriculture*. Vol. 93, 98-110. ISSN: 0168-1699. . Impact factor 1.846. (CIJ)
27. Fazel Amiri, Abdul Rashid bin Mohamed Shariff, Taybeh Tabatabaie, Biswajeet Pradhan, 2013. *A Geospatial Model for the Optimization Grazing Management in Semi-Arid Rangeland of Iran*. *Arabian Journal of Geosciences*. Vol. 6. (1), 1-14. ISSN: 1866-7511. . Impact factor 1.141. (CIJ)
28. Meftah Salem M. Alfatni, Abdul Rashid Mohamed Sharif, Mohd Zaid Abdullah, Mohammad Hamiruce B. Marhaban, Osama Ben Saaed, 2013. *The Application of Internal Grading System Technologies for Agricultural Products – Review*. *Journal of Food Engineering*. Vol. 116 (3), 703-725. ISSN: 0260-8774. . Impact factor 2.276. (CIJ)
29. Tajudeen Abiodun Ishola, Azmi Yahya, Abdul Rashid Mohammed Shariff, Samsuzana Abd Aziz & Chow Syh Chuan, 2013. *Effect of Operational Variables on Rotary Valve Metering System for a Variable Rate Technology Fertilizer Applicator for Oil Palm*. *Journal of Applied Sciences*. Vol. 13(3): 479-484. ISSN: 1812-5654. (CIJ)

30. Saeed, Osama Mohamed Ben, Shariff, Abdul Rashid Mohamed, Mahmud, Ahmad Rodzi B., Shafri, Helmi Zulhaidi Mohd, Alfatni, Meftah Salem, Aouache, Mustapha, 2013. *Oil Palm Fruit Classification using Spectrometer. Advanced Science Letters. Vol. 19(9): 2651-2653. ISSN: 1936-6612. Impact factor 1.253. (CIJ)*
31. Saeed, Osama Mohamed Ben, Shariff, Abdul Rashid Mohamed, Mahmud, Ahmad Rodzi B., Shafri, Helmi Zulhaidi Mohd, Alfatni, Meftah Salem, Aouache, Mustapha, Ehsani, Reza, 2013. *Ripeness Detection of Oil Palm Fresh Fruit Bunches using 4-Band Sensors. . Advanced Science Letters. Vol. 19(12): 3468-3472. ISSN: 1936-6612. Impact factor 1.253. (CIJ)*
32. Alfatni, Meftah Salem, M., Shariff, Abdul Rashid Mohamed, Abdullah, Mohd Zaid, Marhaban, Mohd Hamiruce, Shafie, Suhaidi B., Saaed, Osama M. Ben, 2013. *Recognition System of Oil Palm Fruit Bunch Types Based on Texture Feature and Image Processing Technique. Advanced Science Letters. Vol. 19(12): 3441-3444. ISSN: 1936-6612. Impact factor 1.253. (CIJ)*
33. Alfatni, Meftah Salem, M., Shariff, Abdul Rashid Mohamed, Abdullah, Mohd Zaid, Marhaban, Mohd Hamiruce, Shafie, Suhaidi B., Saaed, Osama M. Ben, 2013. *Oil Palm Fruit Grading System Based on Basic Gray Level Aura Matrix Feature Extraction and Support Vector Machine, K Nearest Neighbourhood and Artificial Neural Network Supervised Machine Learning. Advanced Science Letters. Vol. 19(9): 2612-2614. ISSN: 1936-6612. Impact factor 1.253. (CIJ)*
34. Ruzinoor Che Mat, Abdul Rashid Mohamed Shariff, Biswajeet Pradhan, Ahmad Rodzi Mahmud, Mohd Shafry Mohd Rahim and Amjad Rehman, 2013. *A comparison between Four-Tier Framework and Three-Tier Framework for online applications of 3D GIS Visualization. Life Science Journal (ACTA ZHENGZHOU UNIVERSITY OVERSEAS EDITION). Vol. 10(3): 1534-1540. ISSN: 1097-8135. Impact factor 0.165. (CIJ)*
35. Asa Gholizadeh, Mohd Amin Mohd Soom, Mohammad Mehdi Saberioon and Lubas Boruvka, 2013. *Visible and Near Infrared Reflectance Spectroscopy to Determine Chemical Properties of Paddy Soils. Journal of Food, Agriculture & Environment. Vol. 11(2): 859-866. ISSN: 1459-0255. Impact factor 0.517. (CIJ)*
36. Azmi Yahya, Khairunnisa Hamdan, Tajudeen Abiodun Ishola, Hadi Suryanto, 2013. *Physical and Mechanical properties of Jatropha Curcas L. Fruits from Different Planting Densities. Journal of Applied Sciences. Vol. 13(7): 1004-1012. ISSN: 1812-5654. (CIJ)*
37. Tajudeen Abiodun Ishola, Azmi Yahya, Abdul Rashid Mohammed Shariff, Samsuzana Abd Aziz, 2103. *An RFID-based Variable Rate Technology Fertilizer Application for Tree Crops. Journal of Applied Sciences. Vol. 13(3): 409-415. ISSN: 1812-5654. (CIJ)*
38. El-Pebrian, D., Azmi Yahya, 2013. *Mechanized System for inField oil Palm Fresh Fruit Bunches Collection-Transportation. Agricultural Mechanization in Asia, Africa and Latin America (AMA). Vol. 44(2): 7-14. ISSN: 0084-5841. (CIJ)*
39. Tajudeen Abiodun Ishola, Azmi Yahya, Abdul Rashid Mohammed Shariff, Samsuzana Abd Aziz & Chow Syh Chuan, 2013. *Effects of Operational Variables on Rotary Valve Metering System for a Variable Rate Technology Fertilizer Applicator for Oil Palm. Journal of Applied Sciences. Vol. 13(3): 479-484. ISSN: 1812-5654. (CIJ)*
40. El-Pebrian, D., Azmi Yahya, Nawi, N. M., Siang, T.C., Bockari-Gevao, S. M. 2013. *Monitoring and Auditing Human Energy input for Oil Palm and Rice Production in Malaysia. Philippine Agricultural Scientist. Vol. 96(3): 282-289. ISSN: 0031-7454. Impact factor 0.333. (CIJ)*

41. Ataur Rahman, Azmi Yahya, 2013. *Performance Investigation of an Advance Tracked Prime Mover on the low Bearing Soil. Journal of Therramechanics. (Elsevier). Vol. 50(4): 233-244. ISSN: 0022-4898. Impact factor 0.853. (CIJ)*
42. Umara, B.G., A.S. Abdullahi, J. M. Dibal and Desa Ahmad, 2013. *Effect of Salts Concentration on Emergence and Growth of Tomato (Lycopersicon Esculentum) in Tropical Areas. International Journal of Engineering and Innovative Technology (IJEIT). Vol. 3(2): 228-291. ISSN: 2277-3754*
43. Pardis Fazli, Hasfalina Che Man, Umi Kalsom Md Shah & Azni Idris, 2013. *Characteristics of Methanogens and Methanotrophs in Rice Fields: A Review. Asia-Pacific Journal of Molecular Biology and Biotechnology. Vol. 21(1): 3-17. ISSN: 0128-7451*
44. Azmi Yahya, Su Vui Heong, El-Pebrian. D, Tajudeen Abiodun Ishola, 2013. *Performance and Economic Comparisons of Manual and Mechanised Fertiliser Application for Mature Oil Palm. The Planter. Vol. 89(1046): 323-340. ISSN: 0126-575X*
45. Total Impact Factor: **20.09**

4.2 Prosiding

1. Amer N. N. Kakahy, **D. Ahmad**, , MD. Akhir, S. Sulaiman, Ishak A. (2013). Effects of Feeding Angles and Cutting Speeds of a Mower Knife with Serrated Edges on the Pulverization of Sweet Potato Vines. *International Conference on Advanced Material Engineering & Technology (ICAMET 2012)*. 28- 30th November 2012. Penang Island, Penang, Malaysia.
2. Amer N. N. Kakahy, **D. Ahmad**, , MD. Akhir, S. Sulaiman, Ishak A. (2013). Pulverization of Sweet Potato Vine at Different Mower Speeds. *2nd International Conference on Mechanical Engineering Research (ICMER2013)*. UMP. 1-3 July 2013. Kuantan, Pahang, Malaysia.
3. Amer N. N. Kakahy, **D. Ahmad**, , MD. Akhir, S. Sulaiman, Ishak A. (2013). Effects of Knife Shapes and Cutting Speeds of a Mower on the Power Consumption for Pulverizing Sweet Potato Vine. *2nd International Conference on Advanced Material Engineering & Technology 2013 (ICAMET 2013)*. Bandung, Indonesia. November 28-29, 2013.UniMAP.
4. Amer N. N. Kakahy, **D. Ahmad**, , MD. Akhir, S. Sulaiman, Ishak A. (2013). Effects of Knife Shapes and Cutting Speeds of a Mower on the Percentage Pulverization of Sweet Potato Vine. *2013 4th International Conference on Information Technology for Manufacturing Systems (ITMS 2013)*. August 28-29, 2013, Auckland, New Zealand. <http://www.itms-conf.net/>.
5. Mohd. Hudzari Haji Razali, Syazili Roslan, **Wan Ishak Wan Ismail** and Zulkifli Abbas (2013). Rapid Detection Techniques for Mechanical Properties Determination on Surface of *Dioscorea hispida*. *Malaysian International Tribology Conference 2013 (MITC2013)*. Procedia Engineering 00 (2013) 000-000, SciVerse Science Direct, Elsevier, 2013.
6. **Wan Ishak W.I., M.K. Muhamad Saufi** and M.R. Mohd Hudzari (2013). Camera Vision For Crop Ripeness Model. Cite as : *Book of Abstracts of the 2013 Society for Engineering in Agriculture (SEAg) Conference*. Published by the Australian Society for Engineering in Agriculture 22 – 25 September 2013. Mandurah, Perth, Western Australia. (Ed: T. Banhazi & C. Saunders)
7. **Aimrun W.** (2013). Application of Multi-GNSS in Sustainable Agriculture Through Precision Farming Practice. *The "Workshop on Space Applications for Disaster Risk Reduction and Management in Asia and the Pacific and The Second Workshop on Use of Multi-Global Navigation Satellite System for Sustainable Development"*

organized by the Economic and Social Commission for Asia and the Pacific (ESCAP), the United Nations (UN), with support from the Japan Space Exploration Agency (JAXA) 5th to 8th March 2013, at the United Nations Conference Centre, Bangkok, Thailand.

8. Usman Zubairu, U.B., **Aimrun W.** and **Amin M.S.M.** (2013).SRI Single Seedling Nursery Tray: An Innovative Breakthrough to Challenges in Raising and Transplanting Seedlings. *2nd SRI National Conference (SRI2013)*. 11 - 13th June 2013. The Orient Star Resort, Lumut, Perak.
9. Meftah Salem M. Alfatni, **Abdul Rashid Mohamed Shariff**, Mohd Zaid Abdullah, Mohd Hamiruce Marhaban, Suhaidi B. Shafie, mohd Din Bin Amiruddin & Osama M. Ben Saaed, 2013. Oil Palm Fruit Maturity Classification Based on Texture Feature Extraction of Thorns and Supervised Machine Learning Classifiers. *International Conference on Agricultural Engineering*. 24 - 26 Feb 2013. Sultan Qaboos University, Muscat, Oman.
10. **Hasfalina C.M.**, Maryam R. Z., Luqman C.A., **Rashid M.** 2013. Kinetic and Equilibrium Studies of Copper (II) Removal from Aqueous Medium by Kenaf Fibres. *World Academy of Science, Engineering & Technology*. January 2013. Zurich, Switzerland.
11. **Khairunniza-Bejo, S.** and Hairi, N.L.S.H., Mengenalpasti Kandungan Kelembapan Padi di Bawah Permukaan Objek Menggunakan Teknologi Pengimejan untuk Persidangan Padi Kebangsaan 2013, Seberang Jaya, Pulau Pinang, Malaysia, 10 – 12 Disember 2013.
12. **Khairunniza-Bejo, S.** and Jamil, N., Preliminary Study on Detection of Fungal Infection in Stored Paddy Using Thermal Image in the proceeding of the International Conference on Agriculture and Biotechnology, Kuala Lumpur, Malaysia, 29 – 30 Disember 2013.

4.3 Poster

1. Desa Ahmad (2013). Kenaf Harvesting Machine. Poster, MICCOS 2013, Serdang Selangor.
2. Desa Ahmad (2013). Design and Development of a Harvesting Machine for Kenaf. Poster Pecipta 2013, KLCC.

4.4 Artikel dalam Majalah

1. Samsuzana Abd Aziz & Hasfalina Che Man. JURUTERA: Strengthening Employability Skills Programme and IEM's AFETD Membership Drive, pp 39-40. Januari 2013.

5. AKTIVITI-AKTIVITI & PENCAPAIAN SEPANJANG TAHUN

5.1 Anugerah

1. **Gold Medal Award:** MIExpo 2013, Universiti Putra Malaysia on 26th- 28th September, 2013. Single Seedling Nursery Tray for SRI Planting Machine. Authors; **Aimrun Wayayok**, Bashar Usman Zubairu, **Mohd Amin Mohd Soom** and Mohamad Razif Mahadi.
2. **Gold Medal Award:** International Engineering Invention & Innovation Exhibition (i-ENVEX) and Malaysian International Young Inventors Olympiad (MIYIO) 2013, Universiti Malaysia Perlis, 16 - 19 April 2013. Dielectric Based Measurement of Agricultural Materials. Authors; Diyana Jamaludin, Nur Fizura Chin @ Hashim, **Samsuzana Abd Aziz**.
3. **Gold Medal Award:** MIExpo 2013, Universiti Putra Malaysia on 26th- 28th September, 2013. Above Ground Biomass Estimation of Oil Palm Trees using PALSAR. Authors; **Abdul Rashid M. Shariff**
4. **Silver Medal Award:** International Engineering Invention & Innovation Exhibition (i-ENVEX) and Malaysian International Young Inventors Olympiad (MIYIO) 2013, Universiti Malaysia Perlis, 16 - 19 April 2013. Development of a Cooking Oil Quality Sensor. Authors; Al-Fadhl Yahya Khaled Al Khaled, Nur Ul Atikah Ibrahim, **Samsuzana Abd Aziz**.
5. **Bronze Medal Award;** PECIPTA2013, KLCC, 7-9 November 2013. Design and Development of a Harvesting Machine for Kenaf. Authors; **Desa Ahmad**.

5.2 Paten dan Hak Cipta

1. A Tuber Vegetation Harvester. Desa Ahmad, Amer Kakahy, Md.Akhir Hamid,Shamsuddin Sulaiman, Ishak Aris. Date of Filing 11th Oct. 2013 (PI2013701939) – Pending
2. Single Seedling Nursery Tray. Aimrun Wayayok; Usman Bashar Zubairu; Mohd Amin Mohd Soom; Mohamad Razif Mahadi (PI2013700745) – Filed

5.3 Kursus, Konferens, Bengkel, Program

1. Intelligence Empowered Vertical Farming Systems Seminar, Fakulti Kejuruteraan, 30 April 2013
2. National Conference on System of Rice Intensification 2013 (SRI 2013), Orient Star Resort, Lumut, Perak, 11-13 Jun 2013
3. Precision Agriculture: The Way Forward in Mechanized Agriculture Seminar, Fakulti Kejuruteraan, 17 Oktober 2013
4. The 5th Asia Oceania Regional Workshop on GNSS. Hanoi, Vietnam. 1 – 3 December 2013.

5.4 Pencapaian lain

1. Aktiviti Penyelidikan bersama Japan Aerospace Exploration Agency (JAXA) di bawah Projek Kerjasama MultiGNSS
2. Talk on "Precision Farming Prospect in Soil Fertility Management and National Rice Production". Invited for IADA Barat Laut Selangor Intellectual Seminar on 17th September 2013.

6. LAMPIRAN BERGAMBAR

6.1 Aktiviti Penyelidikan bersama JAXA di bawah Projek Kerjasama MultiGNSS

