



# LAPORAN TAHUNAN

1989-90

UNIVERSITI PERTANIAN MALAYSIA

# UNIVERSITI PERTANIAN MALAYSIA

## LAPORAN TAHUNAN 1989-1990

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# LAPORAN NAIB CANSOLOR

## MAJLIS

### Mesyuarat

Majlis telah bersidang sebanyak enam kali untuk mesyuarat biasa (mesyuarat ke-84 hingga ke-89) sepanjang tempoh laporan. Kesemua mesyuarat itu diadakan di Kampus Serdang.

### Perubahan Keanggotaan

Ketua Pengarah Pendidikan, Y.Bhg. Tan Sri Datuk Wira Abdul Rahman Arshad, yang dahulunya diwakili oleh seorang pegawai lain dalam Majlis, telah menetapkan yang beliau akan hadir sendiri dalam mesyuarat-mesyuarat Majlis. Puan Hafisah bt Mustaffa telah dinamakan sebagai wakil Peguam Negara menggantikan wakil yang terdahulu yang terlibat dalam pertukaran jabatan.

### Tahniah

Majlis merakamkan ucapan setinggi-tinggi tahniah kepada:

- \* Y.Bhg. Profesor Tan Sri Dato' Dr Nayan bin Ariffin atas pengurniaan Darjah Panglima Setia Mahkota (P.S.M.) sempena ulangtahun keputeraan Duli Yang Maha Mulia Seri Paduka Baginda Yang di-Pertuan Agong pada 7 Jun 1989 dan atas perlantikan semula sebagai Naib Canselor Universiti Pertanian Malaysia.
- \* Y.Bhg. Dato' Asiah bt Abu Samah atas kenaikan pangkat beliau sebagai Timbalan Pengarah Pendidikan II, Kementerian Pendidikan Malaysia.

## Penghargaan

Majlis merakamkan penghargaan dan ucapan setinggi-tinggi terima kasih kepada Y.Bhg. Dato' Asiah bt Abu Samah (wakil Ketua Pengarah Pendidikan) dan Encik Mohd. Hishamudin bin Haji Mohd. Yunus (wakil Peguam Negara Malaysia) atas segala sumbangan yang telah mereka berikan semasa menjadi anggota majlis.

## SENAT

### Laporan Mesyuarat Senat 1989/90

Sepanjang sesi 1989/90 Senat Universiti telah bersidang untuk 12 mesyuarat biasa dan 6 mesyuarat khas. Di antara perkara-perkara penting yang diputuskan ialah:

1. Meluluskan cadangan untuk melaksanakan sistem Pusat Pengajian di Kampus Bintulu.
2. Perlantikan anggota Lembaga Pengajian Program Bachelor Sains (Biomedikal Veterinar).
3. Meluluskan Laporan Jawatankuasa Perancangan Akademik.
4. Menyokong penubuhan Fakulti Ekologi Manusia.
5. Bersetuju meminda Syarat Kemasukan Ke Program Diploma UPM.

### PEMERIKSA/PENILAI LUAR SESI 1989/90

Universiti Pertanian Malaysia telah melantik seramai 15 orang Pemeriksa/Penilai Luar bagi program-program bachelor seperti berikut:

Bil.	Pemeriksa/Penilai Luar	Dari	Untuk Program
1.	Prof. Werner Dopler	University of Hohenheim, Federal Republic of Germany.	B.S. (Ekonomi Sumber)
2.	Prof. Dr. Lloyd Bullerman	University of Nebraska, USA.	B.Sains dan Teknologi Makanan

3.	Prof. T.R. Parson	University of Boulevard, Canada.	B.S. (Perikanan)
4.	Prof. J.J. Goering	University of Alaska, USA.	B.S. (Perikanan)
5.	Prof. Jacques C.J. Nihoul	University of Leige, Belgium.	B.S. (Perikanan)
6.	Prof. Roderick A. Jacobs	University of Hawaii at Manoa, USA.	B. Pend. (TESL)
7.	Prof. Ronald Mc Caffer	Loughborough University of Technology, UK.	B. Kej. (Awam)
8.	Prof. Jean-Louis Floriot	Institut De Gestion, Internationale Agrolimentaire, France	B.S. (Perniagaantani)
9.	Prof. Raymond George Wales	Murdoch University, Australia.	Doktor Perubatan Veterinar
10.	Prof. Ernest J.L. Soulsby	University of Cambridge, England	Doktor Perubatan Veterinar
11.	Prof. David Ernest Noakes	University of London, England	Doktor Perubatan Veterinar
12.	Prof. D.G. Walker	University of Birmingham, England	B.S. (Kepujian)
13.	Prof. J. Frank McCormick	University of Tennessee, USA	B.S. (Alam Sekitar)
14.	Prof. Salvadore J. Locascio	University of Florida, USA	B.S. Hortikultur
15.	Prof. Patrick R. Carnage	Murdoch University, Australia	B.S. (Bioteknologi)

## KEMASUKAN DAN REKOD PELAJAR SESI 1989/90

### 1. Program Pengajian

Pada sesi 1989/90 Universiti Pertanian Malaysia telah menawarkan program-program di peringkat Master dan Doktor Falsafah, 24 program di peringkat Bachelo, 8 program di peringkat Diploma, satu program Matrikulasi Sains, satu program Matrikulasi (TESL) dan satu program Pendahuluan. Senarai penuh program yang ditawarkan ialah seperti berikut:

1.1 (a) Pengajian Siswazah	Kampus
Master Sains	Serdang
Master Sains Pertanian	Serdang
Master Kejuruteraan (Pertanian)	Serdang
Master Sains Veterinar	Serdang
Master Sains dan Teknologi Makanan	Serdang
Master Pentadbiran Perniagaan	Serdang
Doktor Falsafah	Serdang

Doktor Kejuruteraan (Pertanian)	Serdang
Doktor Sains Veterinar	Serdang

(b) Jangkamasa untuk Pengajian Siswazah adalah seperti berikut:

Program Master penuh masa	2 – 6 semester
Program Master separuh masa	4 – 10 semester
Program Ph. D penuh masa	4 – 10 semester
Program Ph. D separuh masa	6 – 12 semester

### 1.2 Program Bachelo

	Jangkamasa	Kampus
Doktor Perubatan Veterinar	10 semester	Serdang
Bachelor Sains Pertanian	8 semester	Serdang
Bachelor Sains Perhutanan	8 semester	Serdang
Bachelor Sains (Perniagaantani)	8 semester	Serdang
Bachelor Sains (Ekonomi Sumber)	8 semester	Serdang
Bachelor Sains (Kepujian)	8 semester	Serdang
Bachelor Sains (Bioteknologi)	8 semester	Serdang
Bachelor Sains (Alam Sekitar)	8 semester	Serdang
Bachelor Kejuruteraan (Pertanian)	8 semester	Serdang
Bachelor Sains dan Teknologi Makanan	8 semester	Serdang
Bachelor Sains (Pembangunan Manusia)	8 semester	Serdang
Bachelor Sains Perikanan	8 semester	Serdang
Bac. Pend. (Sains Pertanian)	8 semester	Serdang
Bac. Pend. (Sains Rumahtangga)	8 semester	Serdang
Bac. Pend. (Pendidikan Jasmani)	8 semester	Serdang
Bac. Pend. (Bimbingan & Kaunseling)	8 semester	Serdang
Bac. Pend. (Pengajaran Bahasa Malaysia sebagai Bahasa Pertama)	8 semester	Serdang
Bac. Pend. (Pengajaran Bahasa Inggeris sebagai Bahasa Kedua)	8 semester	Serdang
Bachelor Sains Komputer	8 semester	Serdang
Bachelor Kejuruteraan (Awam)	8 semester	Serdang
Bac. Kej. (Mekanikal/Sistem)	8 semester	Serdang
Bac. Kej. (Elektronik/Komputer)	8 semester	Serdang
Bachelor Perakaunan	8 semester	Serdang
Bachelor Sains Hortikultur	8 semester	Serdang

### 1.3 Program Diploma, Pendahuluan dan Matrikulasi

Diploma Pertanian	6 semester	Serdang & Bintulu
Diploma Kesihatan Haiwan dan Peternakan	7 semester	Serdang
Diploma Perikanan	6 semester	Serdang
Diploma Pembangunan Manusia	6 semester	Serdang
Diploma Kejuruteraan Pertanian	6 semester	Serdang
Diploma Perhutanan	6 semester	Bintulu
Diploma Sains Komputer	6 semester	Serdang
Diploma Perniagaantani	6 semester	Bintulu
Program Pendahuluan	2 semester	Bintulu
Matrikulasi Sains	4 semester	Serdang
Matrikulasi TESL	4 semester	Serdang

## 2. Pengambilan Pelajar

2.1 Bilangan pelajar baru yang diterima masuk bagi sesi 1989/90 mengikut peringkat pengajian adalah seperti berikut:

Pengajian Siswazah	121 orang
Program Bachelor	1738 orang
Program Diploma	986 orang
Program Pendahuluan	75 orang
Matrikulasi Sains	535 orang
Matrikulasi TESL	50 orang

Jadual 1 menunjukkan taburan pengambilan pelajar baru bagi sesi 1989/90 mengikut program dan jantina.

2.2 Laporan Pengambilan Pelajar – sila rujuk Lampiran 1 hingga 3.

## 3. Pendaftaran Pelajar

Seramai 9594 orang pelajar telah mendaftarkan diri pada Semester Julai dan 9074 orang pada Semester Disember untuk mengikuti berbagai program yang terdapat di kampus Serdang dan Bintulu, (termasuk program pengajian siswazah. Jadual II, III dan IV menunjukkan taburan pelajar yang mendaftar untuk semua program bagi kedua-dua Semester sesi 1989–90 ini).

## 4. Siswazah

Pada akhir sesi 1989–90 seramai 1869\* orang pelajar telah tamat pengajian mereka dengan jayanya dan akan dikurniakan ijazah atau diploma masing-masing. Pecahan bilangan siswazah ini adalah:

Master Pentadbiran Perniagaan	13 orang*
Master Sains Pertanian	9 orang
Master Sains	22 orang
Ph.D	13 orang
Bachelor	989 orang
Diploma	823 orang

Jadual V menunjukkan taburan siswazah mengikut program dan jantina bagi sesi 1989–90.

**JADUAL 1**  
**TABURAN PENGAMBILAN PELAJAR MENGIKUT**  
**PROGRAM DAN JANTINA BAGI TAHUN AKADEMIK 1989–90**

Program	Lelaki	Perempuan	Jumlah
Diploma Pertanian (Serdang)	213	129	342
(Bintulu)	54	38	92
Diploma Pembangunan Manusia	30	57	87
Diploma Kesihatan Haiwan dan Peternakan	45	32	77
Diploma Perikanan	63	26	89
Diploma Perhutanan	47	7	54
Matrikulasi Sains	285	250	535
Matrikulasi (TESL)	7	43	50

Diploma Kejuruteraan Pertanian	56	32	88
Diploma Perniagaantani	34	39	73
Diploma Sains Komputer	36	38	84
Pendahuluan	44	31	75
<b>Jumlah Kecil</b>	<b>914</b>	<b>732</b>	<b>1646</b>
Bachelor Sains Hortikultur	51	33	84
Bachelor Sains Pertanian	68	37	105
Bachelor Sains (Pembangunan Manusia)	13	53	66
Bachelor Sains (Perniagaantani)	77	70	147
Bachelor Sains (Ekonomi Sumber)	41	28	69
Bachelor Perakaunan	41	36	77
Doktor Perubatan Veterinar	26	19	45
Bachelor Sains Perhutanan	46	4	50
Bachelor Sains dan Teknologi Makanan	16	39	55
Bachelor Sains (Kepujian)	115	122	237
Bachelor Sains (Bioteknologi)	15	29	44
Bachelor Sains (Alam Sekitar)	16	13	29
Bachelor Sains Komputer	25	34	59
Bachelor Sains Perikanan	34	15	49
Bachelor Kejuruteraan (Pertanian)	26	4	30
Bachelor Kejuruteraan (Awam)	21	4	25
Bachelor Kej. (Elektronik/Komputer)	38	9	47
Bachelor Kejuruteraan (Mekanikal/Sistem)	51	—	51
Bachelor Pend. (Sains Pertanian)	25	12	37
Bachelor Pend. (Sains Rumah Tangga)	—	32	32
Bachelor Pend. (Pendidikan Jasmani)	42	18	60
Bachelor Pend. (Bimb. & Kaunseling)	37	22	59
Bachelor Pend. (Pengajaran Bahasa Malaysia sebagai Bahasa Pertama)	95	69	164
Bachelor Pend. (Pengajaran Bahasa Inggeris sebagai Bahasa Kedua)	15	102	117
<b>Jumlah Kecil</b>	<b>934</b>	<b>804</b>	<b>1738</b>
Master Sains	78	30	108
Ph.D	11	2	13
<b>Jumlah Kecil</b>	<b>89</b>	<b>32</b>	<b>121</b>
<b>JUMLAH BESAR</b>	<b>1937</b>	<b>1568</b>	<b>3505</b>

**JADUAL II**  
**TABURAN PELAJAR MENGIKUT PROGRAM**  
**SEMESTER TAHUN AKADEMIK 1989-90 (KAMPUS SERDANG)**

FAKULTI	PROGRAM	TAHUN		SEMESTER I					SEMESTER II				
		I	II	III	IV	V	J	I	II	III	IV	V	J
Ekonomi dan Pengurusan	Bachelor Sains (Perniagaantani)	147	122	98	131	—	498	145	119	97	129	—	490
	Bachelor Sains (Ekonomi Sumber)	69	70	57	49	—	245	68	67	55	51	—	241
	Bachelor Perakaunan	77	58	39	44	—	219	76	57	39	43	—	215
	Diploma Perniagaantani	—	—	80	—	—	80	—	—	77	—	—	77
	Jumlah	293	250	274	224	—	1041	289	243	268	223	—	1023
Kedoktoran Veterinar & Sains Peternakan	Doktor Perubatan Veterinar	45	29	16	16	24	130	41	30	16	16	24	127
	Diploma Kesihatan Haiwan & Peternakan	77	52	37	36	—	202	75	51	40	—	—	166
	Jumlah	122	81	53	52	24	332	116	81	56	16	24	293
Kejuruteraan	Bachelor Kejuruteraan (Pertanian)	30	34	24	14	—	102	28	26	24	12	—	90
	Bachelor Kejuruteraan (Awam)	25	18	7	28	—	78	21	20	7	20	—	68
	Bachelor Kej. (Elektronik/Komputer)	47	41	21	30	—	139	46	37	21	25	—	129
	Bachelor Kej. (Mekanikal/Sistem)	51	46	15	22	—	134	45	42	15	22	—	124
	Diploma Kejuruteraan Pertanian	88	77	94	—	—	259	86	73	83	—	—	242
	Jumlah	241	216	161	94	—	712	226	198	150	79	—	653
Perhutanan	Bachelor Sains Perhutanan	50	41	48	17	—	156	43	48	49	15	—	155
Sains Makanan dan Bioteknologi	Bac. Sains dan Teknologi Makanan	55	50	29	19	—	153	54	50	29	19	—	152
	Bachelor Sains Bioteknologi	44	25	26	18	—	113	44	25	26	18	—	113
	Jumlah	99	75	55	37	—	266	98	75	55	37	—	265

FAKULTI	PROGRAM	TAHUN		SEMESTER I						SEMESTER II					
		I	II	III	IV	V	J	I	II	III	IV	V	J		
Pengajian Pendidikan	Bac. Pend. (Sains Pertanian)	37	32	34	20	–	123	38	31	34	6	–	109		
	Bac. Pend. (Sains Rumah tangga)	32	26	20	19	–	97	32	26	20	–	–	78		
	Bac. Pend. (Pendidikan Jasmani)	60	54	52	51	–	217	58	54	52	28	–	192		
	Bac. Pend. (Peng. Bahasa M'sia sebagai Bahasa Pertama)	164	153	153	122	–	592	164	152	153	17	–	486		
	Bac. Pend. (Bimbingan & Kaunseling)	59	50	50	49	–	208	59	50	50	49	–	208		
	Bac. Pend. (Peng. Bahasa Inggeris sebagai Bahasa Kedua)	117	102	98	80	–	397	116	102	98	3	–	319		
	Jumlah	469	417	407	341	–	1634	467	415	407	103	–	1392		
Pertanian	Bachelor Sains Hortikultur	84	65	59	14	–	222	81	65	59	14	–	219		
	Bachelor Sains Pertanian	105	108	97	57	–	367	94	114	92	64	–	364		
	Bac. Sains (Pembangunan Manusia)	66	51	32	29	–	178	66	50	32	27	–	175		
	Diploma Pertanian	342	345	295	–	–	982	336	310	296	–	–	942		
	Diploma Pembangunan Manusia	87	69	49	–	–	205	86	66	49	–	–	201		
Jumlah	684	638	532	100	–	1954	663	605	528	105	–	1901			
Sains dan Pengajian Alam Sekitar	Bachelor Sains (Kepujian)	237	95	52	35	–	419	213	109	47	24	–	393		
	Bac. Sains dgn. Pendidikan (Kep.)	–	–	–	44	–	44	–	–	–	41	–	41		
	Bachelor Sains (Alam Sekitar)	29	17	14	12	–	72	27	16	14	10	–	67		
	Bachelor Sains Komputer	59	29	22	35	–	145	52	33	22	35	–	142		
	Diploma Sains Komputer	84	63	67	–	–	214	82	55	63	–	–	200		
Jumlah	409	204	155	126	–	894	374	213	146	110	–	843			
Perikanan & Sains Samudera	Bachelor Sains Perikanan	49	22	23	11	–	105	43	27	23	11	–	104		
	Diploma Perikanan	89	63	67	–	–	219	89	60	67	–	–	216		
	Jumlah	138	85	90	11	–	214	132	87	90	11	–	320		
	Matrikulasi Sains	535	562	–	–	–	1097	529	536	–	–	–	1065		
	Matrikulasi (TESL)	50	41	–	–	–	91	51	41	–	–	–	92		
<b>JUMLAH BESAR</b>		<b>3090</b>	<b>2610</b>	<b>1775</b>	<b>1002</b>	<b>24</b>	<b>8501</b>	<b>2988</b>	<b>2542</b>	<b>1749</b>	<b>699</b>	<b>24</b>	<b>8002</b>		

**JADUAL III**  
**TABURAN PELAJAR MENGIKUT PROGRAM DAN**  
**SEMESTER TAHUN AKADEMIK 1989-90 (KAMPUS BINTULU)**

TAHUN PROGRAM	SEMESTER I				SEMESTER II			
	I	II	III	J	I	II	III	J
Diploma Pertanian	92	127	120	339	92	124	119	335
Diploma Perhutanan	54	61	36	151	54	56	36	146
Dip. Perniagaantani	73	53	—	126	73	50	—	123
Pendahuluan	75	—	—	75	75	—	—	75
Jumlah	294	241	156	691	294	230	155	679

**JADUAL IV**  
**TABURAN PELAJAR-PELAJAR PENGAJIAN SISWAZAH MENGIKUT**  
**FAKULTI DAN SEMESTER BAGI TAHUN AKADEMIK 1989-90**

FAKULTI/PUSAT	SEMESTER I				SEMESTER II			
	MBA	Master	Ph.D	J	MBA	Master	Ph.D	J
Ekonomi dan Pengurusan	37	18	11	66	26	18	13	57
Kedoktoran Vet. & Sains Peternakan	—	17	20	37	—	16	18	34
Kejuruteraan	—	17	1	18	—	15	3	18
Pengajian Pendidikan	—	47	7	54	—	46	7	53
Pertanian	—	33	19	52	—	33	15	48
Sains & Pengajian Alam Sekitar	—	27	8	35	—	39	8	37
Perikanan & Sains Sains Samudera	—	13	7	20	—	14	7	21
Sains Makanan dan Bioteknologi	—	17	5	22	—	21	6	27
Pusat Pengembangan & Pend. Lanjutan	—	54	18	72	—	51	19	70
Perhutanan	—	18	8	26	—	20	8	28
<b>JUMLAH</b>	<b>37</b>	<b>261</b>	<b>104</b>	<b>402</b>	<b>26</b>	<b>263</b>	<b>104</b>	<b>393</b>

**TABURAN SISWAZAH MENGIKUT PROGRAM  
DAN JANTINA BAGI TAHUN 1989/90**

Program	Lelaki	Perempuan	Jumlah
Diploma Pertanian	260	107	367
Diploma Pembangunan Manusia	11	37	48
Diploma Perikanan	56	5	61
Dip. Kesihatan Haiwan & Peternakan	27	7	34
Diploma Kejuruteraan Pertanian	50	18	68
Diploma Perhutanan	32	3	35
Diploma Perniagaantani	26	39	65
Diploma Sains Komputer	19	16	35
Jumlah Kecil	481	232	713
Bachelor Sains (Perniagaantani)	73	56	129
Bachelor Sains (Ekonomi Sumber)	26	27	53
Bachelor Perakaunan	11	24	35
Bachelor Sains Pertanian	50	14	64
Bachelor Sains (Pembangunan Manusia)	8	20	28
Bachelor Sains Hortikultur	6	8	14
Bachelor Sains & Teknologi Makanan	12	7	19
Bachelor Sains (Bioteknologi)	3	13	16
Bachelor Sains (Perhutanan)	20	—	20
Doktor Perubatan Veterinar	10	11	21
Bachelor Kejuruteraan (Pertanian)	12	—	12
Bachelor Kejuruteraan (Awam)	19	1	20
Bachelor Kejuruteraan (Elek./Komputer)	26	1	27
Bachelor Kejuruteraan (Mekanikal/Sistem)	15	—	15
Bachelor Sains (Alam Sekitar)	6	6	12
Bachelor Sains (Kepujian)	21	15	36
Bachelor Sains dgn. Pend. (Kepujian)	5	39	44
Bachelor Pendidikan (Sains Pertanian)	13	6	19
Bachelor Pend. (Sains Rumahtangga)	—	19	19
Bachelor Pend. (Pendidikan Jasmani)	33	18	51
Bachelor Pend. (Bimb. & Kaunseling)	32	13	45
Bachelor Sains (Perikanan)	7	4	11
Bachelor Pend. (Pengajaran B. Malaysia sebagai Bahasa Pertama)	91	31	122
Bachelor Pend. (Pengajaran B. Inggeris sebagai Bahasa Kedua)	30	49	79
Bachelor Sains Komputer	25	7	32
Jumlah Kecil	554	389	943
Master Pentadbiran Perniagaan	9	4	13
Master Sains Pertanian	4	1	5
Master Sains	6	8	14
Ph.D	6	—	6
Jumlah Kecil	25	13	38
<b>JUMLAH BESAR</b>	<b>1060</b>	<b>634</b>	<b>1694</b>

## PERJAWATAN

Atas kepentingan akademik Universiti, maka pihak Kerajaan telah meluluskan 9 jawatan lagi Kumpulan A bagi tempoh laporan ini. Hasil daripada kenaikan gred gaji bagi beberapa jawatan di Universiti ini, maka pembahagian jawatan-jawatan juga turut berubah. Dengan ini pembahagian jawatan-jawatan di Universiti Pertanian Malaysia adalah 1251 jawatan Kumpulan A, 151 Kumpulan B, 987 Kumpulan C dan 2035 lagi Kumpulan D yang menjadikan jumlahnya 4424 jawatan.

Bagi tempoh antara bulan Jun 1989 hingga Mei 1990 ini, Bahagian Perjawatan telah menguruskan 87 perlantikan bagi jawatan dalam Kumpulan A, 8 lagi Kumpulan B, 38 bagi Kumpulan C dan seramai 125 lagi dilantik bagi memenuhi jawatan dalam Kumpulan D.

### Perletakan Jawatan

Seramai 41 orang telah meletakkan jawatan dalam tempoh yang sama iaitu 20 lagi Kumpulan A, 1 Kumpulan B, 8 Kumpulan C dan selebihnya seramai 12 orang lagi bagi Kumpulan D.

### Tatatertib

Sebanyak 10 kes tatatertib yang telah dikendalikan oleh Lembaga Tatatertib Universiti. Daripada jumlah kes tersebut 9 orang daripadanya telah disabitkan dengan berbagai kesalahan dan dikenakan hukuman; di mana 5 orang telah diberhentikan kerja, seorang diturunkan pangkat, 2 orang telah diberi amaran dan seorang telah dikenakan tindakan lucut gaji dan amaran.

### Kenaikan Pangkat

Seramai 16 orang telah dinaikkan pangkat antara tempoh bulan Jun 1989 hingga Mei 1990 ini. Mereka adalah 8 orang dari Kumpulan D dan 8 orang dari Kumpulan D.

### Latihan

Kursus dan latihan adalah merupakan salah satu aspek penting dan berkesan

dalam meninggikan mutu kerja serta memberikan dorongan dan kepuasan kepada pekerja untuk memajukan kerjayanya. Untuk itu Unit Latihan, Bahagian Perjawatan, Universiti Pertanian Malaysia sentiasa mengambil perhatian dalam hal ini dan seramai 65 orang tenaga pengajar telah melanjutkan pelajarannya ke peringkat Ph.D, 9 di peringkat Master.

Di samping itu pula seramai 39 orang tenaga pengajar telah menamatkan kursus Ph.D dan 5 orang lagi telah berjaya dalam kursus di peringkat Master dalam jangkamasa yang sama. Bagi memenuhi kepentingan dan keperluan selain daripada tenaga pengajar, maka Unit Latihan, Bahagian Perjawatan, Universiti Pertanian Malaysia ini telah mengendalikan sebanyak 14 program kursus pendek dalam perkhidmatan iaitu 3 program bagi Kumpulan A; 3 bagi Kumpulan A dan B, 4 bagi Kumpulan C dan 4 lagi bagi Kumpulan C dan D. Jumlah pegawai yang telah mengikuti kursus-kursus tersebut ialah 583 orang.

Selain daripada itu seramai 5 orang pegawai dalam Kumpulan A dan 9 dari Kumpulan C telah berpeluang menghadiri kursus-kursus di luar negeri.

Bagi memenuhi keperluan dan penggunaan komputer sebagai otomasi pejabat maka jabatan ini telahpun mengendalikan beberapa peringkat kursus pengendalian komputer dan yang berkaitan. Sehingga bulan Mei 1990 Unit Latihan dengan kerjasama Pusat Komputer, Universiti Pertanian Malaysia telah berjaya menganjurkan sebanyak 14 peringkat kursus yang disertai oleh berbagai kategori pegawai. Jumlah pegawai yang telahpun mengikuti kursus tersebut sehingga ini ialah seramai 144 orang.

## PENYELIDIKAN

Sebagai tahun terakhir dalam jangka masa Rancangan Malaysia Kelima, kegiatan penyelidikan di Universiti Pertanian Malaysia semakin pesat dijalankan di bawah program IRPA – penyeli-

dikan dalam bidang keutamaan. Bidang keutamaan di UPM bertambah daripada 62 kepada 69 bidang bagi tempoh masa 89/90 ini.

Sektor Pertanian mempunyai 32 bidang, Sektor Perindustrian 10 bidang, Sektor Perubatan 2 bidang dan Sektor Strategik mempunyai 25 bidang keutamaan.

Selain daripada penyelidikan di bawah program IRPA, pegawai-pegawai akademik juga menjalankan lebih daripada 200 projek penyelidikan jangka pendek yang mendapat peruntukan sebanyak \$1 juta setahun. Terdapat juga penyelidikan yang dibiayai oleh badan-badan antarabangsa seperti EEC, IDRC, IAEA, UNESCO dan lain-lain. Agensi-agensi tempatan juga tidak ketinggalan menyumbangkan bantuan termasuk PETRONAS, ESSO, LKIM, LLN, KEJORA, JPH, dan lain-lain.

Penyelidikan yang dijalankan, baik jangka panjang mahupun jangka pendek, telah mencapai banyak kejayaan. Ini terbukti dengan beberapa rekaan dan penemuan seperti pengeluaran vaksin bagi mengawal penyakit sampar ayam, teknik pemindahan janin, kegunaan hasil-hasil sampingan untuk makanan ternakan, tanaman tanpa tanah, pemeliharaan lebahmadu, instrumentasi dan sebagainya.

Kemajuan juga diperolehi dalam penyelidikan berkaitan dengan pengeluaran benih udang galah, penggunaan teknologi tinggi dalam usaha penyelamatan penyu-penyu di Terengganu, kegunaan perubatan beberapa jenis tumbuhan melalui kajian biologi dan kimia, perkembangan bioteknologi dengan penemuan enzim daripada bahan-bahan buangan tempatan, penggunaan prestressed konkrit dalam pembinaan bangunan dan jambatan dan lain-lain.

Penyelidikan tersebut memberi sumbangan besar ke arah penerokaan ilmu dan penciptaan teknologi dalam bidang-bidang pakarannya di Universiti ini.

## PEMBANGUNAN

1. Pada tahun akademik 1989/90 projek yang telah dapat disiapkan adalah seperti berikut:—
  - a. **Kampus Serdang**
    1. 3 buah Rumah Pengetua (Kelas 'C')
    2. Bangunan Setor Jualan
  - b. **Kuala Terengganu**  
Satu Blok Tiga-Tingkat Asrama
2. Projek yang sedang dalam pelaksanaan sekarang adalah:—
  - a. **Kampus Serdang**  
Bangunan Fakulti Pengajian Pendidikan  
Bangunan Matematik dan Sains Komputer  
Bangunan Tambahan Fakulti Sains Makanan dan Bioteknologi
  - b. **Port Dickson**  
Kompleks Pusat Oseanografi dan Marikultur

## BAHAGIAN HAL EHWAL PELAJAR

Bahagian Hal Ehwat Pelajar Mengandungi Unit-Unit Seperti Berikut:

1. Perhubungan Pelajar
2. Kaunseling dan Kerjaya
3. Kesihatan
4. Perumahan
5. Agama dan Kerohanian
6. Sukan dan Rekreasi
7. Kebudayaan dan Kesenian

### Unit Perhubungan Pelajar

Persatuan Fakulti/Kolej dan Kelab menjalankan kegiatan mereka setelah mendapat kelulusan daripada Bahagian Hal Ehwat Pelajar.

## Senarai Persatuan Fakulti/Kolej dan Kelab

Jumlah Kegiatan  
Sesi 1989/90

1. Majlis Perwakilan Pelajar	—	19
2. Persatuan Mahasiswa Fakulti Perhutanan	—	6
3. Persatuan Mahasiswa Fakulti Kedokteran Veterinar dan Sains Peternakan	—	6
4. Persatuan Mahasiswa Fakulti Pertanian	—	7
5. Persatuan Mahasiswa Fakulti Kejuruteraan	—	7
6. Persatuan Mahasiswa Fakulti Ekonomi dan Pengurusan	—	8
7. Persatuan Mahasiswa Fakulti Pengajian Pendidikan	—	18
8. Persatuan Mahasiswa Fakulti Sains Makanan dan Bioteknologi	—	3
9. Persatuan Mahasiswa Pembangunan Manusia	—	5
10. Persatuan Mahasiswa Fakulti Perikanan dan Sains Samudera	—	5
11. Kumpulan Latihan Kelanasiswa UPM	—	11
12. Kelab Pandu Puteri	—	4
13. Persatuan Bulan Sabit Merah UPM	—	7
14. Kumpulan Latihan Kelanasiswa Laut UPM	—	2
15. Kolej Kediaman Cikgu Rashid	—	5
16. Kolej Kediaman Kedua	—	4
17. Kolej Kediaman Ketiga	—	4
18. Kolej Kediaman Keempat	—	4
19. Kolej Kediaman Kelima	—	4
20. Kolej Kediaman Keenam	—	4
21. Kolej Kediaman Ketujuh	—	5
22. Kolej Tun Perak	—	6
23. Kolej Pendita Za'ba	—	5
24. Pelajar Luar Kampus	—	4
25. Kegiatan Kelab-Kelab	—	12

JUMLAH KEGIATAN : 167

2. Laporan Seminar / Kursus / Forum / Bengkel Dan Lain-lain Yang Dianjurkan Oleh Hal Ehwal Pelajar Kepada Pelajar

(a) Bilangan yang dianjurkan bagi sesi 1989/90 — 11

3. Laporan Tatatertib

(a) Bilangan kes yang dibicarakan bagi sesi 1989/90 — 26

4. Laporan Projek Lawatan Sambil Belajar Ke Luar Negara

(a) Bilangan projek Lawatan Sambil Belajar Ke Luar Negara sesi 1989/90. — 6

### Unit Bantuan Kewangan

Daripada pelajar yang berjumlah 8,001 orang pada sesi 1989/90 sebanyak 82.91% daripadanya telah memperolehi bantuan kewangan berbentuk pinjaman atau biasiswa. Bagi para pelajar yang terdiri dari bekas guru, kebanyakannya mendapat separuh gaji dan termasuk dalam kumpulan yang mendapat bantuan kewangan. Sebanyak 54 buah penganjur yang telah menawarkan biasiswa dan pinjaman kepada pelajar-pelajar di Universiti Pertanian Malaysia dan Kampus Bintulu Sarawak.

Bagi sesi 1990/91 Tabung Pinjaman Pelajar akan memulakan operasinya memberi pinjaman sementara khas

kepada para pelajar baru yang masih belum ditaja oleh mana-mana penganjur. Tabung ini adalah terhad syaratnya kepada anak negeri masing-masing.

Bahagian ini berusaha untuk memperingkatkan usaha mencari bantuan kewangan pe pelajar bagi sesi akan datang.

### Unit Bimbingan Agama dan Kerohanian

Unit Bimbingan Agama dan Kerohanian berusaha dari semasa ke semasa untuk membimbing para pelajar supaya menjadi seorang muslim yang berpegang teguh dan mendaulatkan cara hidup Islam yang mencakupi semua bidang kehidupan. Dengan tujuan dan falsafah ini diharapkan agar kefahaman, penghayatan, motivasi dan kecermalangan beragama setiap individu pelajar sentiasa terjamin kukuh.

Bagi mencapai hasrat supaya ajaran agama dapat diintegrasikan dalam cara hidup setiap individu pelajar, kegiatan-kegiatan yang berbentuk khidmat nasihat bimbingan, perbincangan kumpulan kelas bimbingan Fardhu Ain, Kelas Pengajian Islam, Kursus, Bengkel, Seminar, Forum dan Muzakarah Umum telah dijalankan pada sesi 1989/90.

### Aktiviti Kegiatan Pelajar

Persatuan/Badan Pelajar	Jumlah Aktiviti
Persatuan Mahasiswa Islam	20
Badan Kerohanian Kolej-Kolej Kediaman	17
Persatuan Hindu	22
Persatuan Buddhist	26
Persatuan Ikatan Kristian	24
Persatuan Katholik	2

Unit Bimbingan Agama adalah bertanggungjawab memberi khidmat nasihat, mengawas dan meluluskan aktiviti-aktiviti Persatuan Agama tersebut di atas, termasuklah Badan-badan Kerohanian di Kolej-Kolej Kediaman yang menjalankan aktiviti-nya dari masa ke semasa.

Tujuan murni ini kami yakin akan tercap dengan sepenuhnya dengan kerjasama dari semua individu pelajar dan masyarakat kampus.

### Unit Kebudayaan

Berikut adalah ringkasan jenis kegiatan kebudayaan yang telah dijalankan sepanjang sesi 1989/90.

1. Laporan kegiatan dan aktiviti persatuan seni mempertahankan diri Universiti Pertanian Malaysia.

Terdapat 6 buah persatuan seni mempertahankan diri di kampus ini, iaitu:

Persatuan	Aktiviti
a. Seni Silat Gayung Malaysia	10
b. Seni Silat Cekak	18
c. Seni Silat Lincah	11
d. Seni Silat Gayung Fatani	5
e. Shito Ryu Karate	10
f. Tae Kwon Do	3
	Jumlah 57

Setiap persatuan menjalankan latihan 3 kali seminggu.

2. Kumpulan Muzik di bawah kelolaan Unit Kebudayaan

Persatuan	Aktiviti
a. Brass Band	3
b. Caklempong	24
c. Kompang	12
d. Muzik Asli	1
e. Koir	3
	Jumlah 43

4. Permainan Tradisional – Gasing Pangkah  
– Jumlah aktiviti 1

	Aktiviti
5. Drama Group Teater UPM	3
6. Seni Lukis	2
7. Seni Foto	1
	Jumlah 6

3. Kumpulan Tarian Mahasiswa/Siswi UPM (PERMATA)  
– Jumlah aktiviti 16

Jumlah keseluruhan aktiviti sepanjang sesi 1989/90 = 122 aktiviti

### Unit Perumahan Pelajar

1. Bilangan pelajar yang tinggal di Kolej-Kolej Kediaman Sesi 1989/90

Kolej	Bilangan Pelajar Julai 1989	Sistem Makanan
Kolej Cikgu Rashid	546	Bekalan makanan Kontrak
Kolej Kediaman Kedua	651	Tradisional
Kolej Kediaman Ketiga	649	Tradisional
Kolej Kediaman Keempat	654	Tradisional
Kolej Kediaman Kelima	678	Kafetaria
Kolej Kediaman Keenam	657	Tradisional
Kolej Kediaman Ketujuh	644	Tradisional
Kolej Tun Perak	723	Kafetaria
Kolej Pendita Za'ba	727	Bekalan makanan Kontrak
	5,929	

2. Bilangan pelajar yang mendaftar tinggal di luar kampus

Semester	Bilangan Pelajar
Julai 1989/90	2,065 orang

## Unit Kaunseling dan Kerjaya

Bil. Aktiviti	Aktiviti
21	Kegiatan profesional, pengembangan dengan pelajar di dalam kampus.
1	Seminar Kaunseling dan Kemanusiaan pada 9 – 10/12/1989 Fokus : Potensi Diri
6	Bengkel untuk pelajar 1. Bengkel Etika Sosial 2. Bengkel Kemahiran Komunikasi Sesama Manusia 3. Bengkel Mengurus Stress 4. Bengkel Panduan Menulis Resume 5. Bengkel Cara Menghadapi Temuduga 6. Bengkel Asas Kejurujualan
1	Program Pembangunan Usaha Siswa (pada 31/7 – 13/8/1989) Latihan Sangkut Kerja (Kumpulan I pada 6 – 19/11/1989) II pada 28/11 – 10/12/1989)
19	Ceramah di agensi luar dan di sekolah-sekolah
10	Taklimat kepada sekolah-sekolah yang melawat Universiti Pertanian Malaysia
1	Orientasi Jabatan Perkhidmatan Awam dengan pelajar-pelajar tahun akhir pemegang biasiswa JPA pada 21/2/1990
1	Lawatan dan perbincangan dengan pegawai-pegawai Universiti Teknologi Malaysia pada 6/3/1990 mengenai bagaimana membantu masalah pembelajaran pelajar-pelajar tahun 1 UTM
10	Menghadiri seminar/bengkel di dalam dan di luar kampus
2	Memberi ceramah kursus anjuran Bahagian Pentadbiran UPM
3	Siri Penerbitan a. Buletin Pembimbing Rakan Sebaya b. Panduan Menulis Resume c. Panduan Perkhidmatan Unit Kaunseling dan Kerjaya UPM
2	Sesi temuduga berjaya dikendalikan bersama dengan bakal Majikan
81	Bakal majikan yang menggunakan khidmat unit untuk mendapatkan senarai graduan bagi tujuan pekerjaan
197	Sesi Kaunseling dengan pelajar (Klien)

Unit ini juga telah menjalankan Penyelidikan Perkembangan Kerjaya Lulusan UPM tahun 1988/89. Sehingga kini projek tersebut telah sampai ke peringkat akhir penulisan laporan penyelidikan.

### Unit Sukan

Unit Sukan memainkan peranan untuk merancang, menyelaras dan mengendalikan program sukan pelajar samada berbentuk rekreasi atau pertandingan ke arah pembentukan kecergasan fizikal dan sahsiah yang terpuji. Unit Sukan berurusan terus dengan Sekretariat Sukan Pelajar yang terdiri daripada wakil Majlis Perwakilan Pelajar, Setiausaha Sukan Kolej-Kolej Kediaman dan Pengerusi/Setiausaha semua Jawatankuasa Kecil Permainan – semua aktiviti dapat dirancang dan dijalankan secara berterusan.

Unit Sukan menjadi sekretariat kepada semua pengurusan pentadbiran kegiatan sukan pelajar. Ini merangkumi aktiviti-aktiviti sukan di dalam dan di luar kampus sehinggalah ke peringkat mewakili Majlis Sukan Universiti Malaysia (MASUM) untuk menyertai pertandingan peringkat Antarabangsa.

Berikut adalah ringkasan kegiatan Sukan Pelajar yang dijalankan sepanjang sesi 1989/90.

### Aktiviti Semester Julai 1989/90

#### 1. Jun/Julai 1989

- 1.1 Mengadakan aktiviti sukan Minggu Suaikenal untuk para pelajar baru pada 27 Jun hingga 1 Julai 1989. Ini diikuti dengan aktiviti pelajar baru mengadakan perlawanan dengan pelajar lama dalam beberapa jenis permainan yang dianjurkan oleh Jawatankuasa Sukan Peringkat Kolej-Kolej Kediaman dan Fakulti.
- 1.2 Jawatankuasa Kecil permainan peringkat Universiti mengadakan pemilihan dan latihan ke arah pembentukan pasukan Universiti. Terdapat sebanyak

26 pasukan Universiti dibentuk termasuk pasukan lelaki dan wanita seperti berikut:

1. Bolasepak
2. Bola Jaring
3. Sepak Takraw
4. Ragbi
5. Bola Tampar Lelaki
6. Bola Tampar Wanita
7. Badminton Lelaki
8. Badminton Wanita
9. Hoki Lelaki
10. Hoki Wanita
11. Ping Pong Lelaki
12. Ping Pong Wanita
13. Sofbol Lelaki
14. Sofbol Wanita
15. Bola Keranjang Lelaki
16. Bola Keranjang Wanita
17. Bola Baling Lelaki
18. Bola Baling Wanita
19. Tenis Lelaki
20. Tenis Wanita
21. Skuasy Lelaki
22. Skuasy Wanita
23. Catur (Lelaki & Wanita)
24. Trek dan Padang (Lelaki & Wanita)
25. Tae Kwon Do
26. Renang (Lelaki & Wanita)

- 1.3 Setiap Jawatankuasa Kecil Permainan dengan kerjasama Unit Sukan merancang kalender Aktiviti bagi sesi 1989/90. Ini termasuklah menganjurkan pertandingan Tertutup/Terbuka, menyertai pertandingan Terbuka, Kejohanan anjuran MASUM dan mengadakan lawatan bersukan sambil belajar. Untuk meningkatkan lagi penglibatan pasukan-pasukan Universiti, beberapa jenis permainan tersebut telah bergabung dengan Pasukan / Kesatuan / Badan Permainan Peringkat Negeri Selangor Darul Ehsan seperti pasukan-pasukan Bola-sepak, Ragbi, Olahraga (trek dan padang), Bola Tampar, Sofbol, Tenis Skuasy dan Tae Kwon Do.

## 2. Ogos, September dan Oktober 1989

Beberapa Pertandingan Tertutup dan Terbuka telah dianjurkan pada jangka-masa tersebut ke arah memantapkan pasukan-pasukan Universiti di samping mendedahkan ahli-ahli Jawatankuasa Kecil permainan-permainan tertentu dalam bidang pengelolaan.

2.1 Sebanyak lapan (8) acara permainan telah dipertandingkan di Pesta Sukan Konvo 1989/90 yang diadakan pada dua hujung minggu. Pertandingan Jemputan Terbuka ini diadakan sempena Konvo UPM ke 13.

– Pertandingan Ragbi 10 Sebelah, Ping Pong Antara Pasukan, Hoki Lelaki 6 Sebelah dan Tenis Berpasukan diadakan pada 12 dan 13 Ogos 1989.

– Sementara Pertandingan Bola-sepak 7 Sebelah, Bola Tampar Lelaki, Sepak Takraw Antara Regu dan Bola Jaring diadakan pada 19 dan 20 Ogos 1989.

2.2 Sekretariat Sukan Pelajar Universiti juga menganjurkan Sukan Alumni pada 18 Ogos 1989 bagi memeriahkan lagi Konvo UPM ke 13. Di antara acara permainan yang dipertandingkan ialah Tenis, Ragbi, Bolasepak, Bola Jaring dan Tarik Tali.

2.3 Beberapa Pertandingan Tertutup (di antara para pelajar) telah diadakan oleh beberapa Jawatankuasa Kecil permainan sebagai asas pemilihan dan pendedahan pemain - pemain yang berbakat.

– 26 Julai – 02 Ogos 1989  
Kejohanan Skuasy Tertutup UPM.

– 19 Sept, – 04 Okt. 1989  
Kejohanan Badminton Ter-

tutup (Bergu dan Perseorangan – Bahagian Lelaki & Wanita).

– 09 – 17 Sept, 1989  
(2 hujung minggu)  
Kejohanan Tenis Tertutup (Bergu dan Perseorangan – Bahagian Lelaki & Wanita)

2.4 Aktiviti Olahraga Pasukan Universiti

– Trek dan Padang untuk per-sediaan.

– 06 Sept., 1989  
Lari berganti-ganti Jalan Raya – Antara Kolej-kolej Kediaman.

– 23 & 24 Sept. 1989  
Pemilihan peserta Trek dan Padang Universiti – diadakan di Stadium PERMATA, Petronas, Bangi.

## Aktiviti Semester Disember 1989/90

### 3. • Disember & Januari 1990

3.1 Temasya Sukan MASUM (Antara Universiti/IPT Malaysia) Peringkat Pertama di USM Pulau Pinang pada 04 – 07 Dis. 1990. Kontigen UPM berjaya menjadi **Johan dalam Lima (5)** jenis sukan dan memperolehi **dua (2) Naib Johan** daripada dua belas (12) jenis sukan yang dipertandingkan.

3.2 Dalam Temasya Sukan MASUM Peringkat Kedua di Universiti Malaya, Kuala Lumpur pada 08 – 11 Jan. 1990 – Kontigen UPM berjaya menjadi **Johan dalam empat (4)** acara dan memperolehi **Naib Johan dalam dua (2)** acara daripada sebelas (11) jenis sukan yang dipertandingkan.

3.3 Kontigen UPM muncul sebagai **Juara Keseluruhan** pada kejohanan Trek dan Padang MASUM ke 6 yang berlangsung

di Universiti Utara Malaysia pada 15 dan 16 Dis. 1989. Para atlit Universiti berjaya memungut 18 Pingat Emas daripada 38 Pingat Emas yang dipertandingkan.

3.4 Jawatankuasa Kecil Sepak Takraw menganjurkan dua (2) pertandingan ke arah memajukan permainan tersebut:

1. Pertandingan Antara Regu dan Sepaktraga Bulatan – Antara Kolej-kolej Kediaman pada 06 – 07 Januari 1990.

2. Pertandingan Berpasukan Antara Kolej-kolej Kediaman bagi merebut Piala Warisan pada 13 & 14 Januari 1990.

3.5 Menganjurkan Temasya Sukan Antara Kolej-kolej Kediaman bermula pada 11 Jan. – 19 Mac 1990. Sebanyak 23 acara permainan dipertandingkan di mana acara-acara tersebut dijalankan secara berperingkat-peringkat (MODUL).

3.6 UPM diberi penghormatan menganjurkan Pertandingan Tae Kwon Do MASUM pada 20 Jan. 1990 bertempat di Dewan Besar, UPM.

#### 4. Februari/Mac 1990

4.1 Meneruskan Temasya Sukan Antara Kolej-kolej Kediaman Modul ke 2 hingga ke 4. Temasya Sukan tersebut berakhir pada 20 Mac 1990.

4.2 Mengadakan Majlis Penganugerahan Lencana Sukan 1989/90 pada hari Rabu 21 Mac 1990 jam 8.30 malam bertempat di Dewan Besar, UPM. Empat (4) orang atlit UPM telah dianugerahkan Lencana Biru Universiti – Lencana Tertinggi yang disampaikan oleh pihak Universiti kepada ahli-ahli sukan yang aktif dan mempunyai pencapaian yang membanggakan.

#### 5. April 1990

5.1 Seramai enam (6) orang pelajar UPM telah terpilih mewakili Majlis Sukan Universiti (MASUM) ke Santander, Sepanyol menyerta pertandingan Tae Kwon Do Universiti Se dunia ke 2 pada 05 – 08 April 1990.

#### Pusat Kesihatan Pelajar

Bagi tahun 1989 jumlah kedatangan di Pusat Kesihatan Pelajar ialah 34,353 – 29,942 (87.15%) ialah di Klinik Perubatan dan 4,411 (12.85%) di Klinik Pergigian. Sebanyak 357 kes telah dirujuk di Hospital-hospital Kerajaan dan 84 daripadanya telah dimasukkan di Hospital-hospital tersebut. Di Wad Pusat Kesihatan Pelajar pula seramai 180 orang pelajar telah dimasukkan kerana mengidapi penyakit berjangkit. Antara sebab-sebab kedatangan di Klinik Perubatan ialah penyakit Pernafasan 34.45%, Kulit 14.63%, Urat Saraf 9.44%, Kecederaan 9.30% dan Penghazaman 4.91%. Di Klinik Pergigian pula 40.29% ialah tampalan kekal, 15.05% tampalan sementara, 12.49% bersih gigi, 6.82% cabut gigi dewasa dan 6.60% cabut gigi susu.

#### Lain-lain Perkhidmatan

Pusat Kesihatan Pelajar juga menjalankan:

- |   |                          |
|---|--------------------------|
| a. Pemeriksaan kebersihan di tiap-tiap Kolej Kediaman dan Kafeteria | – 5 kali                 |
| b. Semburan Nyamuk (fogging)  | – 4 kali                 |
| c. Kempen Derma Darah   | – 2 kali (1870 penderma) |
| d. Kursus-kursus Kesihatan  | – 8 kali                 |
| e. Ceramah-ceramah Kesihatan  | – 1 kali                 |
| f. Perkhidmatan Pertolongan Cemas di Padang                         | – 46 aktiviti            |

# FAKULTI PERTANIAN

## DEKAN

Prof. Mohd. Zain Hj. Abdul Karim B. Agr. Sc., M. Agr. Sc. (NZ), Ph. D. (Cornell)

## KAKITANGAN

### Jumlah Kakitangan

Jabatan	Kategori A	Kategori B	Kategori C	Kategori D
Pejabat Dekan	2	—	7	6
Agronomi dan Hortikultur	43	1	29	5
Perlindungan Tumbuhan	21	2	22	9
Sains Tanah	26	2	30	33
Pengajian Pembangunan Manusia	25	—	17	10
<b>JUMLAH</b>	<b>117</b>	<b>5</b>	<b>105</b>	<b>52</b>
<b>JUMLAH BESAR</b>				<b>279</b>

### Perlantikan Baru

Seorang pensyarah dan 10 orang Pembantu Am Rendah telah dilantik sepanjang tahun.

### Perletakan Jawatan

Seorang pensyarah telah meletak jawatan pada 18 Mei, 1989.

### Cuti Pelajar

Seramai 20 orang pensyarah sedang bercuti belajar untuk program Ph. D. di dalam dan di luar negeri.

## PERKARA AKADEMIK

### Ijazah Lanjutan

Seramai 57 orang pelajar sedang mengikuti ijazah lanjutan di Fakulti ini, iaitu 22 orang Ph. D., 29 orang M. Agr. Sc. dan 6 orang bagi program M.S.

### Pemeriksa Luar

Seramai 2 orang pemeriksa luar telah bertugas di Fakulti Pertanian bagi

sesi 1989/90. Mereka ialah:—

1. Prof. Linda Jean Nelson dari Department of Family and Child Ecology, Michigan State University, USA bagi bidang Pembangunan Manusia; dan
2. Prof. G. S. Khush dari International Rice Research Institute, Philippines bagi bidang Pertanian.

## PENYELIDIKAN

1. Prof. Mohd. Zain Karim (Ketua Program): Improvement of production and postharvest practices of selected tropical fruits.
2. Dr. Mohmmad Md. Ali (Ketua Program): Improvement on yield and quality of chilli through proper agronomic management.
3. Dr. Azizah Hashim (Ketua Program): Improving productivity of cocoa in Malaysia through better pest and crop management practices.

4. Dr. Cheah Chooi Hwa (Ketua Program): Production of high yielding groundnut (*Arachis hypogaea*) varieties with minimum inputs.
5. Prof. Yap Thoo Chai (Ketua Program): Improvement of food crops.
6. Dr. Mohd. Yusof Hussein (Ketua Program): Agroecosystem management of plantation crop: increasing productivity of oil palm through efficient pollination and fertilization.
7. Dr. Saleh Kadzimin (Ketua Program): Germplasm preservation of selected ornamental plants for urban landscape use and visual perception and scenic assessment study.
8. Dr. Wan Sulaiman Wan Harun (Ketua Program): Characterization and management of problem soils.
9. Chee Heng Leng (Ketua Program): Family community health.
10. Dr. Jariah Hj. Masud (Ketua Program): Family development and resources utilization to improve the quality of life.
11. Dr. Sharifuddin Hj. Abdul Hamid (Ketua Program): Introduction of exotic crops in Malaysia.
12. Khalip Abdul Raffar (Ketua Program): Research on crop production under various soilless culture system.
13. Prof. Dr. Abdul Rahman Abdul Razak (Ketua Program): The science and technology of mushroom production on agro waste in Malaysia.
14. Dr. Mohd. Matthieu Abdullah (Ketua Program): Development of underutilized agro-based fibres.
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2. Abdullah Al-Hadi Hj. Muhamed (1989): Faktor-faktor psikososial yang mempunyai perkaitan dengan pembentukan tingkahlaku permulaan penggunaan dadah di kalangan remaja. **Seminar Ijazah Tinggi**, Fakulti Sastera dan Sains Sosial, Universiti Malaya: 26 Oktober 1989.
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78. Zaitun Yassin (1990): Keselamatan di kalangan kanak-kanak prasekolah: **Kursus Pendidikan Prasekolah**, UPM 14-19 Mei, 1990.

79. Zakaria W. & A.R. Razak (1990): Grain maize production in Malaysia. **Int. Seminar on Integrated Technology of Field Corn Production in the Paddy Field**. UPLB, Philippines, March 1990.

80. Zauyah, S., S. Paramanathan and Lim Jit Sai (1989): Implication of the recent changes in the soil taxonomy on the classification of ultisols and oxisols in Peninsular Malaysia., **Workshop on Recent Development in Soil Genesis and Classification**, Kuala Lumpur: 2-5 Oktober 1989.

81. Zauyah, S. (1989): Use of micromorphology in the classification of soils in Peninsular Malaysia. **Workshop on Recent Developments in Soil Genesis and Classification**, Kuala Lumpur: 2-5 Oktober, 1990.

#### SEMINAR/BENGGKEL/KURSUS DI-ADAKAN:

1. 5 - 9 Jun 1989:  
Kursus Perlebahan ke 13, peringkat kebangsaan.
2. 23 - 24 September 1989:  
Hari Ladang Lebah Madu, peringkat kebangsaan.
3. 3 - 8 November 1989:  
Kursus Perlebahan ke 14, peringkat kebangsaan.
4. 20 - 25 November 1989:  
Kursus "Pesticide application Technology" peringkat kebangsaan.

# FAKULTI PERHUTANAN

## DEKAN

Profesor Madya Dr Kamis Awang, B.Sc. (For.) Hons, Ph.D. (A.N.U.)

## KAKITANGAN

### Jumlah Kakitangan

Jabatan	Kategori			
	A	B	C	D
Pejabat Dekan	4	—	10	29
Jabatan Pengurusan Hutan	12	—	7	5
Jabatan Pengeluaran Hutan	16	—	11	5
<b>JUMLAH</b>	<b>32</b>	<b>—</b>	<b>28</b>	<b>39</b>
<b>JUMLAH BESAR</b>				<b>99</b>

### Cuti Belajar

Seramai tujuh orang pensyarah sedang mengikuti kursus Ph.D. Seroang pensyarah sedang cuti Sebatikal.

## TABURAN PELAJAR MENURUT SESI AKADEMIK – B.S. PERHUTANAN

### Sesi Akademik

Tahun	85/86	86/87	87/88	88/89	89/90
Tahun 1	36	24	49	43	51
Tahun 2	38	36	14	49	41
Tahun 3	24	38	36	14	49
Tahun 4	20	23	38	35	15
	118	111	137	141	156

## Ijazah Lanjutan

Seramai 16 orang pelajar mengikuti ijazah lanjutan, Ph.D – 2 orang dan Master – 14 orang.

## PENYELIDIKAN

1. Ahmad Said Sajap: Biologi, ekologi dan kawalan biologi serangga perosak ladang hutan.
2. Ahmad Said Sajap: Entomopathogens of the Psyllid, *H. cubana*.
3. Kamaruzaman Jusoff and Wan Sabri W.M. : Effects of recreation on soils in Kanching Recreation Forest.
4. Kamaruzaman Jusoff and Nik Muhamad Majid: Survey, quantification and rehabilitation of degraded forest areas.
5. Kamis Awang: Multipurpose tree species and provenance trial.
6. Ismail Hashim: Sawmill flow analysis using queueing theory.
7. Ismail Hashim: Simulation analysis of log and lumber cutting patterns.
8. Lai Food See: Sediment studies in hill forested watersheds.
9. Lee, S.S.: Studies on some aspects of the biology of *Shorea* spp. mycorrhiza.
10. Lee, S.S.: Heart rot of *Acacia mangium* in Sabah.
11. Lim Meng Tsai: Ecological studies on Kapur and Chengal.
12. Lim Meng Tsai: Productivity and nutrient cycling in *Acacia mangium* stands.
13. Nik Muhamad Majid: Intercropping *Acacia mangium* with annual legumes.
14. Nik Muhamad Majid: Thinning and pruning regime for *Acacia mangium* plantation and their economics.
15. Nik Muhamad Majid: Determination or nutrient requirement of plantation species.
16. Nik Muhamad Majid: Evaluation of some agroforestry systems in Malaysia.
17. Nik Muhamad Majid: Effects of natural forest conversion to plantation forest on soil properties and tree growth.
18. Nor Aini Ab. Shukor: Genetic variation and relationship of plantation Species.
19. Nor Aini Ab. Shukor: Provenance trials of *Acacia auriculiformis*.
20. Nor Aini Ab. Shukor: Production of non-dipterocarp secondary tree species for composite products.
21. Paridah Md. Tahir dan Hizamri: Moisture resistance of some commercial wood finishes.
22. Paridah Md. Tahir dan Laura Bunye: Organosolv pulping of *Paraserianthes falcataria*.
23. Razali Abdul-Kader: Production technology of low density particleboard.
24. Razali Abdul-Kader: Warp-free drying of rubberwood lumber.
25. Wan Sabri W. M., S. Ahmad and R.M. Rashid: Benefits valuation of outdoor recreation resources.
26. Wan Sabri W. M., and Mohd. Subri Md. Isa: Recreational congestion in Kancing Recreation Forest.
27. Wan Sabri W. M., and Maznah Mahali: Attractiveness of Kanching Recreation Forest: an evaluation by the visitors.
28. Wan Sabri W.M., Mohamadiah Nordin dan Zahid Embi: Carrying capacity of forest recreation areas.
29. Wan Sabri W.M. and Mohamadiah Nordin: Recreational area visit choice and preferences.
30. Wan Sabri W.M.: Inventory of

outdoor recreation and tourism areas.

31. Yusuf Hadi: Log production planning.

32. Yusuf Hadi: Stumpage appraisal for Malaysian forestry.

33. Yusuf Hadi: Sampling intensity for pre-felling inventory under the Selective Management System.

## PENERBITAN

1. Abdul Kadir Hj. Din and Kamis Awang. 1989. Tropical forest resources in the development of Malay culture. Paper presented at 2nd International Conference on Malay Civilization. 15 – 20 August, 1989. Kuala Lumpur. 30p.

2. Ahmad Said Sajap and L.C. Lewis. 1989. Impact of *Nosema pyrausta* (Microsporida: Nosematidae) on a Predator, *Chrysoperla carnea* (Neuroptera: Chrysopidae). *Environ. Entomol.* 18 (1) : 172 – 176.

3. Ahmad Said Sajap. 1989. Incidence of attack by beehole borer, *Xyleutis ceramicus* Wlk., in *Gmelina arborea* Roxb. plantation in Peninsular Malaysia. Paper presented at Regional Symposium on Recent Development in Tree Plantations of Humid/Subhumid Tropics of Asia June 5 – 9, 1989. Universiti Pertanian Malaysia, Serdang, Malaysia.

4. Ahmad Said Sajap and Lee Su See. 1989. *Xylosandrus compactus* (Eichhoff) Coleoptera: Scolytidae) – a new insect pest of *Acacia mangium* Willd, Malaysian Forester (in press).

5. Ahmad Said Sajap. 1989. Insect pest of urban trees. Paper presented at ASEAN Seminar on Urban Forestry. November 6–8 November 1989. Singapore.

6. Ahmad Ainuddin Nuruddin, Mohd. Rasri Hamzah and Mohd. Fauzi Abu Bakar. 1989. Forest fire management practices in Peninsular Malaysia. Paper presented at International conference on "Meeting Global Wildland Fire

Challenges The People, The Land, The Resources". 23–26th July, 1989.

7. Ahmad Ainuddin Nuruddin and Abdul Wahab Deraman. 1989. Environmental characteristics of 1 1/3 year old *Acacia mangium* stand. Paper presented at Regional Symposium on Recent Development in Tree Plantations of Humid/Subhumid Tropics of Asia. 5–9th June, 1989. Serdang, 12 pp.

8. Ahmad Ainuddin Nuruddin, Mohd. Basri Hamzah, Abdul Rahman Md. Derus and Jalaluddin Harun. 1989. National Forestry Policy: An assessment with Islamic resources management principles. Paper presented at International Seminar on Islamic Philosophy and Sciences. 30th May – 2nd June, 1989. Penang. 16 pp.

9. Awang Noor Abd. Ghani and Kamis Awang. 1989. Development and evaluation of agroforestry systems for fodder production paper presented at the International Workshop on Tree Fodders. 24–28 July 1989. Denpasar, Bali, Indonesia. 28p.

10. Hashim Md. Noor, Sheikh Ali Abod and Jalaluddin Harun. 1989. Wood properties of forest plantation trees and the effects of silvicultural practices on them. Paper presented at an International Symposium on Recent Development in Tree Plantations of Humid/Subhumid Tropics of Asia. UPM, Serdang, 5–9 Jun, 1989.

11. Ismail Hashim. Design of acceptance sampling plans for controlling the quality of kiln-dried lumber. *Pertanika*.

12. Ismail Hashim. Productivity trends in downstream wood-based manufacturing industries. *Journal Productivity*.

13. Jalil Md. Som and Nor Aini Ab. Shukor. Management of forest genetic resources in Peninsular Malaysia. Kertas kerja di kursus Management of Genetic Resources and Agroforestry areas di Bogor, Indonesia dari 22 Ogos – 28 September 1989.

14. Kamaruzaman Jusoff, 1989. Mixing

- sheep and rubber in Malaysia. International Ag-Sieve. Roadale Institute, Emmaus, PA. 2(5). 8p.
15. Kamaruzaman Jusoff and Nik Muhamad Majid. 1990. Inventory and monitoring of forest wetland resources of Asean. *J. For. Ecol. and Manage., U. KINGDOM*. (In Press).
16. Kamaruzaman Jusoff. 1989. Physical soil properties associated with recreational use of forested areas in Malaysia. *J. Environ. Conserv., SWITZERLAND*. 16(4) : 339 – 42.
17. Kamaruzaman Jusoff. 1989. Saw-milling safety and accident prevention in Selangor, Malaysia. Proc. IUFRO Joint Meeting, Div. 3, P3. 03–04 Economics in the Timber Industry. Conference in Lappeeranta, FINLAND. Aug. 29–31, 1989. pp. IX: 1–13.
18. Kamaruzaman Jusoff. 1989. Effects of recreation on soil properties in Kanching Recreation Forest, Malaysia. Paper accepted for presentation at the 13th. Commonwealth Forestry Conference, 18–30 September, 1989, Rotorua, NEW ZEALAND.
19. Kamaruzaman Jusoff. 1989. Heating value determination of green and brown Balsam Fir Needles (*Albies balsamea*). Paper accepted for presentation at the IUFRO Project group P3.05–00 Meeting held on September 24–28, 1989 in Riga, Latvia, SSR USSR.
20. Kamaruzaman Jusoff and Kamis Awang. 1989. The initial establishment and growth of *Acacia mangium* seedlings on Compacted Soils. Paper accepted for presentation at the IUFRO WPS 3. 02–01 Symposium "Efficiency of Stand Establishment Operations", 1–15 September, 1989. Rotorua, NEW ZEALAND.
21. Kamis Awang and Ng A.B. 1989. Effects of hormones and cutting positions on rooting of cuttings of *Acacia mangium* Willd and *Shorea leprosula* Mig. – Paper presented at the Regional Symposium on Recent Development in Tree Plantations of Humid/Subhumid Tropics of Asia. 5–9 June, 1989. UPM, Serdang, Malaysia. 23 p.
22. Kamis Awang. 1989. Social forestry: A forester's perspective. Paper presented at the Workshop on Social Forestry. 6 December 1989. Serdang, Malaysia. 11 p.
23. Lai, F.S. 1989. Effects of plantation establishment on water resources: with special reference to the Sg. Tekam Experimental Basin Study. Kertas kerja di symposium on Recent Developments in Tree Plantations of Humid/Subhumid Tropics of Asia, 5–9 Jun 1989.
24. Lai, F.S. and Salleh Omar. 1989. Rainfall interception, throughfall and stemflow in two *A. mangium* stands in Kemasul, Pahang. Kertas kerja di Tropical Forest Hydrology, 4–8 September 1989.
25. Lee, S.S. and Goh, L.K. 1989. Seedling diseases of *A. mangium* Willd. and *G. arborea* Roxb. in a Forest Nursery. Kertas kerja di Symposium on Recent Development in Tree Plantations in the Humid/Subhumid Tropics of Asia. 5–9 June 1989, UPM.
26. Lee, S.S. and Lim, K.L. 1989. Mycorrhizae infection and foliar phosphorus of seedlings of three Dipterocarp species growing in a selectively logged and a plantation forest. *Plant and Soil* 117: 237 – 241.
27. Lee, S.S. 1989. An unusual ectomycorrhizal-like structure from *Shorea leprosula* (Dipterocarpaceae). Kertas kerja di BIOTROP-UNESCO-IWED Fourth Round Table Conference on Dipterocarps. 12–15 December 1989, Bogor, Indonesia.
28. Lee, S.S. 1990. The association of *Thelephora ramarioides* Reid with *Acacia mangium* Willd. Kertas kerja di MAPPS Third International Conference on Plant Protection in the Tropics 20–23 March 1990, Genting Highlands.
29. Lim Meng Tsai. Modelling the growth of *Acacia mangium* Willd.

Kertas kerja di Regional Symposium on Recent Developments in Tree Plantations of Humid/subhumid Tropics of Asia, 5–9 Jun 1989, UPM.

30. Lim Meng Tsai and Selvarajah, N. Litter production, accumulation and decomposition in a *Dryobalanops aromatica* stand. Kertas kerja di Fourth Roundtable Conference on Dipterocarps di Bogor, Indonesia dari 12–15 Desember 1989.

31. Lim Meng Tsai and Siti Rubiah Zainudin. Germination and early growth of *Neobalanocarpus heimii*. Kertas kerja di Fourth Roundtable Conference on Dipterocarps di Bogor, Indonesia dari 12 – 15 Desember 1989.

32. Mohd. Hamami Sahri, Razali Abdul Kader, Kee, T.K. 1989. Gluing properties of wood of three fast-growing plantation species. Paper presented at the Regional Symposium on Recent Development in Tree Plantations of Humid/Subhumid Tropics of Asia, 5–9 June 1989. Serdang.

33. Mohd. Hamami Sahri, Ahmad Ainuddin Nuruddin and Lee Chee Ling. 1989. Calorific value and the potential of some plantation species for energy production. Paper presented at Regional Symposium on Recent Development in Tree Plantations of Humid/Subhumid Tropics of Asia. 5–9 June 1989. Serdang. 12 pp.

34. Nik Muhamad Majid, Awang Noor Abd. Ghani and Jamaludin Abd. Hamid. 1989. Economic appraisal of sheep grazing under rubber plantation in Peninsular Malaysia. Paper presented at the Symp. on agroforestry systems and technologies. 19–21 September 1989. Bogor, Indonesia. 22 pp.

35. Nik Muhamad Majid and Ismail Harun. 1989. Integrated farming under rubber plantation in Peninsular Malaysia. Paper presented at the Symp. on agroforestry systems and technologies. 19–21 Sept. 1989. Bogor, Indonesia. 25 pp.

36. Nik Muhamad Majid, Azizah Chulan and Idris Abdol. 1989. Growth response of *Acacia mangium* Willd. to NPK fertilization on exmining land. Poster presented at the Int. Conf. on fast-growing trees and N-fixing trees. Marburg, F.R.G. 8–12 October 1989. 30 pp.

37. Nor Aini Ab. Shukor and Jalil Md. Som. Agroforestry status in Malaysia. Report di Kursus Management of Genetic Resources and Agroforestry areas di Bogor, Indonesia dari 22 Ogos – 28 September 1989.

38. Nor Aini Ab. Shukor. Observations on some social forestry practices in Central and East Java. Report di kursus Management of Genetic Resources and Agroforestry areas dari 22 Ogos – 28 September 1989.

39. Obrycki, J.J., M.N. Hamid, Ahmad Said Sajap and L.C. Lewis. 1989. Suitability of corn insect pests for development and survival of *Chrysoperla carnea* and *Chrysopa oculata* (Neuroptera: Chrysopidae). Environ. Entomol. 18(6) : 1126 – 1130.

40. Paridah Md. Tahir and Terry Seller Jr. (1989). Phenolic adhesive modified with Organosolv-lignin used to Bond Southern Pine Plywood. Paper presented at the 197th American Chemical Society National Meeting, April 9–14, 1989, Dallas, Texas, U.S.A.

41. Razali Abdul-Kader and Kamis Awang. 1989. Forest Resources – the management of competing uses, kertas kerja di International Law Conference, 6–8 Nov. 1989, Port Moresby.

42. Sheikh Ali Abod and A.D. Webster. 1989. Root and shoot growth of newly – transplanted apple trees as affected by rootstock cultivar, defoliation and time after transplanting. *J. Hort. Sc.* 64 (6) : 655 – 666.

43. Sheikh Ali Abod and Jaludin Abun. 1989. Root and shoot growth and their manipulations of *Acacia mangium*

seedlings. Paper presented at an International Symposium on Recent Development in Tree Plantations of Humid/Subhumid Tropics of Asia. UPM, Serdang, 5–9 Jun 1989.

44. Sheikh Ali Abod and Cheong Kok Leong. 1989. Physical and chemical control of the growth of *Acacia mangium* seedlings for plantation establishment in Malaysia. Paper presented at a symposium on Efficiency of Stand Establishment Operations. 11–15 September 1989, Rotorua, New Zealand.

45. Sheikh Ali Abod. 1989. Root growth studies of *P. caribaea* var. *hondurensis* seedlings with implications for bare-root planting. Paper presented at The International Symposium on Man-made Communities in the Tropics and Rational Development of Tropical and Subtropical Lands. 4–9 November 1989. Hikou, Hainan Island, PR China.

46. Wang, Q; Sasaki, H. and Razali Abdul-Kader. 1989. Properties of tropical fast-growing timbers from plantation thinnings in Sabah, Malaysia, Wood Research & Tech. Notes No. 25: 45 – 51.

47. Yusuf Hadi; Awang Noor Abd. Ghani; Doraisingam; S.F. Liew. 1989. A network-based model for planning forest plantation establishment in Peninsular Malaysia. Paper presented at the Symposium on recent development in tree plantations of humid/subhumid tropics of Asia, 5–9 June 1989, Serdang 17p.

48. Zaidon Ashaari, H.M. Barnes, R.C. Vasishth, D.D. Nicholas and D.E. Lyon. 1990. Effect of aqueous polymer treatment on wood properties Part I: treatability and dimensional stability. IRG/WP/3610, 11p.

49. Zaidon Ashaari, H.M. Barnes, R.C. Vasishth, D.D. Nicholas and D.E. Lyon. 1990. Effect of aqueous polymer treatments on wood properties Part II: Mechanical Properties. IRG/WP/3611, 9p.

50. Zakariya Abdullah and Ahmad Ainuddin Nuruddin. 1988. Management of Kuala Lumpur greenery – its implication on tourism development. Paper presented at International Symposium on Nature Conservation and Tourism Development, 22–26 August 1988. Surat Thani, Thailand. 15 pp.

51. Zakariya Abdullah and Ahmad Ainuddin Nuruddin. 1989. Kuala Lumpur – Urban Forestry or just urban beautification. Paper presented in ASEAN seminar in urban forestry 6–8 November 1989. Singapore. 11 pp.

52. Zakariya Abdullah and Ahmad Ainuddin Nuruddin. 1989. Urban forestry in Malaysia. Past and Present. Malaysian Forester (submitted).

#### SEMINAR AKADEMIK

1. Use of direct scanning X-Ray densitometry to study wood quality disampaikan oleh Prof. Robert L. Kramer pada 4 Mei 1989.

2. Development of particleboard disampaikan oleh Dr. Mark Irlle pada 25 Ogos 1989.

3. Effects of soil compaction on pulp and paper properties of 4-year-old *A. mangium* disampaikan oleh En. Jalaluddin Harun pada 29 Ogos 1989.

4. Newsprint from Rubberwood CIMP disampaikan oleh En. Jalaluddin Harun pada 29 Ogos 1989.

5. Physical and chemical control of the growth of *Acacia mangium* seedlings for plantation establishment in Malaysia disampaikan oleh Dr. Sheikh Ali Abod pada 5 September 1989.

6. Forest fire management practices in Peninsular Malaysia disampaikan oleh En. Ahmad Ainuddin Nuruddin pada 12 September 1989.

7. Tools in plant identification disampaikan oleh Dr. Faridah Hanum Ibrahim pada 26 September 1989.

8. K. L. Greenery – Tree planting or Ubran Forestry disampaikan oleh Hj. Zakariya Hj. Abdullah pada 10 Oktober 1990.

9. Trip to Kenya disampaikan oleh Dr. Ahmad Said Sajap pada 17 Oktober 1989.

10. Synthesis and evaluation of modified organosolv lignin phenol formaldehyde for bonding southern pine plywood

disampaikan oleh Puan Paridah Tahir pada 24 Oktober 1989.

11. Root growth studies of Pinus caribaea seedlings with implications for bare-root planting disampaikan oleh Dr. Sheikh Ali Abod pada 1 November 1989.

12. World Forestry – Issues and concerns disampaikan oleh Dato' Dr. Salleh Mohd. Nor pada 19 December 1989.

# FAKULTI KEDOKTORAN VETERINAR DAN SAINS PERTERNAKAN

## DEKAN

Profesor Dr. Abdul Latif Ibrahim

## KAKITANGAN

### Jumlah Kakitangan

Jabatan	Kategori A	Kategori B	Kategori C	Kategori D
Pejabat Dekan	2	1	8	8
Sains Peternakan	16	3	20	22
Patologi & Mikrobiologi	16	4	17	11
Pengajian Klinikal Vet.	14	6	3	9
<b>JUMLAH</b>	<b>48</b>	<b>14</b>	<b>48</b>	<b>50</b>
<b>JUMLAH BESAR</b>				<b>160</b>

### Perlantikan Baru

Prof. Madya Dr. Shaik Mohd Amin bin Haji Babjee dilantik sebagai Ketua Jabatan Patologi dan Mikrobiologi Veterinar pada 1 Disember 1989.

### Bersara

Prof. Madya Dr. Mohd Fadzil Haji Yahaya telah bersara pada 31 November 1989.

### Cuti Belajar

1. Seorang Pensyarah bercuti belajar di University of Bristol, U.K.
2. Dua orang Tutor mengikuti kursus Ph.D. di luar negeri.

### PERKARA AKADEMIK

#### Ijazah Lanjutan

Seramai 32 orang pelajar mengikuti ijazah lanjutan, iaitu Ph.D. – 20 dan Master – 12.

### Pemeriksa Luar

Seramai 4 orang Pemeriksa Luar berkhidmat di Fakulti ini. Mereka ialah:

1. Prof. Raymond George Wales dari Murdoch University.
2. Dato' Dr. Ahmad Mustaffa Babjee Ketua Pengarah Kementerian Pertanian.
3. Prof. E.J.L. Soulsby daripada Department of Clinical Veterinary Medicine, University of Cambridge.
4. Prof. D.E. Noakes.

### PENYELIDIKAN

1. Chronic toxicity studies of glyphosate in rats – Dr. Abd. Salam Abdullah.
2. Brachiaria decumbens toxicity in sheep – Dr. Abd. Salam Abdullah.
3. Conservation and improvement of indigenous livestock (IRPA Project) – Dr. Tan Hock Seng.

4. Use of radioimmunassay techniques to assess reproductive performance of cattle (IAEA Project) – Dr: Tan Hock Seng.
5. Reproduction performance of imported sheep (UPM Project) – Dr. Tan Hock Seng.
6. Studies on improving breed and productive performance of village chicken – Puan Ramlah Hamid
7. Histochemical studies of tropical grasses and their degradation in the rumen – En. Osman Awang.
8. Effect of high level of milk and fat intake on the performance of crossbred dairy calves – En. Osman Awang.
9. Evaluation of carcass composition of sheep under restricted feeding – Dr. Ishak Yahaya.
10. Sire Evaluation as means of Herd Improvement – Dr. Ishak Yahaya.
11. Semen quality of crossbred water buffaloes used as draught.
12. Draught studies in crossbred water buffalo.
13. Abdul Latif Ibrahim:
  - a. Vaccination of village chickens in Malaysia against Newcastle disease. Supported by a grant from the Australian Center for International Agriculture Research.
  - b. Application of Genetic engineering in animal health and Production IRPA.
  - c. Animal Biotechnology (MPKSN).
14. Abdul Rahim Mutalib:
  - a. Etiologic Studies of Neonatal Kid Pneumonia.
  - b. Ecology of Bifidobacteria, Lactobacillus & Bacteroides in Goats.
  - c. The Microflora of the eye of the sheep.
- d. Captive Breeding of the Silvered Leaf-Monkey Joint Research.
15. Abdul Rani Bahaman:
  - a. Epidemiology of leptospiral infection in Malaysia.
  - b. Immunogenicity of Pasteurella multocida and P. haemolytica.
  - c. Diagnosis of bovine brucellosis.
16. Awang, I.P.R.: Isolation and characterization of avian paramyxoviruses.
17. Mohd. Shah Majid: Studies on mycoplasma infections in chickens.
18. Mohd. Zamri-Saad:
  - a. Aetiological Studies on pneumonia of sheep and goats.
  - b. Contagious ecthyma of sheep and goats.
  - c. Studies on sarcoptic mange of goats.
19. Rasedee Abdullah: The effect of nephrotic syndrome on blood coagulation associated mechanisms.
20. Rehana A. Sani: Detection of circulating antigens in T. evansi infection in cattle and buffalo.
21. Saleha, A.A.: Evaluation of Hydrogen Sulphide Method; for bacteriological testing of Drinking Water.
22. Shaik Mohd. Amin Hj. Babjee:
  - a. Rintangan lembu Kedah-Kelantan terhadap sengkent Boophilus microplus.
  - b. Parasites of birds.
23. Sheikh-Omar, A.A.:
  - a. Etiologic studies of Pneumonia in sheep & goats.
  - b. The pathogenicity of the local IBR virus in cattle & buffalo.
  - c. Studies of animal rotaviruses.
  - d. Abattoir studies on feedlot cattle.

24. Ungku Chulan U. Mohsin: Diagnoses of poultry disease of livestock using immunoperoxidase staining technique.

25. Abdul Aziz Saharee: Studies on haemorrhagic septicaemia in cattle and buffaloes in Malaysia.

26. Abdul Aziz Saharee: A study of disease and mortality in young ruminants.

27. A. Aziz Saharee, Nadzri Salim, Fatimah Iskandar dan Shafie's Mohamad: A study on diseases and mortality in young ruminants in Malaysia: goats and sheep in the Hulu Langat District, Selangor (IRPA).

28. Aini Ideris: Vaccination of village chickens in Malaysia against Newcastle disease (ACIAR).

29. Aini Ideris: The establishment of improved methods for the diagnosis and control of livestock diseases in Southeast Asia using the Enzyme Linked Immunosorbent Assay (ELISA) (ACIAR).

30. Aini Ideris: Pathogenicity studies of *Haemophilus gallinarum* (MPKSN).

31. Aini Ideris: Pre-mix Newcastle disease vaccine (UPM).

32. Fatimah Iskandar dan Sheikh Omar A.R.: Molecular detection and analysis of Malaysian animal Rotaviruses (MPKSN).

33. Fatimah Iskandar: Studies on neonatal calf diarrhoea (UPM).

34. Jainudeen, M.R. dan Rosnina Yusoff: Embryo transfer in goat (MPKSN).

35. Jainudeen, M.R. dan Wahid Haron: In-vitro fertilization of cattle oocytes (UPM).

36. Kalthum Hashim: Study of the effect analgesics on the respiratory blood gas value in dogs and cats.

37. Nadzariah Cheng Abdullah: Studies on the cat liver fluke, *Platynosomum*

*fastosum*.

## PENERBITAN

1. A. Salam Abdullah, M.M. Noordin and M.A. Rajion (1989): Neurological Disorders in Sheep During signal Grass (*Brachiaria decumbens*) Toxicity. *Veterinary and Human Toxicology*. 31, 128 - 129.

2. M.M. Noordin, A. Salam Abdullah and M.A. Rajion (1989): Experimental *Brachiaria decumbens* Toxicity in cattle. *Veterinary Research Communication* 13, 491 - 494.

3. A. Salam Abdullah, M.M. Noordin and M.A. Rajion (1990): Induced *Brachiaria decumbens* Toxicity in Rats. *Journal Malaysian Applied Biology* (in press).

4. Choo Pow Yoon, A. Salam Abdullah and Che Nyonya Abdul Razak (1989): Antimicrobial resistance patterns of *E. coli* isolated from farm handlers, normal and diarrhoeic piglets. *Journal Veterinary Pharmacology and Therapeutics* (submitted for publication).

5. A. Salam Abdullah and M.A. Rajion (1989): Signal grass (*Brachiaria decumbens*) Toxicity in sheep. Changes in Rumen Microbial Population and level of Volatile Fatty Acids. *Veterinary and Human Toxicology* (submitted for publication).

6. Drost, M., Tan, K.L. Mac Millan and W.W. Thatcher (1983): Successful asynchronous embryo transfer in cattle. *Theriogenology*, 31:392.

7. Tan, H.S., H. Kassim, S. Adnan and G. Termizi (1990): Effect of palm kernel cake on puberty and conception rate in indigenous cattle. *Proc. 5th AAAP Anim. Sci. Congress, Taipei, Taiwan* (in press).

8. Lucy, M.C., W.W. Thatcher, H.S. Tan and M. Drost (1990): Effect of timing of prostaglandin injection subsequent to embryo collection on resumption of normal follicular development following superovulatory

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# FAKULTI EKONOMI DAN PENGURUSAN

## DEKAN

Dr. Mohd Ariff Hussein, B. Agric. Sc. (Hons) Malaya, M.S, Ph.D (Penn State).

## KAKITANGAN

Jabatan	Kategori			
	A	B	C	D
Pej. Dekan	3	3	9	11
Ekonomi Sumber Asli	14	—	1	2
Pengurusan dan Pemasaran	19	—	1	2
Perakaunan dan Kewangan	16	—	1	1
Ekonomi Pertanian	13	—	1	1
Ekonomi	17	—	1	2
<b>Jumlah</b>	<b>82</b>	<b>3</b>	<b>14</b>	<b>19</b>

### Perlantikan Baru

Seramai 3 orang pensyarah, 2 orang tutor telah dilantik.

### Perletakan Jawatan

2 orang pensyarah telah meletak jawatan.

### Cuti Belajar

Seramai 16 pensyarah sedang mengikuti kursus di dalam dan luar negeri (Ph.D – 12 orang, cuti sabbatical – 4 orang).

## PERKARA AKADEMIK

### Program Ijazah Lanjutan

Seramai 83 orang pelajar mengikuti program Ijazah Lanjutan, iaitu Ph.D – 14 orang, Master Sains – 28 orang dan MBA – 41 orang.

### Program Bachelor

Seramai 1014 orang pelajar telah mengikuti program Bachelor di Fakulti ini.

- a) B.S Perniagaantani : 487 orang
- b) B.S Ekonomi Sumber : 236 orang
- c) Bachelor Perakaunan : 215 orang
- d) Dip. Perniagaantani : 76 orang

### Pemeriksa Luar

Seramai 4 orang pemeriksa luar telah bertugas di Fakulti, mereka ialah:

1. Prof. Werner Doppler dari University of Honhenheim, German Barat (B.S. Ekonomi Sumber).
2. Prof. Susan Dev, dari University of London, England (Bachelor Perakaunan).
3. Prof. James Marsden dari University of Kentucky, U.S.A (B.S Perniagaantani).
4. Prof. Lindsay, W. Daryl. dari University of Saskatchewan, Canada (Master Business Administration).

## PENYELIDIKAN

1. Prof. Dr. Mohd. Ariff Hussein, Dr. Ishak Hj. Omar: "Projek Penilaian Program Akuakultur" – program kerjasama dengan Kementerian Pertanian (Dis 1989 – Ogos 1990).

2. Muzafar Shah Habibullah: "Demand for Money by Business Enterprises in Malaysia Duration."

3. Muzafar Shah Habibullah dan Mohd Mansor Ismail: "Bee-Honey Industry in Malaysia: Structure, Cost and Efficiency."
4. Dr. Ishak Hj. Omar, Dr. Syed Kadir Alsagoff, Dr. Nik Mustapha Raja Abdullah: Kajian Sistem Pangu di Kuala Kedah dan Besut (LKIM).
5. Dr. Ishak Hj. Omar: "Fish Marketing in Malaysia." (MPKSN)
6. Ahmad Shuib: "Kajian Pengurusan Ladang Tanaman Padi, Getah, Kelapa Sawit, Koko dan Kopi di Semenanjung Sabah dan Sarawak."
7. Ahmad Shuib: "Penilaian Faedah Sumber Rekreasi Luar Kawasan Takungan Air Semenyih."
8. Ahmad Shuib: "Tourism Development in Tioman; The Perception of Residents. Analysis of Demand and The Perception of Tourists."
9. Iskandar Abdullah and Muzafar Shah Habibullah: "Advertising Expenditure in Malaysia: Its Relationship with Sales and Market Share."
10. Habrizah Hussin dan Dr. Zainal Abidin Mohamed, "Sistem Pengurusan Syarikat-Syarikat Pengangkutan Barangan Lembah Kelang."
11. Dr. Zainal Abidin Mohamed, Mohd. Mansor Ismail & Dr. Mad Nasir Shamsuddin: "Assessment of Sheep Industry in Malaysia."
12. Arfah Salleh, Hashanah Ismail, Badriyah Minai & Prof. A'Amir Nordin: "Pembentukan Sistem Penyimpanan Rekod Perakaunan Untuk Pengusaha Kecil."
13. Salmah Muhamed & Dr. Shaari Abdul Hamid: "Masalah-Masalah Yang Dihadapi Oleh Firma-Firma Kecil Di dalam Mendapatkan Bantuan Kewangan."
14. Dr. Khalid Abdul Rahim, "Resource Linkages of Pollution Control in The Palm Oil Industry."
15. Dr. Mohd Shahwahid Hj. Othman: "Price Competitiveness of Malaysian Timber Products."
16. Dr. Mohd Shahwahid Hj. Othman: "Supply and Demand Studies of Timber Products of Malaysia."
17. Dr. Maisom Abdullah & Dr. Mohd Shahwahid Hj. Othman: "Labour Absorption (Employment), Technical Progress and Productivity in Malaysian Resource Based Industries."
18. Dr. Mohammed Yusoff: "Malaysian Foreign Exchange Rate Its Determinants."
19. Saroni Judi & Dr. Roslan A. Ghaffar: "Kapasiti, Kos dan Kecekapan Industri Pemprosesan Kayu Gergaji Semenanjung Malaysia."
20. Saroni Judi & Dr. Roslan A. Ghaffar: Kos, Pendapatan dan Halangan-halangan Kemasukan di dalam Industri Pemprosesan Kayu Gergaji.
21. Azman Hassan & Dr. Roslan A. Ghaffar: "Struktur Kos dan Kecekapan Ekonomi Dalam Sektor Pengangkutan Kes MAS (Sistem Penerbangan Malaysia)."
22. Dr. Chew Tek Ann. "Farm Management Study of Rubber Estate."
23. Dr. Eddie Chiew Fook Chong and Dr. Chew Tek Ann: "Determinants of Fertilizer Use and Theoretical Framework for Economic Analysis in the Malaysian Plantation."
24. Dr. Maisom Abdullah: "Absorption Technology Transfer and Productivity Differences in Malaysian Agrobased Industries."
25. Azman Hassan, Dr. Roslan A. Ghaffar & Habrizah Hussin: "Kecekapan & Ekonomi Bidang dalam Sektor Pengangkutan Kes KTM."
26. Saroni Judi & Dr. Roslan A. Ghaffar: "Kos, Pendapatan dan Halangan-Halangan Kemasukan Di dalam Industri Pemprosesan Kayu Gergaji."

27. Dr. Zainal Abidin Mohamed & Samsinar Md. Sidin: "Struktur Pasaran Sektor Pembuatan Berasaskan Perakayuan dan Implikasinya Terhadap Pembentukan Strategi Pemasaran Perusahaan Kecil Bumiputra."
28. Tan Liong Tong: "Disclosure Practices in the Annual Reports of Malaysian Corporation."
29. Dr. Zakariah Abd. Rashid: "Technological Obsolescence of Malaysian Average Vintage Technologies."
30. Annuar Md. Nasir: "The Efficient Market Hypothesis in a Thin Market: Tests with Appropriate Refinements."
31. Loo Sin Chun: "The Relationship Between Malaysia and Major International Equity Indices."
32. Zainal Abidin Kidam: "Relationship Between Work Values, Characteristic, Motivation and Productivity of Malaysian Farmers: A Cross Cultural Comparative Study."
33. Dr. Zainal Abidin Mohamed: "Proses Perancangan Yang Dipraktikkan oleh Organisasi Besar di Malaysia."
34. Dr. Wan Leong Fee: Investment Strategies in ASEAN Energy Markets.
35. Dr. Syed Kadir Alsagoff: Integrated Aquacultural System.
36. Dr. Eddie Chiew Fook Chong, Dr. Abd. Aziz Abd. Rahman, Zainal Abidin Tambi and Siti Khairon Shariff: "Off-Farm Employment & Rural Industrialization in Malaysia."
37. Dr. Eddie Chiew Fook Chong: "Economic Viability of Grapes Cultivation in Malaysia."
38. Dr. Mad Nasir Shamsudin: "Agricultural Productivity Measurement and Analysis."
39. Dr. Mad Nasir Hj. Shamsudin: "Agricultural and Policy Modelling System."
40. Salmah Muhamed: "Perbandingan Antara Firma."
41. Dr. Mohammed Yusoff: "The Role of Exchange Rate in the Demand for Malaysian Export of Manufactures."
42. Dr. Abd. Aziz Abd. Rahman: "A study of non-farm employment in Northwest Selangor Intergrated Agricultural Development Project Area, Malaysia." Project sponsored by the International Development Research Centre (IDRC).
43. Dr. Abd. Aziz Abd. Rahman "1985 Asian input-output table", sponsored jointly by the Institute of Developing Economics (IDE), Japan, and the Malaysian Institute of Economic Research (MIER).
44. Dr. Abd. Aziz Abd. Rahman "Action and Master Plan for Agriculture – Selangor Darul Ehsan", commissioned by the Selangor State Government.
45. Dr. Abd. Aziz Abd. Rahman "Magnitude and structure of agricultural price protection in Malaysia" and "The influence of the methodology and the product sample" within the research project "Discrimination of the Agricultural sector in Developing Countries: magnitude, structure and the role of economic policy" sponsored by the Kiel Institute of World Economics, 1989.
46. Dr. Abd. Aziz Abd. Rahman: "Agricultural Taxation in Developing Countries" sponsored by the Policy Analysis Division, Food and Agricultural Organisation (FAO), 1989.
47. Dr. Abd. Aziz Abd. Rahman: "Industrial Structure and Development Policies in Malaysia" organised by The Institute of Developing Economics (IDE), Japan, 1989–1991.
48. Dr. Abd. Aziz Abd. Rahman. Study Of The Economic Impact of Tourism in Malaysia, for The Ministry of Tourism and Culture, commissioned by The Economic and Social Commission for Asia and Pacific (ESCAP), November 1989 – September 1990.

## PENERBITAN

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5. Mohd. Ariff Hussein, Abd. Aziz Abd. Rahman (1990), "The dawn of 1990's: Challenges for Agriculture," in OPTIONS, UPM Volumes, No. 1, pp 1-4.
6. Mohd. Nasir Shamsudin, Abd. Aziz Abd. Rahman, Mohd. Ariff Hussein (1990): "Agricultural Productivity in Malaysia: Direction for the 1990s", in OPTIONS, UPM, Vol 5, No. 1, pp 8-10.
7. Mohammed Yusof, Suhaila Abdul Jalil, Muzafar Shah Habibullah and Shahril Abd. Karim (eds) (1989): Trade and Development in Malaysia, UPM.
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10. Muzafar Shah Habibullah (1989). "The Demand for Loans in Forestry Sector: The Case of a Developing Economy." *Indian Journal of Economics* Vol. 69, No. 275 pp 455-462.
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17. Muzafar Shah Habibullah (1989). "Economies of Scale in Financial Institutions: A Study in Commercial Banking." *Staff Paper No. 39*.
18. Muzafar Shah Habibullah (1989). "Gelagat M3 di Malaysia: Satu Kajian Empirik" (The Behaviour of M3 in Malaysia; An Empirical Study). *Staff Paper No. 40*.

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20. Muzafar Shah Habibullah (1989). "Macroeconomic Variables and the Demand for Loans." Staff Paper No. 42.
21. Muzafar Shah Habibullah (1989). "The demand for M3 in a Financial Deepening Developing Economy: The Malaysian Experience." Staff Paper No. 43.
22. Ishak Hj. Omar, Kusairi Mohd Noh, Nik Mustapha Raja Abdullah & Syed Kadir Alsagoff (1990), *Kajian Sistem Pangu Bot Pukat Jerut Bersaiz 30 GRT Ke atas di Kuala Kedah dan Kuala Besut, Semenanjung Malaysia. Laporan Perundingan untuk LKIM.*
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70. Saroni Judi (1989). "Struktur Kos Pemprosesan Bagi Industri Kayu Gergaji Kes Negeri-negeri Selatan Semenanjung Malaysia. Staff Paper 44.
71. Saroni Judi (1989). "Cost and Earning Structures of Sawntimber Processing Industries in Peninsular Malaysia. Staff Paper 50.
72. Saroni Judi (1989). "Cost Functions of Malaysian Sawntimber Industry". Staff Paper No. 60.
73. Saroni Judi (1990). "Production and Resource Use Efficiency in the Sawntimber Industry in Peninsular Malaysia. Staff Paper 61.
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75. Ahmad Shuib (1989). "Analisis Permintaan Pelancongan di Malaysia." *Journal Pertanian* Vol. 12 No. 3.
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#### SEMINAR/KURSUS YANG DIANJURKAN

1. UMAS Executive Development Program  
(12 hingga 20 Jun 1989)

2. The State of The Art  
(24 hingga 26 Julai 1989)

3. Finance for Non Financial Executives Course  
(10 dan 11 Okt 1989)

4. Pengurusan Projek I  
(30 Okt – 18 Nov 1989)

5. Professional Report Writing  
(12 dan 13 Disember 1989)

6. Pengurusan Projek II  
(5 Feb – 24 Feb 1990)

7. Program Tanpa Ijazah  
Semester Julai 1989/90

8. Cabaran Di dalam Pengurusan

i) Product Management:  
Issues for the 90's  
(12 dan 13 Feb. 1990)

ii) How to stop New Product Failure  
(15 dan 16 Feb. 1990)

9. Workshop on the New Economic Policy after 1990.  
PKDP – 14 June 1989.

10. Kursus Kaedah Penyelidikan dan Kajian Kes (di Port Dickson) anjuran Jabatan Pengurusan, 4 Dec 1989.

11. Seminar Perakaunan Antarabangsa anjuran Jabatan Perakaunan dan Kewangan.  
22 Ogos 1989.

12. Workshop on "Agricultural Forecasting and Policy Models" anjuran PKDP February 1990.

# FAKULTI PENGAJIAN PENDIDIKAN

## DEKAN

Prof. Madya Mohd. Shah Hj. Lassim: Dip. Agric (Malaya) B.S., M.S. (Louisiana State)

Jabatan	Kategori			
	A	B	C	D
Pejabat Dekan	4	—	10	7
Jabatan Pendidikan	61	1	8	11
Jabatan Bahasa	50	2	5	7
Jabatan Sains Kemasyarakatan	17	—	1	3
JUMLAH	132	3	24	28
JUMLAH BESAR				187

## Perlantikan Baru

7 orang pensyarah, seorang pensyarah sementara, 2 orang tutor dan 5 orang Pembantu Am Rendah telah dilantik.

## Perletakan Jawatan

Seorang Guru Bahasa telah tamat perkhidmatannya di Fakulti Pengajian Pendidikan.

## Cuti Belajar

Seramai 21 pensyarah sedang mengikuti kursus di dalam dan luar negeri (20 orang Ph.D dan seorang Master).

## Tamat Pengajian

Seorang pensyarah Jabatan Sains Kemasyarakatan telah tamat pengajian Ph.D pada 6hb. Mei 1990.

## PERKARA AKADEMIK

### Pemeriksa Luar

Seorang Pemeriksa Luar bertugas di Jabatan Bahasa. Beliau ialah Prof. Madya Dr. Mashudi Kader dari Universiti Sains Malaysia, Pulau Pinang. (Program PBMP).

Seramai 2 orang Pemeriksa Luar bertugas di Jabatan Pendidikan. Mereka ialah:

1. Professor Dr. John S. Giesler dari Dept. of Counselor Education and Counseling, Western Michigan University, Kalamazoo, (Bimbingan dan Kaunseling)
2. Professor Chiyono Matsushima dari Kyolitsu Woman's University 2-1, Hitotsubashi 2 Chome Chiyoda - Ku, Tokyo (Sains Rumahtangga)

### Ijazah Lanjutan

Seramai 51 orang pelajar program Ijazah Lanjutan sedang mengikuti pengajian di Fakulti Pengajian Pendidikan sehingga Semester Disember 1989/90. Mereka adalah terdiri daripada 44 orang mengikuti program Master Sains dan 7 orang mengikuti program Ph.D.

## PENYELIDIKAN

1. Dr Hj Amat Juhari Moain: Aliran Pemikiran Hassan Bandung dan Pengaruhnya di Malaysia.

2. Dr Abdul Hamid Mahmood:
  - i. Kecekapan Bahasa Malaysia.
  - ii. Dialek Terengganu – Satu Tingjauan Ringkas. Bahasa Baku di Kalangan Pelajar-pelajar.
3. Goh Seng Pang: The Preferred Patterns of Response to Selected Literary Prose Texts by Universiti Pertanian Malaysia Undergraduates.
4. Malachi Edwin: Setting Up a Listening Laboratory for a Primary School.
5. Dr. Abd. Halin Hamid: Pola Penggunaan perkhidmatan kesihatan ibu dan kanak-kanak di luar bandar Semenanjung Malaysia.
6. Dr. Abd. Halin Hamid: Perkhidmatan perbidanan moden di pedesaan Malaysia satu tinjauan struktur dan proses di Daerah Hilir Perak. Semenanjung Malaysia.
7. Dr. Abd. Halin Hamid: Persepsi rakyat terhadap program-program pembangunan di Sarawak.
8. Dr. Abd. Halin Hamid: Pemeliharaan lebah madu di Malaysia: Beberapa aspek sosio-ekonomi.
9. Dr. Abd. Halin Hamid: Organisasi semula sistem pengeluaran pertanian: Kajian tentang estet mini di Semenanjung Malaysia.
10. Dr. Ghazali Basri: Pusat Pengajian Pondok Bachok Kelantan: Satu Kajian tentang pengendalian pengajaran.
11. Dr. Ghazali Basri: Persepsi Rakyat Terhadap program pembangunan di Sarawak.
12. Dr. Ghazali Basri: Perubahan faham keagamaan di Kalangan masyarakat India di Malaysia: Satu kajian kes di Banting, Selangor.
13. Hj. Ahmad Fauzi Morad: Pusat Pengajian pondok Telung, Bachok Kelantan.
14. Puan Maznah Baba: Malay Secondary School Students' Social Support Preferences: Implication for Formulating Support Oriented Interventions (Disertasi Kedoktoran selesai pada 26hb Mac 1990).
15. Ma'rof Redzuan: Organisasi semula sistem pengeluaran pertanian: Satu penilaian ke atas Estet Mini di Semenanjung Malaysia.
16. Dr. Nazaruddin Hj. Mohd. Jali: Pengurusan Kemudahan Sekolah Termasuk Pusat Sumber. Pembiayaan Kementerian Pendidikan, Pinjaman Bank Dunia ke 8.
17. Dr. Nazaruddin Hj. Mohd. Jali: Pola Penggunaan Perpustakaan oleh Pelajar-pelajar UPM. Jangka siap September 1990 (Sedang buat editing).
18. Dr. Nazaruddin Hj. Mohd. Jali: Organisasi Semula Sistem Pengeluaran Pertanian: Satu Penilaian Terhadap Estet Mini di Semenanjung Malaysia (Peringkat instrumentasi).
19. Dr. Zahid Emby: Organisasi Semula Sistem Pengeluaran Pertanian: Satu Penilaian Terhadap Projek Estet Mini di Semenanjung Malaysia. (Ketua Kumpulan Penyelidik).
20. Dr. Zahid Emby: Pemeliharaan Lebah di Malaysia: Beberapa Aspek Sosio-ekonomi. (Ahli Kumpulan Penyelidik).
21. Dr. Zahid Emby: Persepsi Rakyat Sarawak Terhadap Program Pembangunan. (Ahli Kumpulan Penyelidik).
22. Zaid Ahmad: Perubahan faham keagamaan di Kalangan Masyarakat India di Malaysia: Satu Kajian Kes di Banting Selangor.
23. Encik Mohd. Majid Konbing: Kepuasan Bekerja Guru-Guru Sains Pertanian di Negeri Sembilan dan Melaka.
24. Dr. Rohani Ahmad Tarmizi: Satu Pendekatan Untuk Keberkesanan Pembelajaran dan Penyelesaian Masalah Matematik.

25. Dr. Rohani Ahmad Tarmizi: Pengajian Mikro: Satu Tinjauan Terhadap Pelajar Fakulti Pengajian Pendidikan.

26. Puan Wan Zah Wan Ali: Pembelajaran Melalui Bahasa Bercetak dari Prespektif Pelajar.

27. Dr. Noran Fauziah Yakub: Some Correlates of Performance: The Case of UPM's Education Students.

28. Dr. Noran Fauziah Yakub: Hubungan Antara Ciri-Ciri Sekolah dan Prestasi.

29. Dr. Noran Fauziah Yakub: Some Correlates On Scholastic Performance: A Production Function Approach.

30. Dr. Nordin Kardi: Perkembangan kerjaya lulusan UPM.

31. Dr. Azizah Abd. Rahman: Pendidikan di Luar Bandar: Satu kajian.

32. Dr. Sharifah Nor: Pandangan Pelajar Remaja Terhadap Sekolah.

33. Dr. Gan Siowek Lee: Needs Analysis – Preparing Computer – Using Educations for Malaysian Schools.

34. Puan Aminah Haji Hashim: Keberkesanan Latihan Komunikasi dan Perhubungan Manusia Ke atas Guru-Guru di Dua buah Sekolah Menengah di Selangor.

35. Puan Norsiah Mohd. Isa: Kesesuaian Kurikulum Perakaunan Sekolah Menengah di Sektor Swasta.

## PENERBITAN

1. Dr Hj Amat Juhari Moain (1989): **Sistem Panggilan Dalam Bahasa Melayu: Suatu Analisis Sosiolinguistik.** Dewan Bahasa dan Pustaka, K.L.

2. Dr Hj Amat Juhari Moain (1989): **Kaedah Penyapaan Dalam Bahasa Melayu Dengan Beberapa Contoh Khusus Daripada Dialek Melayu Sarawak,** (Monograf). Dewan Bahasa dan Pustaka, Kuching.

3. Dr Hj Amat Juhari et. al; (1989):

**Istilah Sains Politik.** Dewan Bahasa dan Pustaka, K.L.

4. Dr Hj Amat Juhari et. al; (1990): **Kamus Biologi: Histologi dan Sitologi.** Dewan Bahasa dan Pustaka, K.L.

5. Dr Hj Amat Juhari Moain (1989): 'Sistem Panggilan dalam Bahasa Melayu', kertas kerja yang dibentangkan dalam **Persidangan Antarabangsa Pengajian Melayu,** di Universiti Malaya, Kuala Lumpur pada 21–24 Ogos 1989.

6. Dr Hj Amat Juhari Moain (1989): 'Bahasa dan Peristilahan,' kertas kerja yang dibentangkan dalam **Kursus Bahasa Malaysia untuk pegawai-pegawai MARDI** anjuran MARDI dan PLM yang diadakan di ibu pejabat MARDI pada 4–8 September 1989.

7. Dr Hj Amat Juhari Moain (1989): 'Penulisan Surat Rasmi,' kertas kerja yang dibentangkan dalam **Kursus Bahasa Malaysia untuk Pegawai-pegawai MARDI** anjuran MARDI dan PLM yang diadakan di ibu pejabat MARDI pada 4–8 September 1989.

8. Dr Hj Amat Juhari Moain (1989): 'Perkembangan Terakhir Tulisan Jawi,' kertas kerja yang dibentangkan dalam **Dialog Malaysia-Propinsi Riau,** Indonesia di Pekanbaru, Riau, Indonesia pada 27–30 September 1989.

9. Dr Hj Amat Juhari Moain (1989): 'Sejarah Perkembangan Tulisan Jawi,' kertas kerja dalam **Seminar Jabatan Bahasa UPM** pada 18 Oktober 1989.

10. Dr Hj Amat Juhari Moain (1990): 'Perkembangan Terakhir Tulisan Jawi,' kertas kerja dalam **Kolokium Bahasa Melayu,** di Maktab Perguruan Sultan Abdul Halim, Kedah pada 25–26 Februari 1990.

11. Dr Abdul Hamid Mahmood (1990): 'Ujilah Kecekapan Bahasa Malaysia Anda.' **Pelita Bahasa,** DBP, Januari 1990.

12. Dr Abdul Hamid Mahmood (1990): 'Dialek Terengganu – Satu Tinjauan Ringkas.' **Jurnal Dewan Bahasa,** DBP, Mac 1990.

13. Che Ibrahim Hj Salleh (1989): 'Penggunaan Bahan Pengajaran dan Pembelajaran Bahasa Malaysia dan Kesannya Terhadap Pelajar,' **Jurnal Dewan Bahasa**, Disember 1989, m.s. 930 – 936.
14. Kamarudin Hj Husin (1989): **KBSM dan Model-model Pengajaran Bahasa**. Kumpulan Budiman, Subang Jaya.
15. Kamarudin Hj Husin (1989): **Pedagogi 2 (Strategi Pengajaran)**. Longman Malaysia Sdn Bhd, Petaling Jaya.
16. Kamarudin Hj Husin (1990): **Pedagogi 3 (Aspek-aspek Pengajaran dan Psikologi Pembelajaran)**. Longman Malaysia Sdn Bhd, Petaling Jaya.
17. Kamarudin Hj Husin (1990): **Pedagogi 4 (Pendidikan Pemulihan Pengayaan dan Modul)**. Longman Malaysia Sdn Bhd, Petaling Jaya.
18. Kamarudin Hj Husin (1990): 'Teknik Mengajar Yang Berkesan dalam Bilik Darjah,' kertas kerja dalam **Ceramah di Sekolah Menengah Sungai Rambai**, Melaka, 24 Mac 1990.
19. Kamarudin Hj Husin (1990): 'Keberkesanan Pengajaran di Dalam Bilik Darjah,' kertas kerja **Ceramah di Sekolah Menengah Iskandar Shah**, Jasin, Melaka, 5 Mei 1990.
20. Md Aripin Said (1989): **Awang Sabdu & Tok Guru**. (Antalogi Cerita Rakyat), Pustaka Mastika, Sri Petaling.
21. Md Aripin Said (1989): **Sebuah Warong Di Tengah Kota**. (Antologi Cerpen), Pustaka Mastika, Sri Petaling.
22. Md Aripin Said (1989): **Menongkah Gelombang**. (Novel), Pustaka Mastika, Sri Petaling.
23. Md Aripin Said (1989): 'Kampung Air' (puisi). **Dewan Sastra**, September 1989.
24. Md Aripin Said (1989): 'Alangkah Indahnnya Namamu' (cerpen). **Dewan Pelajar**, September 1989.
25. Md Aripin Said (1989): **Tukang Canai Batu Permata (Cerita Rakyat)**. Prisma Publications, P. J.
26. Md Aripin Said (1989): 'Amanat' (Cerpen). **Berita Minggu**, 31 Disember 1989, m.s. 16.
27. Md Aripin Said (1990): **Pemain Rebana (Antologi Puisi)**. Azam Publications, Kuala Lumpur.
28. Md Aripin Said (1990): 'Gema Azan Masjid Tua,' (cerpen). **Dewan Siswa**, Januari 1990, DBP K. L., m.s. 22 – 25.
29. Md Aripin Said (1990): 'Sepanjang Jalan ke Tanjung Api,' (Puisi). **Watan**, 6 Januari 1990, m.s. 29.
30. Md Aripin Said (1990): 'Kampung Air,' (Cerpen). **Dewan Pelajar**, DBP K. L., Januari 1990, m.s. 16 – 17.
31. Md Aripin Said (1990): 'Beduk Tua,' (cerpen). **Utusan Zaman**, 18 Februari 1990, m.s. 18.
32. Md Aripin Said (1990): 'Sastera Rakyat: Tiada Yang Mengaku Pengarang,' (esei). **Dewan Siswa**, Februari 1990, m.s. 42 – 43.
33. Md Aripin Said (1990): 'Suara dari Menara,' (cerpen). **BTV/Berita Minggu**, 25 Februari 1990, m.s. 10.
34. Md. Aripin Said (1990): 'Sastera Klasik: Perihal Puteri Yang Cantik.' **Dewan Siswa**, Mac 1990, m.s. 42 – 43.
35. Md Aripin Said (1990): 'Sastera Klasik: Pantun Pancaran Pemerikiran Masyarakat Melayu.' **Dewan Siswa**, April 1990, m.s. 42 – 43.
36. Md Aripin Said (1990): 'Sastera Klasik: Rangkap Yang Membentuk Pantun.' **Dewan Siswa**, Mei 1990, m.s. 42 – 43.
37. Md Aripin Said (1990): **Najwa Arifah (Antologi Cerpen Bersama)**, Sasbadi Sdn Bhd., April 1990, m.s. 1 – 8.
38. Md Aripin Said (1990): **Cempaka Berdarah (Antologi Drama Bersama)**,

Sasbadi Sdn Bhd, April 1990, m.s. 87 – 99 & 115 – 124.

39. Md Aripin Said (1990): **Puteri Dewi Hairani (Antologi Cerita Rakyat Bersama)**. Sasbadi Sdn Bhd, April 1990, m.s. 17 – 54, 80 – 108 & 129 – 161.

40. Md Aripin Said (1990): 'Bendahara Tun Abbas: Hubungan Hirarki Kesultanan antara Riau, Johor dan Pahang.' Kertas kerja dalam **Seminar Penyelidikan**, anjuran Lembaga Muzium Pahang, IPT & Organisasi Budaya di Riau, Indonesia pada 15 – 19 Mei 1990.

41. Nora Mohamed Nor (1989): **KBSM – English Form 3**. Mutiara Ilmu Sdn Bhd, K.L.

42. Mat Nor Hussin (1989): **Kaedah Pengajaran Bahasa Malaysia KBSM**. Longman Malaysia.

43. Normah Abdullah (1989): **Kaedah Pengajaran Bahasa Malaysia KBSM**. Longman Malaysia.

44. Malachi Edwin (1989): **The English Language Companion for KBSR Students I**. Penerbit PRISMA, Petaling Jaya.

45. Malachi Edwin (1989): **The English Language Companion for KBSR Students II**. Penerbit PRISMA, Petaling Jaya.

46. Malachi Edwin (1989): 'Error Analysis of Form Four English Compositions.' **The English Teacher**, Vol. XVIII, September 1989, m.s. 110 – 124.

47. Malachi Edwin (1989): 'Analisis Kesalahan Bahasa: Satu Kajian Terhadap Kesalahan Bahasa Inggeris.' **Dewan Bahasa**, Jilid 33 Bil. 9, September 1989, m.s. 615 – 622.

48. Malachi Edwin (1989): 'A Study of the development of interrogative forms in two Malaysian Boys.' **Jurnal Persatuan Linguistik Malaysia**, Jilid 4, Oktober 1989, m.s. 52 – 61.

49. Malachi Edwin (1989): 'Penilaian

Murid oleh Guru Pelatih,' kertas kerja dalam **Seminar Latihan Mengajar Antara Universiti ke-6**, 3–4 November 1989 di Universiti Malaya.

50. Malachi Edwin (1990): 'English Listening Tasks for Pupils.' **The Sunday Star**, 11 Mac 1990, m.s. 18.

51. Malachi Edwin (1990): 'More Listening Tasks for Pupils.' **The Sunday Star**, 25 Mac 1990, m.s. 15.

52. Dr Jamali Ismail (1990): 'Perception of Learners' Motivation in Relation to Competence in English as a Second Language.' Kertas kerja dalam **Seminar on the Teaching of English as a Second Language**, 22 Januari 1990 di IAB, Genting Highlands.

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57. Ismail Jusoh (1990): 'Senarai Ilmu di dalam al-Quran,' **Kiblat**, Februari 1990.

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61. Prof. Madya Taha Abd Kadir (1990): 'Siri Bimbingan dan Strategi Peperiksaan STPM.' Kertas kerja **Ceramah STPM**, 15 Mei 1990 di Sekolah Menengah Dong, Raub, Pahang.
62. Prof. Madya Taha Abd Kadir (1990): 'Malaysian Folklores in the Context of Present Malay Peasant Community.' Kertas kerja **Seminar on Cultural Understanding Thailand-Malaysia**, pada 28–29 Mei 1990 di Songkhla, Thailand.
63. Prof. Madya Dr. Shamshudin Hussin (1990): Counselor Education – An Emphasis on Systematic Supervision and Consultation, kertas kerja di 8th. APECA Biennial Conference Workshop pada 19 – 23 Mei 1990 di Universiti Sains Malaysia, Minden, Pulau Pinang.
64. Tuan Sheikh Kamaruddin Sheikh Ahmad (1990): Kecergasan Fisikal, kertas kerja di Kursus Kecergasan Kementerian Kerja Raya Malaysia di Intan. Kemaman Terengganu pada 20/2/1990.
65. Dr. Naim Haji Ahmad (1990): Kaedah Penggunaan OHP dan Penghasilan Lutsinar, kertas kerja di Bengkel Penggunaan dan Penghasilan ABM di Sekolah Menengah, Damansara Jaya pada 17/3/1990.
66. Dr. Gan Siowek Lee (1990): Konsep dan kandungan Pendidikan Alam Sekitar, kertas kerja di Kursus Pendidikan Alam Sekitar Untuk Guru-Guru Kanan, Penyelia Sains Negeri dan Pensyarah Maktab Perguruan pada 9 – 10/3/1990.
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73. Puan Maznah Baba: Malay Secondary School Students' Social Support Preferences: Implication for Formulating Support Oriented Interventions telah dihantarkan kepada pihak UMI Dissertation Services untuk diterbitkan dalam bentuk abstrak (Dissertation Abstracts International) dan Microfilm.
74. Ma'rof Redzuan: **Pengantar Psikologi** (Dalam Percetakan).
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on Malaysian Agricultural Policy: Issues and Directions, Pusat Kajian Dasar Pertanian, UPM, 1989.

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79. Dr. Zahid Emby: "Agricultural Development in Peasant Development: Fact or Fiction" dalam Options, Vol. 5, No. 1 (Newsletter of the Centre for Agricultural Policy Studies).

80. Dr. Zahid Emby: "Malaysian Villagers and MPTS: Past, Present and Future" dalam Newsletter, Multipurpose Tree Species - Malaysia, Dec. 1989.

## SEMINAR/BENGGKEL/KURSUS

1. Seminar Kaunseling Dalam Agensi-

Agensi Korporat, Fakulti Pengajian Pendidikan, UPM pada 17 Mac 1990.

2. Sukan dan Pameran: Membudayakan Teknologi dan Pendidikan di Unit Teknologi Pendidikan, FPP, UPM pada 24/3/1990.

3. Bengkel Kecergasan Eksekutif Pegawai Kanan Jabatan Perkhidmatan Awam Malaysia di Frasers Fine Resort, Bukit Fraser pada 22 - 24/2/1990..

4. Kursus Asas Pendidikan Sekolah Menengah Agama Terengganu di MARDI, Serdang pada 26/7 - 3/8/1989.

5. Kursus Asas Kaunseling untuk Pegawai-Pegawai Kementerian Tanah dan Wilayah di Pulau Pinang pada 10-14/8/1989.

6. Kursus Pendidikan Peringkat Ke Dua Sekolah Menengah Agama Terengganu di UPM pada 18 - 25/11/1989.

7. Kursus Komunikasi dan Kaunseling untuk Pegawai-Pegawai Kumpulan A dan G Bahagian Hal Ehwal Perajurit, Kementerian Pertahanan di INTAN pada 18 - 20/12/1989.

8. 'A Workshop on the Teaching of Literature in the English Language Classroom,' diadakan pada 24 Februari 1990.

# FAKULTI KEJURUTERAAN

## DEKAN

Prof. Madya Dr. Mohd. Zohadie Bardaie

## KAKITANGAN

### Jumlah Kakitangan

Jabatan	Kategori A	Kategori B	Kategori C	Kategori D
Pejabat Dekan	2	1	7	12
Jabatan KA	21	—	6	5
Jabatan KPP	8	—	4	3
Jabatan KPJ	7	—	5	6
Jabatan KPL	7	—	5	1
Jabatan KK	11	—	5	3
Jabatan KS	13	—	8	3
JUMLAH	71	1	40	33
JUMLAH BESAR				145

### Perlantikan Baru

Seramai 2 Pensyarah dan seorang Tutor telah dilantik.

### Cuti Belajar

Seramai 21 orang Pensyarah sedang mengikuti kursus di luar negeri (Ph.D 19, master 2).

### PERKARA AKADEMIK

#### Ijazah Lanjutan

Seramai 22 orang pelajar mengikuti ijazah lanjutan iaitu Ph.D – 8, Master Sains – 19.

#### Pemeriksa Luar

Seramai 4 orang Pemeriksa Luar bertugas di Fakulti. Mereka ialah:

1. Prof. Ronald Mc. Caffer dari University of Loughborough, United Kingdom (Kejuruteraan Awam dan Alam Sekitar)

2. Prof. A.K. Kochhar dari University of Bradford, United Kingdom (Kejuruteraan Mekanikal/Sistem)

3. Prof. H. Kemhadjian dari University of Southampton (Kejuruteraan Elektronik/Komputer)

4. Prof. Thomas H. Burkhardt dari Michigan State University, Michigan (Kejuruteraan Pertanian)

### PENYELIDIKAN

1. Prof. Madya Dr. Mohd. Nordin Ibrahim: Sumbangan Tenaga (Solar & Biogas) Kepada Keperluan Tenaga Untuk Pemerosesan Susu.

2. Encik Radin Umar Radin Suhadi: Analisa Kajian Kemalangan Melalui Kajian Konflik.
3. Encik Shukri Maail: Plasticity Characteristics of Residual Soils.
4. Encik Shattri Mansor: Development of Regional Flood Zone Mapping Technique Using Satellite Imagery.
5. Encik Ahmad Jusoh: Pengupas Kulit Lada Untuk Pemprosesan Lada Putih.
6. Encik Rimfiel Janius: Merekabentuk Dan Membina Jentera Pengupas Kulit Kopi.
7. Prof. Madya Hussain Mohd. Salleh: Sambutan Penyejukan Oleh Buah-buahan Tempatan.
8. Prof. Madya Dr. Salim Said: Effect of Climatological Changes On Water Resources And Crop Production.
9. Puan Nor Mariah Adam: Kajian Awal Terhadap Buah Melinjar.
10. Dr. Abdul Aziz Zakaria: Pembangunan Pengairan Mini Sprinkler Untuk Tanaman Kontan.
11. Dr. Azmi Yahya: Rekabentuk Pisau Torehan Bermotor Untuk Tanaman Getah.
12. Encik Hishamuddin Jamaluddin: Kaedah Ringkas Untuk Merekabentuk Proses Kromotografi Ganjakan.
13. Dr. Fakhru'l-Razi Ahmadun: Transport Of Agricultural Chemicals In Irrigation Water.
14. Dr. Azni Hj. Idris: Modelling In The Water And Waste Water Treatment Processes.
15. Encik Radin Umar Radin Suhadi: Wearing Course Formulations For High Speed Roads In Malaysia.
16. Encik Rimfiel Janius: Pemutaran Subpermukaan Dalam Pencabutan Pokok Kacang Tanah.
17. Encik Shattri Mansor: Digital Analysis Of Multisensor Data For Land Cover Classification.
18. Encik Mohd. Razali Abd. Kadir: Alternative To The Present Belian Support for Pepper (Piper Nigrum).
19. Dr. Borhanuddin Mohd. Ali: Application In Industry and Data Integration In Packet Switching System.
20. Dr. Lee Teang Shui: Furrow Irrigation.
21. Prof. Madya Dr. Mohd. Zohadie Bardaie, Puan Nor Mariah Adam: Development of Agricultural Machinery for Oil Palm and Cocoa.
22. Prof. Madya Dr. Mohd. Zohadie Bardaie: Harvesting and Transportation of Oil Palm Fresh Fruit Bunches.
23. Encik Muhammad Salih Hj. Ja'afar, Encik Abdul Razak Jelani: Design and Construction of Cocoa Pod Breaker and Separator.
24. Encik Kamarudzaman Aribi: Perolehan Data Bagi Sifat Fizikal Mekanikal dan Reologi Buah Koko.
25. Encik Kamarudzaman Aribi: To Design Air Blast Sprayer for Cocoa Plantation.
26. Prof. Madya Dr. Salim Said, Encik Mohamed Daud: Development of Design Criteria and Water Scheduling Models for Paddy Irrigation.
27. Encik Mohd. Rashidi Bakar: Kesan Air Ke atas Kekuatan Tanah Sawah.
28. Dr. Salim Said: Trickle Irrigation on Tin Tailings.
29. Dr. Abdul Aziz Zakaria: Perforated Pipe Irrigation System.
30. Dr. Salim Said: Studies on the Consumptive Use of Paddy.

31. Dr. Mohd. Nordin Ibrahim, Encik Hussain Mohd. Salleh: Improvement in Drying Operation at LPN Complexes.
32. Encik Zakaria Che Muda, Puan Nurizan Yahya, Puan Halimah Hj. Ahmad: Low Income Settlement: Some Socio-Economic and Engineering Aspects.
33. Dr. S.A. Salam: Prestressed Concrete.
34. Encik Mohd. Salleh Jaafar: Building Systems.
35. Dr. Mohd. Nur Ahmad, Dr. Mohd. Nordin Ibrahim: An Innovative Method to Produce Cocoa Powder for Small-Scale Industries.
36. Dr. Mohd. Nur Ahmad: Automation of Palm Oil Clarification Operations.
37. Dr. Mohd. Nur Ahmad: Role of Chemical-Mechanical Processes in Leaching Starch Granules from Sago.
38. Dr. Barkawi Sahari, Encik Zakaria Che Muda: Develop and Test Finite Element Analysis Package for Stress and Field Analysis.
39. Bambang Sunaryo Suparjo, Rahman Wagiran; Analysis and Design of Large Scale Integration Standard Cell Library.
40. Ir. Mohd. Isa Mansor, Dr. Borhanuddin Mohd. Ali: Computer Network and Real Time Data Acquisition.
41. Encik Mohd. Rasid Osman, Encik Yaacob Mohd. Salleh: Appropriate Automation for Industry.
42. Encik Megat Johari Megat Mohd. Noor, Encik Ahmad Jusoh, Encik Abd. Halim Ghazali, Dr. Anhar Suki, En. Badlishah Sham Baharin: Anaerobic Treatment of Waste Water.
43. Encik Ahmad Jusoh, Encik Megat Johari Megat Mohd. Hamdan, Encik Abdul Halim Ghazali: Use of Agricultural Waste as Filtration Media for Water Treatment.

## PENERBITAN

1. Muhammad Salih Haji Ja'afar (1989): "Laporan Status Penyelidikan Kejuruteraan Pertanian di UPM", di **Bengkel Penjenteraan Pertanian, RRI, Sungai Buloh**, 20-21 Februari 1989. 6 mukasurat.
2. Zohadie, M. (1989): "Development and usage of computer expert systems in agriculture", **MALAYSIAN AGRICULTURAL DIGEST**, Vol. 7, No. 1, pp. 26 - 30.
3. Mohamed Daud (1989): A sand culture hydroponic system for cultivation of leafy vegetables; proc. **Eleventh International Congress on Agricultural Engineering, Dublin**, 4-8 Sept. 89.
4. Mohamed Daud (1989): Development of raingun irrigation system for large scale irrigation of FELDA sugarcane plantation in Malaysia, **Land Development Digest Dec 89** (in press).
5. Salim Said (1989): Rehabilitation of disturbed tropical land with trickle irrigation for crop production; proc. **eleventh International Congress on Agricultural Engineering, Dublin**, 4-8 Sept. 89.
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Cracking in Partially Prestressed Concrete Beams, Paper presented at the **Conference on Concrete Engineering and Technology**, 12–14 June, Kuala Lumpur.

9. Tan Ka Kheng (1989): Biotechnology Engineering Fundamental, Paper presented at the **First Seminar on National Biotechnology Programmes**, 1–3 June, Penang.

10. Ahmad Jusoh, Megat Johari and Abdul Halim (1989): Effects of Effective Size in Rapid Sand Filtration, **PERTANIKA**, Vol. 12(1), pp. 345 – 349.

11. Ahmad Jusoh, Abdul Halim and Megat Johari (1989): Prestasi Butiran Arang Tempurung Kelapa Sawit Dalam Penurasan Dua Media, **Seminar Kebangsaan Pengurusan Air dan Airsisa**, 20–21 Jun, Kuala Lumpur.

12. Ahmad Jusoh, Megat Johari and Abdul Halim (1989): Teknologi Simenfero untuk Landskap, **Bengkel Asas Hortikultur Landskaps Ke 5**, 12–17 Jun, UPM.

13. Shukri Maail (1989): Ujian Tiga-paksi, **Kursus POLIMAS**, Alor Star.

14. Megat Johari and Anhar Suki (1989): Packed Bed Hybrid Reactor for Treatment of POME, **First Seminar on National Biotechnology Programmes**, 1–3 June 1989, Penang.

15. Megat Johari, Ahmad Jusoh and Abdul Halim Ghazali (1989): POME Treatment Utilizing High rate Hybrid Anaerobic Reactor, **Journal of Islamic Academy of Sciences** 2:pp 13 – 16.

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18. Abang Abdullah A. A. and Muhammad Salih H. J., 'Appropriate Materials and Technologies for Low-Income Settlers', paper presented at **Region Seminar on Technology for Rural Development**, Bandung, Indonesia, 23–24 October, 1989.

19. Ahmad Jusoh dan Megat Johari Megat Mohd Noor, 'Teknologi Simenfero untuk Landskap', kertas kerja dibentangkan di **Bengkel Asas Hortikultur Landskap ke 5 UPM**, Serdang, Julai, 1989.

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25. Fuad Abas dan Sulaiman Ismail, 'Rekabentuk Trak Uji Makmal Kejuruteraan Lebuh raya', kertas kerja di-

bentangkan di Seminar Kebangsaan Graduan Kejuruteraan I – Elektronik dan Mekanikal, UPM, Ogos, 1989.

26. Lee, J.H. and Suparjo, B.S., 'Logic Simulation', kertas kerja dibentangkan di Seminar Kebangsaan Graduan Kejuruteraan I – Elektronik dan Mekanikal, UPM, Ogos, 1989.

27. Lee, T.S. and Salam, S.A., 'Ultimate Flexural Strengths of Partially Prestressed Thin Web Beams', *International Symposium on Noteworthy Development in Prestressed and Precast Concrete*, Singapore, 28–29 September, 1989.

28. M. Daud, 'A Sand Culture Hydroponic System for Cultivation of Leafy Vegetables', *Proceeding of the Eleventh Congress on Agricultural Engineering, Dublin*, 4–8 September, 1989, pp. 2961 – 2965.

29. Megat Johari Megat Mohd Nor, Ahmad Jusoh dan Mohd Saleh Hj. Jaafar, 'Ferrocement in Recreational and Public Health Development', paper presented at the *International Conference on Engineering and Tourism*, September, 1989, Melaka.

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31. Mohd. Ali, B.B and Mansor, M. I., 'Local Area Networks: An Overview' *UPM Engineering Review*, No. 1, 1988/89.

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34. Mohd Saleh Hj. Jaafar, 'Parameter Affecting Web Crushing Failure in Thin Web Concrete Beams', *UPM Engineering Review*, No. 1, 1988/1989.

35. Mohd Saleh Hj. Jaafar, and Jonathan S. Galeh 'Some Characteristics of Partially Prestressed Beams', paper presented at *First Conference on Concrete and Structures*, Kuala Lumpur, Malaysia, 3–4 October, 1989.

36. Mohd Rasid Osman dan Ahmad Sarafi Ali Asrah, 'Design of a Fan Test Rig', kertas kerja dibentangkan di Seminar Kebangsaan Graduan Kejuruteraan I – Elektronik dan Mekanikal, UPM, Ogos, 1989.

37. Mohd Rasid Osman dan Liew Jihu Yit, 'Merekabentuk dan Membina Mesin Pengeluaran Sate Secara Automatik', kertas kerja dibentangkan di Seminar Kebangsaan Graduan Kejuruteraan I – Elektronik dan Mekanikal, UPM, Ogos, 1989.

38. Marman Mariun and Roslee Jumat, 'A Computerised Energy Water Management for Irrigation Systems', kertas kerja dibentangkan di Seminar Kebangsaan Graduan Kejuruteraan I – Elektronik dan Mekanikal, UPM, Ogos, 1989.

39. Radin Umar, R.S., 'Kenapa Perlu Pengekangan Trafik', *UPM Engineering Review* No. 1, 1988/1989.

40. Radin Umar, R.S., Muhammad Salih, H.J and Habsah, M., 'Service Characteristics for a Closed System Toll Express Way', *Proceeding of the International Seminar on Engineering and Tourism*, Melaka September, 1989.

41. Ramli, A. R. dan Mohammad, G., 'Sistem Sasaran Mikrokomputer Z80', kertas kerja dibentangkan di Seminar Kebangsaan Graduan Kejuruteraan I – Elektronik dan Mekanikal, UPM, Ogos, 1989.

42. S. Said, 'Rehabilitation of Disturbed Tropical Land With Trickle Irrigation for

- Agricultural Production', **Proceeding of the Eleventh Congress on Agricultural Engineering, Dublin, 4-8 September, 1989**, pp. 679 - 681.
43. Shattri Mansor and Azmi Hassan, 'Identification of Tourist Area from Remotely Sensed Data', paper presented at **International Conference on Engineering and Tourism, 19-21 September, 1989, Melaka.**
44. Shattri Mansor and Jayanthi Thangam, 'Computer Aided Design: Subdivision and Earthworks', paper presented at **Regional Seminar on the Application of CAD/CAM/CAE in Industry and Education, 14-15 November, 1989, Bangi.**
45. Shattri Mansor, 'An AtoCAD Based Subdivision Design' paper presented at **International Symposium on Modern Surveying Instruments and Digital Techniques**, 14-21 August, 1989, Budapest, Hungary.
46. Shattri Mansor, Abdul Halim Ghazali and Mazlan Hashim, 'Satellite Imagery as an Aid to Flood Zone Mapping', paper presented at **14th World Cartographic Conference, 17-24 August, 1989, Budapest, Hungary.**
47. Shattri Mansor, Mohd Isa Mansor and Azmil Hassan, 'Evaluating Recreational Resources of Southeast Johor Using Remotely Sensed Data', paper presented at **10th Asian Conference on Remote**
48. Shukri Maail, 'Shear Testing on Tropical Residual Soil', **UPM Engineering Review No. 1, 1988/1989.**
49. Subramaniam, R. and Suparjo, B. S., 'Serial Interface Chip', kertas kerja dibentangkan di **Seminar Kebangsaan Graduan Kejuruteraan I - Elektronik dan Mekanikal, UPM, Ogos 1989.**
50. Suparjo, B.S., 'Teaching VLSI at Universiti Pertanian Malaysia (UPM)', **UPM Engineering Review, 1988/89 No. 1.**
51. Suparjo, B. S., Lee. J. H., and Mansor, M. I., 'Logic Minimization Simulator', paper presented at **Regional Conference on CAD/CAM/CAE in Industry and Education, K.L., November, 1989.**
52. Tan Ka Kheng and Megat Johari Megat Mohd Nor, 'Environmental Engineering for Agricultural Production', paper presented at the **International Symposium on agricultural Engineering, Beijing, China, September 1989.**
53. Yong Eu Fan, 'Water supply in Malaysia', paper presented at **International Conference on water 1989, Bangkok**, 13 - 16 December, 1989.
54. Zakaria Che Muda and Abang Abdullah Abang Ali, 'FINSAP4: An Interface Transform Sub-System for Finite Element Packages', paper presented at **Fifth 'SAS-World Conference STRUCENG-89 - Structural Engineering, FEM and CAD', Los Angeles, 9-11 August, 1989.**
55. Zakaria Che Muda and Mohd Saleh Hj. Jaafar, 'Comprehensive Procedural Computer Aided Design of Solid Slab', **Journal Pertanika, Vol 12(2), 225 - 238 (1989).**
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59. Yong Eu Fan "Water Supply in Malaysia", paper presented at **International Conference on Water Decade and Beyond, 13-16 Dec. 1989, Bangkok, Thailand.**

60. Yong Eu Fan and Salim Said, "Effect of Climate Change on Rice Production in Malaysia", paper presented at **International Conference on Global Warming – A call for International Coordination**, 9–12 April, 1990, Chicago, U.S.A.
61. Abdul Hakim Juri, Adznir Mokhtar, Napsiah Ismail (1990), 'Management Support System in Manufacturing Environment', kertas kerja dibentangkan di **Seminar on Cost and Management Accounting**, 18–19 Mac, Kuala Lumpur.
62. Napsiah Ismail (1990), 'Robot Control System'. Kertas kerja dibentangkan di **Seminar Fakulti Kejuruteraan**, 20 April 1990, UPM.
63. Fuad Abas (1990), 'Istilah Kejuruteraan Dalam Kegiatan Ilmiah', kertas kerja dibentangkan di **Seminar Kebangsaan Peristilahan dan Penulisan Sains**, 2–3 Mei 1990, USM.
64. Fuad Abas (1990), "**Termodinamik untuk Juruteknik**", (terjemahan), Penerbit UPM.
65. Fuad Abas (1989), 'An Evaluation of Energy Utilisation and Potential in Palm Oil Production', **Special Study Report**, Sept. 1989, Asian Institute of Technology, Bangkok.
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67. Zainal Abidin Sulaiman, Elias Saim, Mohd. Yusof Sulaiman, Abd. Rahman Ramli (1990), 'Pembinaan Sistem Tomografi Berkomputer di Jabatan Fizik, UPM', kertas kerja di **Persidangan Sains dan Teknologi Nuklear**, 20–21 Februari, 1990, UKM.
68. Radin Umar Radin Suhadi and Aminuddin Adnan, Accident Investigation by Conflict Study, **Six. Int. Conference Road Engineering Association of Asia and Australasia**, March 1990.
69. Aminuddin Adnan, Rehan K., Asri H. and Radin Umar R.S., A Systematic Road Safety Programme in Malaysia, **Sixth Int. Conference REAAA**, Kuala Lumpur 1990.
70. Radin Umar R.S., Aminuddin. Rehan SK, Asri H, Interpretation of Accident Statistics Along Seremban Port Dickson Highway, **Second Int. Conference of Islamic Countries**, Johore 1990.
71. Radin Umar Radin Suhari, Aminuddin A dan T. Jamaluddin, Ciri-ciri Pengguna Jalan Raya di Malaysia, **Majlis Keselamatan Jalan Raya Malaysia**, Kuala Lumpur 1990.
72. Ahmad b. Jusoh dan Megat Johari Megat Mohd. Noor (1990). "Loji Rawatan Air Mini Simenfero", kertas kerja di **Seminar Kebangsaan Simenfero**, 16–17 Januari 1990, UPM.
73. Ahmad b. Jusoh, Lee Teang Shui dan Megat Johari Megat Mohd. Noor (Penyunting) 1990, **Prosiding Seminar Kebangsaan Simenfero** 16–17 Januari 1990.
74. Azni Idris, Megat Johari Megat Mohd. Noor, Ahmad Jusoh, Abdul Halim Ghazali (1990), Anaerobic Digestion of POME using Upflow Biofilter Reactor, **Water and Wastewater '90 Conference**, Barcelona, Spain, April 14–27, 1990.
75. Azni Idris (1990), Management and Utilization of Wastes – Malaysian Experience, **Seminar on Environment Control Development**, Holiday Inn, Kuala Lumpur, March 20, 1990.

#### SEMINAR/BENGGKEL/KURSUS DIANJURKAN

1. Seminar Kebangsaan Graduan Kejuruteraan I Elektronik dan Mekanikal diadakan pada 15–16hb Ogos 1989.



# FAKULTI SAINS DAN PENGAJIAN ALAM SEKITAR

## DEKAN

Profesor Dr. Hj. Badri bin Muhammad

## KAKITANGAN

### Jumlah Kakitangan

Jabatan	Kategori A	Kategori B	Kategori C	Kategori D
Pejabat Dekan	6	—	12	10
Biokimia dan Mikrobiologi	18	1	16	12
Biologi	27	—	24	21
Fizik	25	1	15	9
Kimia	30	—	24	18
Matematik	43	—	1	4
Sains Alam Sekitar	16	—	11	8
<b>JUMLAH</b>	<b>165</b>	<b>2</b>	<b>103</b>	<b>82</b>
<b>JUMLAH BESAR</b>				<b>352</b>

### Perlantikan Baru

Seramai 3 orang pensyarah telah dilantik.

### Perletakan Jawatan

Seramai 2 orang pensyarah dan seorang tutor telah meletak jawatan.

### Cuti Belajar

Seramai 25 orang pensyarah dan tutor sedang mengikuti kursus di dalam dan luar negeri (Ph.D. 24, Master 1).

Seramai 5 orang pensyarah sedang menjalani cuti sabatikal di dalam dan luar negeri.

## PERKARA AKADEMIK

### Ijazah Lanjutan

Seramai 30 orang pelajar mengikuti

ijazah lanjutan iaitu Ph.D. — 9, Master Sains — 21.

### Pemeriksa Luar

Seramai 4 orang Pemeriksa Luar bertugas di Fakulti ini. Mereka ialah:—

1. Profesor D.G. Walker dari University of Birmingham, United Kingdom.
2. Profesor M.A.K. Lodhi dari Department of Physics, Texas Tech University Lubbock, USA.
3. Profesor D.J. Evans dari University of Loughborough United Kingdom.
4. Profesor Frank Mc Cormick dari University of Tennessee, U.S.A.

## PENYELIDIKAN

1. Dr. Abdullah Sipat: Bioteknologi Fundamental.

2. Dr. Abdullah Sipat: Penulenan dan Pencirian Bahan Pengentalan Susu Segar dari Kesinai (*Streblus asper*).
3. Dr. Abdullah Sipat: Enzim Nuklease dari Lateks *Hevea brasiliensis*.
4. Dr. Abu Bakar Salleh: Biotechnology fats and oils: Enzyme and microbial technology.
5. Dr. Che Nyonya Abd. Razak: Teknologi enzim dan Mikrob: Teknologi Lemak dan Minyak
  - a. Penyaringan, pemencilan dan pencirian mikrob lipolitik.
6. Dr. Che Nyonya Abd. Razak: Penyaringan, pemencilan mikrob penghasil Xylanase.
7. Dr. Johari Ramli: Biokimia racun makhluk perosak.
8. Dr. Johari Ramli: Protamik sulfat sebagai bahan awet.
9. Dr. Norani Abdul Samad: Membentuk teknik-teknik pengesanan virus CyMV dan ORSV.
10. Dr. Norani Abdul Samad: Kajian epidemiologi virus di cili.
11. Dr. Norani Abdul Samad: Mengenalpasti virus - virus yang menjangkiti kacang dan sayuran.
12. Dr. Norani Abdul Samad: Menciri virus yang menjangkiti pokok getah, *Hevea* sp.
13. Dr. Nor Aripin Shamaan: Gene and Chromosome Mapping-Comparative studies on KK cattle (*Bos indicus*) and buffalo (*Bubalus bubalis*) immunoglobulin G.
14. Dr. Norhani Abdullah: Rumen biochemistry and microbiology.
15. Dr. Othman Abdul Samah: Pengawalan Mutu Koko.
16. Dr. Tong Chow Chin: Biopenukaran sisa-sisa pertanian kepada terbitan berguna.
17. Dr. Lee Chaing Hin: Cyclic AMP Metabolism.
18. Dr. Johari Ramli: Penggunaan Protamin Sulfat sebagai bahan awet.
19. Ann Anton: Algal Bioassays in pollution studies.
20. Ahmad Ismail: Heavy metals contamination in fiddler crab (*Uca annulipes*) from coastal area of Northern Peninsular of Malaysia.
21. Ahmad Ismail and Idris Abdul Ghani: Heavy metals distribution in the sediment along Port Klang coastal area.
22. Azhar Phoon Chum Guan: Biology of stingless bees.
23. Syed T.S. Hassan & L.T. Wilson: Establishing feeding patterns of insect larvae by incorporating basic data into feeding models.
24. Hasnah Hamdan and Linda S. Thomashow: Genetic analysis of fluorescent siderophore production in *Pseudomonas fluorescens* M4-80R.
25. Sekaran, M., Selvaraj, O.S., Tan, S.G., Mukherjee, T.K., Barker, J.S.F.: Analysis of nucleoside phosphorylase polymorphisms in *Capra hircus*.
26. Tan, S.G., Rita, M., Gan, Y.Y.: Diagnostic biochemical markers in *Helopeltis theobromae*.
27. Gan, Y.Y., G. Otis, Tan, S.G. and M. Mardan: Enzyme polymorphisms in tropical bees.
28. S.G. Tan, T.K. Mukherjee and J.S.F. Barker: Genetic identification stains and genotypes of buffaloes and goats in South East Asia; electrophoretic studies.
29. Abd. Rahman Kurais and Ahmad Ismail. Effect of zinc on development of rat embryo.
30. Abdul Rahim Ismail: Taxonomy of Malaysian Trichoptera (Insecta).

31. Jambari Hj. Ali: The study of entomopathogenic bacteria from immature stages *Elaeidobius kamerunicus* Faust (Coleoptera: Curculionidae).
32. S. C. Quah: Effect of NPK and variety on grain yield in mungbean.
33. Sekaran, M., Selvaraj, O.S., Tan, S.G., Mukherjee, T.K., Barker, J.S.F.: Analysis of nucleoside phosphorylase polymorphisms in *Capra hircus*.
34. Tan, S.G., Rita, M., Gan, Y.Y.: Diagnostic biochemical markers in *Helopeltis theobromae*.
35. Dr. Mohd. Yusof Sulaiman: Penggunaan Teknik Tomografi dalam Pertanian.
36. Dr. Abdul Halim Shaari: Penyediaan Pencirian Bahan-Bahan Magnet dan Semikonduktor.
37. Dr. Abdul Halim Shaari: Superkonduktor Suhu Tinggi.
38. Dr. Yahya Mat Hassan: Instrumentasi.
39. Dr. Shaharin Ibrahim dan Dr. Nasiman Sapari: Disposal of Solid and Toxic Wastes Effects on Groundwater.
40. Dr. Chow Sai Pew: Kajian Sifat Pukal Elastik dan Struktur Bahan dengan Menggunakan Teknik Ultrasonik.
41. Dr. Sidek Hj. Abd. Aziz: Pencirian Sifat (Elektrik, Terma, Magnet dan Elastik) bagi Bahan Seramik.
42. Dr. Mansor Hashim: Kajian Struktur Bahan Seramik Dielektrik dengan Menggunakan Belauan Sinaran-X.
43. Dr. Elias Saion: Teknik dan Penggunaan Pengukuran Tanpa Musnah dengan Menggunakan Sinar Gamma.
44. Prof. M.A.K. Lodhi: Prefeasibility Study of Renewal Sources of Energy in Malaysia.
45. Dr. W. Mahmood Mat Yunus: Application of Photoacoustic Technique.
46. Dr. Hj. Kaida Khalid: The development of Multipurpose Moisture Content Meter by Using Microwave Technique.
47. Dr. Shaharin Ibrahim: Penjanaan Tenaga Elektrik Melalui Punca Tenaga Alternatif Mikro Hidro.
48. Dr. Asmah bte Hj. Yahaya: Kajian ke atas teknik-teknik pencernaan dan analisis bagi unsur-unsur surih dalam bahan pertanian.
49. Atan b. Mohd. Sharif:
  - a. Kajian penentuan struktur dan keaktifan biologi ke atas alkaloid dari popowia pisocarpa (Annonaceae)
  - b. Kajian kandungan kimia dan keaktifan biologi tabernaemontana corymbosa (Apocynaceae)
50. Prof. Dr. Hj. Badri b. Muhammad: Preparation and Characterisation of Activated Carbon.
51. Dr. Faujan b. Hj. Ahmad and Ahmad Abd. Rahman: Curcuma Sp. as food preservative, coloring matter and economic resources.
52. Dr. Faujan b. Hj. Ahmad and Jalaludin Harun: Chemical analysis and termiticidal properties of selected bark extracts.
53. Dr. Hamdan b. Suhaimi: Association structure in palm oil and its implication on human skin, stratum corneum.
54. Kamaliah bte Sirat: Penyediaan, pencirian dan kajian kinetik kompleks logam peralihan. Tumpuan kepada logam vanadium.
55. Dr. Lee Chnoong Kheng:
  - a. Arsenic, cadmium and lead in some Malaysian cocoa beans and soils.
  - b. Application of natural ion-exchanger in the removal of metals from industrial wastewater.

56. Prof. Madya Dr. Low Kun She:
- Heavy metals in agricultural produce and environment.
  - Moss as an ion-exchanger for the removal of heavy metals.
57. Dr. Mawardi b. Rahmani:
- Potensi sebatian semulajadi sebagai racun perosak serangga.
  - Chemical constituents, structural determination of compounds from *Phyllanthus* and *Euodia* species.
  - Biological screening of traditional medicinal plants in relation to the anticancer agents and toxicity.
58. Dr. Hj. Mohamad Zaki b. Ab. Rahman: Tindakbalas metatesis getah asli.
59. Dr. Nordin b. Hj. Lajis: Kajian Kimia Sebatian Aktif Biologi: Alkaloid Daripada Tumbuhan Ubatan Tradisional Sistem Perhubungan Kimia Bagi Tumbuhan dan Serangga. (Kelapa sawit-*Elaeidobins kamerunicus*).
60. Dr. Mohd. Zaizi Desa: Kajian kestabilan pewarna antosianin daripada buah hibiscus sabdariffa.
61. Dr. Mohd. Zaizi Desa dan Dr. Wan Md. Zin Wan Yunus: Pengekstrakan pewarna Congo red, Brilliant Yellow dan Alizarin Yellow oleh resin amberlite XAD-7, amberlyst A26 dan amberlyst A27.
62. Dr. Mohd. Zobir b. Hussein: Penyediaan arang teraktif dari kayu bakaw (*Rhizophora apiculata*) – projek bersama Prof. Dr. Hj. Badri b. Muhammad.
63. Dr. Mohd. Aspollah b. Hj. Sukari:
- Pencirian komponen kimia dari tumbuhan *Ocimum sanctum* dan *Tabernaemontana polynuera* serta kajiankeaktifan biologinya.
  - Keaktifan keracunan tumbuh-tumbuhan tempatan terhadap haiwan akuatik.
64. Rehan bt. Hj. Mohd. Noor: Kajian mengenai masalah pelajar dalam menamakan sebatian-sebatian organik.
65. Prof. Madya Dr. Salihan b. Siais:
- The effect of herbicides the rats of fotosintesis.
  - Masalah dan kemahiran belajar pelajar sekolah menengah dan institusi pengajian tinggi.
66. Dr. Sidik b. Silong:
- Penyediaan, pencirian dan kajian struktur kompleks logam-logam berat dengan ligan multidentat.
67. Dr. Sidik b. Silong dan Dr. Mohd. Zaki b. Ab. Rahman: Kajian awal aktiviti biosida beberapa kompleks koordinasi logam.
68. Dr. Tan Wee Tee:
- Electroanalytical and spectrometric studies of metal ion complexes.
  - Sorption studies of toxic metal ions by agricultural residues.
69. Dr. Zulkarnain Zainal: Penyediaan dan pencirian arang teraktif dari kayu bakau (*Rhizophora apiculata*). (sedang dijalankan).
70. Dr. Md. Jelas b. Haron dan Dr. Wan Md. Zin b. Wan Yunus:
- Pengesteran asid lemah dengan penukaran ion asid kuat.
  - Penyediaan Poli (asid N-fenilhidrok-samik).
71. Dr. Ab. Rahman b. Manas: Potensi sebatian semulajadi sebagai racun perosak serangga.
72. Prof. Madya Dr. Karen A. Crouse:
- Kajian kinetik serta mekanisme tindakbalas sebatian organologam.
73. Prof. Madya Dr. Karen A. Crouse dan Goh Lai Yoong:
- Penyediaan dan tindak balas kompleks dinuklear.

74. Prof. Dr. Hj. Badri b. Muhammad dan Prof. Madya Dr. Karen A. Crouse:
- Kajian therma ke atas kompleks kromium.
  - Karbon aktif.
75. Wan Jamilah Wan, Abdullah: A method for numerical integration on an automatic computer – method of Chebyshev expansion.
76. Drs. Ismail Abdullah dan Prof Madya Dr. Kamel Ariffin Mohd Atan: Hasil Tambahan Ekspone Berkomputer.
77. Dr. Peng Yee Hock: The Chromaticity of Graphs (Kekromatikan Graf).
78. Habshah Midi: Menganggar parameter bagi model regresi dengan menggunakan kaedah nilai mutlak terkecil dengan cara pengaturcaraan linear.
79. Habshah Midi: Memodelkan data eksport kayu bergergaji di Semenanjung Malaysia dengan kaedah Box-Jenkins.
80. Azmi Jaafar: Menyelesaikan masalah regresi dengan menggunakan kaedah pengaturcaraan linear dan kriteria nilai mutlak terkecil.
81. Dr. Malik Hj. Abu Hassan: Kestabilan Sistem tak berantonomi.
82. Dr. Bachok Taib: Polinomial Kubik dalam kaedah kamiran sempadan.
83. Dr. Abu Talib Othman: Pemodelan Sistem Rangkaian Universiti.
84. Fudziah Ismail: Kembangan  $h^2$  bagi beberapa kaedah ekstrapolasi.
85. Fudziah Ismail: Kaedah ekstrapolasi menggunakan kembangan Taylor dan penyelesaian p.b.b peringkat tinggi  $y^d = f(x, y, y', y'', \dots, -y^{d-1})$ .
86. Abdul Wahid Ghazali: Cadangan mengujudkan laluan penghijrahan Gajah yang teratur (PERHILITAN dan Kementerian Kemajuan Tanah dan Wilayah).
87. Dr. Anhar Suki: Kajian Feasibiliti Penubuhan Khidmat Nasihat Teknikal bagi pengurusan rawatan.
88. Dr. Anhar Suki: Mewujudkan membrane sintetik.
89. Dr. Anhar Suki: Proses Kadar Pantas Pencerna Anaerobik.
90. Dr. Anhar Suki: Kesan pembalakan di kawasan bukit, ke atas kualiti air sungai.
91. Dr. Anhar Suki, Dr. Muhamad Awang, Dr. Muhamad Ismail Yaziz, Dr. Muhamad Awang dan Azman Zainal Abidin: Kualiti Alam Sekitar dan Cara Kawalan Pencemaran.
92. Dr. Azizi Muda: Pengangkutan Bandar dan Kesan Alam Sekitar.
93. Azman Zainal Abidin: Observation of the temporal and spatial patterns of selected air pollutants.
94. Azman Zainal Abidin: Observations of vertical temperature profiles and vertical profiles of wind velocity – assessing atmospheric stability.
95. Azman Zainal Abidin: Monitoring of Polynuclear Aromatic Hydrocarbons (PAH) in the Klang Valley.
96. Azman Zainal Abidin, Dr. Muhamad Awang, Tengku Hanidza Ismail dan Dr. Zelina Zaiton Ibrahim: Environmental Impact Assessment: Extension project at Sultan Salahuddin Abdul Aziz Shah Power Station, Kapar.
97. Dr. Mohd. Ismail Yaziz: Panduan Pengolahan rawatan kumbahan melalui kolam pengoksidaan.
98. Dr. Muhamad Awang: Effects of air pollution and simulated acid rain on agricultural and horticultural crops.
99. Dr. Muhamad Awang: Effects of  $CO_2$  enrichment, heat stress and water stress on growth performance of local crops.
100. Dr. Nasiman Sapari: Development of Petrochemical Effects on Rantau Abang Beach.

101. Dr. Nasiman Sapari: Disposal of Solid and Toxic Wastes: Effects on Groundwater and Environment.

102. Dr. Ramdzani Abdullah: Kajian Perbandingan Penilaian Kesan Alam Sekitar di Malaysia.

103. Tengku Hanidza Ismail: Noise problems and control on wood-working industry: A case study in a moulding factory.

104. Tengku Hanidza Ismail: Isolation and Characterization of campylobacter from retailed chicken.

105. Zelina Zaiton Ibrahim: Coastal Zone Resources and Management (UPM-Perancis).

106. Zelina Zaiton Ibrahim: Coastal Zone Information System (UPM-Perancis).

107. Zelina Zaiton Ibrahim: Pengesanan Perubahan Garis Pantai Dengan Menggunakan Maklumat Digital Penginderaan Jauh.

## PENERBITAN

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2. Hamzah, A., Abd. Razak, N., Ghani, B. & Sipat, A.B. (1989): Isolation and Identification of Xylanase Producing Bacteria from the local Environment. Proc. 12th Mal. Microb. Soc. Symp. pg. 21 – 22.

3. Choi, S.Y., Tanizawa, K., Nakajima, N., Sipat, A.B., Pan, Y. 7 Soda, K. (1989): Subcloning and sequencing of glutamate racemase gene from *Pediococcus pentosaceus*. 5th FAOB Congress, Seoul, Korea. August 1989.

4. Yusoff, K. and Ibrahim, A.L. (1990): Molecular biology of Newcastle disease virus. Proceedings of the 39th. Western Poultry Conference pp. 143. University of California Davis, U.S.A.

5. Yusoff, K., Nesbit M., McCartney, H., Meulemans, G., Alexander, D., Collins, M., Emmerson, P.T. and Samson, A.C.R. (1989): Location of neutralising epitopes on the fusion protein of Newcastle disease virus. Journal of General Virology 70, 3105 – 3109.

6. Palombo, E.A., Yusoff, K., Stanisich, V.A., Krishnapillai, V. and Willetts, N.S. (1989): Cloning and genetic analysis of *tra* cistrons of the Tra2/Tra3 region of plasmid RP1. Plasmid 22, 59 – 69.

7. Yusoff, K. (1989): The nucleotide sequence of the polymeerase gene of Newcastle disease virus. Proceedings; 12th. Malaysian Microbiology Symposium (in press).

8. Yusoff, K., Ibrahim, A.L. and Ideris, A. (1989): Biotechnological research and its commercial application in Malaysia. Proceedings: International Symposium on Application of Biotechnological Methods and recent Accomplishments of Economic Value in Asia. (in press).

9. Yusoff, K., Nesbit, M., Samson, A.C.R. and Emmerson, P.T.: Effect of amino acid substitutions on glycosylation of the haemagglutinin-neuraminidase glycoprotein of Newcastle disease virus strain Beaudette C. Journal of General Virology 70, 1549 – 1552.

10. Yusoff, Khatijah. (1989): Use of monoclonal antibodies in the identification of neutralising epitopes in Newcastle disease virus. First Seminar on National Biotechnology Programmes 'Book of Abstracts' pp. om3.

11. Johari bin Ramli (1990): Mancozeb residues in tomato plants in FAO/IAEA research coordination publication on radiotracer studies of fungicide residues in food plants – in press.

12. Mohd. Yusof, A.S., Che Nyonya Abdul Razak, Abu Bakar Salleh, Kamaruzaman Ampon, Wan Yunus W.M.Z., Basri M., (1989): The effect of some growth substrates on lipase

production by a thermophilic fungus *Rhizopus rhizopodifoemis*. Simposium Mikrobiologi Malaysia Ke 12, 22–23 Ogos 1989, Kuala Lumpur.

13. Abu Bakar Salleh, Che Nyonya Abdul Razak, Kamaruzaman Ampon, Wan Md. Zin Wan Yunus, Mahiran Basri (1989): Enzyme and Microbial Technology: Biotechnology of Fats and Oils. First Seminar on National Biotechnology Programmes, 1–3 Jun 1989, Penang.

14. Che Nyonya Abdul Razak, Abu Bakar Salleh, Mohd. Yusof A.S., Wan Md. Zin Wan Yunus, Kamaruzaman Ampon, Mahiran Basri (1989): Screening, isolation and characterisation of lipolytic microbes. First Seminar on National Biotechnology Programmes, 1–3 Jun 1989, Penang.

15. Wan Md. Zin Wan Yunus, Abu Bakar Salleh, Kamaruzaman Ampon, Che Nyonya Abdul Razak, Mahiran Basri (1989): Immobilisation of lipases on several synthetic polymers. First Seminar on National Biotechnology Programmes, 1–3 Jun 1989, Penang.

16. Kamaruzaman Ampon, Abu Bakar Salleh, Salam F., Wan Yunus W.M.Z., Che Nyonya Abdul Razak, Basri M., (1989): Chemical modification of enzymes for use in organic synthesis organic solvents. First Seminar on National Biotechnology Programmes, 1–3 Jun 1989, Penang.

17. Kamaruzaman Ampon, Abu Bakar Salleh, Salam F., Wan Yunus W.M.Z., Che Nyonya Abdul Razak, Basri M., (1989): Solubility and activity of alkylated lipase in organic solvents. 5th FAOB Congress, 13–18 August 1989, Seoul, Republic of Korea.

18. Abu Bakar Salleh, Che Nyonya Abdul Razak, Rosailis Buyong, Kamaruzaman Ampon, Wan Yunus W.M.Z., Basri M. (1989): Penulenan separa lipase daripada *Rhizopus oryzae* (*Partial purification of lipases from **Rhizopus oryzae***). 14th Annual Conference of the Malaysian Biochemical Society, 4–5 September 1989. Universiti Malaya, Kuala Lumpur.

19. Abu Bakar Salleh, Kamaruzaman Ampon, Salam F., Wan Yunus W.M.Z., Che Nyonya Abdul Razak, Basri M. (1989): Modification of lipase for reaction in organic solvents. Enzyme Engineering X, 24–29 September 1989, Kashikojima, Japan.

20. Wan Md. Zin, Md. Jelas Haron, Abu Bakar Salleh (1989): Esterification of oleic acid catalysed by a strong cation exchanger. Malaysian Chemical Congress, Kuala Lumpur.

21. Dr. Lee Chaing Hin: Biochemistry Int. 19: 745 – 753 (1989).

22. Dr. Lee Chaing Hin: Proc. 14th Mal. Biochem. Soc. Conf. (1989).

23. Hamzah, A., Abd. Razak, N., Ghani B. & Sipat, A.B. (1989): Isolation and Identification of Xylanase Producing Bacteria from the local Environment. Proc. 12th Mal. Microb. Soc. Symp. pg. 21 – 22.

24. Johari bin Ramli (1990): Mancozeb residues in tomato plants in FAO/IAEA research coordination publication on radiotracer studies of fungicide residues in food plants – in press.

25. Juzu Hayati Arshad (1990): Persistence of malathion residues in stored milleo rice-direct and indirect applications in 'Studies of the Magnitude and nature of pesticide residues in stored products, using radiotracer techniques' International Atomic Energy Agency. Vienna.

26. Juzu Hayati Arshad, Tiong Yii Chou and Nor Azni Mohd. Syed (1990): The degradation of 14C-malathion in stored milled rice. Kertas kerja di Third International Conference on Plant Protection in the Tropics, 20–23 Mac 1990, Genting Highlands.

27. Norani Abdul Samad. 1989: Use of ELISA for detection of viruses in plants. First Seminar on National Biotechnology Programmes, Penang.

28. Norani Abdul Samad. 1989: Orchid viruses and their management. Malaysian

Agricultural Digest 7, 21 – 25.

29. Norani Abdul Samad. 1989: Detection and management of orchid viruses. Seminar Bunga-Bunga: Perosak dan Penyakit, Cameron Highland.

30. Norani Abdul Samad, 1989: A viral complex affecting *Aranthera Beatrice* Ng orchid. PERTANIKA 12, 149 – 151.

31. Norani Abdul Samad and Teh Teng Khoon. 1989: dsRNA analysis of tomato plants infected with tomato mosaic virus. 3rd. International Conference on Plant Protection in the Tropics, Kuala Lumpur.

32. M.Y. Hussein, Norani A. Samad and Z.B. Sulaiman. 1989: Cultural control of *Aphis gossypii* Glov., a vector of chilli veinial mottle. 3rd. International Conference on Plant Protection in the Tropics, Kuala Lumpur.

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34. Norani Abdul Samad dan Zainab Ari, 1989: Application of latex agglutination tests to detect Cymbidium mosaic virus in orchids. 12th Malaysian Microbiology Symposium, Kuala Lumpur.

35. Shamaan N.A., H. Mahbut, I. Yunus and W.Z. Wan Ngah (1989): The distribution of glutathione S-transferase isoenzymes in organs of the buffalo (*Bubalus bubalis*) and the Kedah-Kelantan cattle (*Bos indicus*). Proc. 14th Mal. Biochem. Soc. Conf., 4–5 Sept. 1989, Universiti Malaya, Kuala Lumpur. pp. 86 – 91.

36. Lim, S.T., Lee, C.H., Abdul Samah, O and Ong, K.K. (1989). Cyclic 3'5' nucleotide phosphodiesterase activity and total cyclic AMP content in continuous cultures of *Rhizobium fredii*

MAR-1. Proceeding of the 14 Malaysian Biochemical Society Conference (4–5 Sept. 1989, Kuala Lumpur).

37. Alimon, H. and Abdul Samah, O. (1989): Production of ethanol from black fruit juice by *S. cerevisiae* 2164. Proceeding of The 14th Malaysian Biochemical Society Conference 94–5 Sept. 1989 Kuala Lumpur).

38. Tong, C.C., Shepherd, M.G. & Cole, A.L.J. (Accepted and in press). One Chapter on 'Cellulases from *Thermoascus aurantiacus* in METHODS IN ENZYMOLOGY entitled 'Biomass'. Vol. 160. Dec. 1989.

39. Tong, C.C. (1989): Cultivation of *Ganoderma lucidum* the Malaysian style. Mushroom journal for the tropics. Vol. 10(1).

40. Tong, C.C., & N.M. Hamzah (1989): Delignification Pretreatment of palm-press Fibres by chemical methods. Pertanika Vol. 12(3): 399 – 403.

41. Tong, C.C. (1989): Growing *Ganoderma lucidum* in plastic bag. 12th Malaysian Microbiology Symposium. 22–23 August 1989, K.L.

42. Delfinado-Baker, M., Baker, E.W. and Phoon, A.C.B.: Mites (Acari) associated with bees (Apidae) in Asia, with description of a new species.

43. Y.W. Ho, T.K. Lim and N.R. Ratu: Histopathological development of custy leaf spot of mango.

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186. M. Awang (1990): Effects of SO<sub>2</sub> on oil palm (Jaq.) seedlings. J. Mal. Appl. Biology (in print).

187. Zulkifli Yusop, A. Suki, Abd Rahim Hj. Nik and Mohd Fauzi Zakaria, 'Rainfall chemistry and nutrient loading in tropical hill forest in peninsular Malaysia' Journal of Tropical Forest Science 1(2), 201 – 214 (1989).

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# FAKULTI PERIKANAN DAN SAINS SAMUDERA

## DEKAN

Prof. Madya Kapt. Dr. Mohd. Ibrahim Hj. Mohamed

## KAKITANGAN

### Jumlah Kakitangan

Jabatan	Kategori A	Kategori B	Kategori C	Kategori D
Pejabat Dekan	3	—	6	8
Jabatan Biologi Ikan	14	—	5	5
Jabatan Akuakultur	9	1	9	8
Jabatan Teknologi Menangkap Ikan	15	3	20	53
<b>JUMLAH</b>	<b>41</b>	<b>4</b>	<b>40</b>	<b>74</b>

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### Perlantikan Baru

Seramai 2 orang Pensyarah dan seorang Juruteknik telah dilantik.

### Perletakan Jawatan

Dua orang Tutor telah meletakkan jawatan.

### Ijazah Lanjutan

Ph.D — 9 orang

M.S — 15 orang

24 orang

### PEMERIKSA LUAR

1. Prof. John Goering — University of Alaska, USA.

2. Prof. T. R. Parsons — University Boulevard, Canada.

3. Prof. J.C.J. Nihoul — University of Leige, Belgium.

4. Prof. Paggi Lia — University di Roma, Italia.

5. Prof. Madya Dr. Lai Hoi Chaw — USM

6. Prof. T. Yamamoto — University of Alberta, Canada.

### PENYELIDIKAN

1. Fatimah Md. Yusoff: Water quality characteristics in catfish culture ponds.

2. Fatimah Md. Yusoff: Comparative study of primary productivity in shallow and deep lakes.

3. Abu Khair Mohd. Mohsin: Taxonomy, Biology and Management of the Sea Fishes of Peninsular Malaysia: MPKSN project.

4. Mariana Nor Shamsudin: Flora Bakteria yang berkaitan dengan penyakit ikan dan udang ternakan tempatan. MPKSN (IRPA). 1985-1990.

5. Mohd. Nasir Saadon: Kajian keberkesanan tukun-tukun tiruan di negeri Terengganu. Kerajaan Negeri Terengganu.

6. Siti Shapor Hj. Siraj: Kajian genetik terhadap ikan keli dan lampam jawa.

7. Siti Shapor Hj. Siraj: Kajian pembiakan aruhan ikan keli.

8. Mohd. Nasir Saadon: Coastal and nearshore processes in the Terengganu coast, MPKSN.

## PENERBITAN

1. Cheah, S.H. and H. Satoh (1989) Trials in induced spawning of *Fugu niphobles* with Human Chorionic Gonadotropin. *Pertanika* 12(3) : 323–328.

2. Ang, K.J., A.T. Law and S.H. Cheah (1989). Nutrition and culture of the giant gourami (*Osphronemus goramy* Lacepede) in floating net cages. In Huisman, E.A., N. Zonneveld & A.H.M. Bouwmans (eds.) *Aquacultural research in Asia: Management techniques and nutrition*. Pudoc, Wageningen. 271 pp.

3. Ang, K.J., S.H. Cheah and K.A. Raffiq Ahmad (1990). Some aspects of the morphology and histology of the ovary of the Malaysian freshwater giant prawn *Macrobrachium rosenbergii* (de Man). In Hirano, R. and I. Hanyu (eds.) *The Second Asian Fisheries Forum*. Asian Fisheries Society, Manila, Philippines, p. 607 – 611.

4. Patimah I., M.N. Mohamad and S.H. Cheah (1990) Toxicity of copper to larval and post larval stages of *Macrobrachium rosenbergii* (de Man). In Hirano, R. and I. Hanyu (eds.) *The Second Asian Fisheries Forum*. Asian Fisheries Society, Manila, Philippines. p. 927 – 930.

5. Cheah, S.H., S.S. Siraj and K.J. Ang (1990). A preliminary study on induced spawning of *Clarias batrachus* (Linnaeus) in Malaysia. *Pertanika* 13(1) : In press.

6. Cheah, S.H., S.S. Siraj, N.A. Salim and K.J. Ang (1990). Further studies on induced spawning of the catfish *Clarias batrachus* (Linnaeus) in Malaysia. Presented at the First Symp. Malays. Appl. Biol. 27–28 February 1990. Universiti Pertanian Malaysia, Serdang, Malaysia.

7. Abdul Wahab Aman, S.H. Cheah, N. Salim and K.J. Ang (1990). A study on the response of juvenile *Macrobrachium rosenbergii* (de Man) to light. Presented at the First Symp. Malays. Appl. Biol. 27–28 February 1990. Universiti Pertanian Malaysia, Serdang, Malaysia.

8. Chin, Kenneth S.S., S.H. Cheah, K.J. Ang and A.T. Law (1990). Nursing the giant freshwater prawn *Macrobrachium rosenbergii* (de Man) in floating net cages. Presented at the First Symp. Malays. Appl. Biol. 27–28 February 1990. Universiti Pertanian Malaysia, Serdang, Malaysia.

9. Siraj, S.S., S.H. Cheah, C.R. Saad and K.J. Ang (1990) Fry rearing of walking catfish, *Clarias batrachus* (Linnaeus) with diets containing chicken eggs enriched with fish meal. Presented at the First Symp. Malays. Appl. Biol. 27–28 February 1990. Universiti Pertanian Malaysia, Serdang, Malaysia.

10. Daud, S.K., Z. Nik Ahmad and S.H. Cheah (1990). Embryonic and larval development of *Puntius gonionotus* (Bleeker). Presented at the First Symp. Malays. Appl. Biol. 27–28 February 1990. Universiti Pertanian Malaysia, Serdang, Malaysia.

11. Saad, C.R., R. Kiandee and S.H. Cheah (1990). Effect of feeding frequency on growth, feed intake and body composition of *Puntius gonionotus* (Bleeker) fry. Presented at the First Symp. Malays. Appl. Biol. 27–28 February 1990. Universiti Pertanian Malaysia, Serdang, Malaysia.

12. M.S. Khan, M.A. Ambak, K.J. Ang and A.K.M. Mohsin (1990). Reproductive Biology of a tropical catfish, *Mystus nemurus* Cuvier and Valenciennes, in Chenderoh Reservoir, Malaysia. *Aquaculture and Fisheries Management*, 21 (131–137).

13. Mohd. Zaki Mohd. Said, A.K.M. Mohsin and Mohd. Azmi Ambak (1990). Colour pattern as an additional aid to the identification of *Nemipterus* species. *Pertanika*.

14. Anderson, I.G., M. Shariff and G. Nash (1989). A hepatopancreatic microsporidian in pond-reared tiger shrimp, *Penaeus monodon*, from Malaysia. *Journal of Invertebrate Pathology* 53, 278–280.
15. Shariff, M. (1989). Some basic concepts of fish disease for nutritionists, p. 101–111. In S.S. De Silva (ed.) *Fish Nutrition Research in Asia*. Proceedings of the Third Asian Fish Nutrition Network Meeting. Asian Fisheries Society Special Publication 4, 166 p. Asian Fisheries Society, Manila, Philippines.
16. Shariff, M. and C. Sommerville (1989). Comparative morphology of the larval stages of *L. polymorpha* and *L. cyprinacea*. *Crustaceana* 57, 134–139.
17. Shariff, M. and R.J. Roberts (1989). The experimental histopathology of *Lernaea polymorpha* Yu 1938 infection in naive *Aristichthys nobilis* (Richardson) and a comparison with lesion in clinical resistant fish. *Journal of Fish Diseases* 12, 405–414.
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19. Shariff M and C. Sommerville (1990). Comparative morphology of the adult of *L. polymorpha* Yu and *L. cyprinacea* Linnaeus. 717–720p. In Hirano, R and I. Hanyu, editors 1990. The Second Asian Fisheries Forum. 991p. Asian Fisheries Society, Manila, Philippines.
20. Cheah, S.H., S.S. Siraj, N. Salim & K.J. Ang. 1990. Further studies on induced spawning of the catfish in Malaysia. Paper presented at the First Malaysia applied biologi symposium Theme “Current Research in Applied Biology” 27–28th February, 1990. PPPL, UPM.
21. Saadon, M.N. & Liew H.C. (1989). Water Circulation Pattern in the Coastal water off Port Dickson. Paper presented in Seminar on Advances in Fisheries & Marine Sciences – The JICA/FPSS (UPM) Experience, 10th – 11th March 1989, Malacca, Malaysia pp. 22.
22. Saadon, M.N. & Rosnan Yaacob (1989). A Study on the Surface Water Movements Due to Tides Off the Kuala Terengganu Coast. Paper presented in the National Workshop on Tides and Tidal Phenomena. 12–13 June, 1989. Hotel Pantai Primula, Kuala Terengganu, Malaysia. pp 20.
23. Rosnan Yaacob & M.N. Saadon (1989). Grain-size distribution and shore drift direction along the coastal areas of Terengganu. Paper presented in the 12th Annual Seminar of the Malaysian Society of Marine Science, 18th Nov. 1989, Universiti Malaya, Kuala Lumpur, pp. 17.
24. Saadon, M.N., Liew H.C. & M. Hidaka (1990). Temperature and Salinity Profiles in Sabah Water. Ekspedisi Matahari '89. Mohsin A.K.M. & Mohd. Ibrahim (eds.). Faculty of Fisheries and Marine Science, Universiti Pertanian Malaysia. Occasional Publication. (In Press).
25. Saadon, M.N., Liew H.C. & M. Hidaka (1990). Sigma-t and Dissolved oxygen profiles in Sabah water. In Ekspedisi Matahari '89. Mohsin A.K.M. & Mohd. Ibrahim (eds.). Faculty of Fisheries and Marine Science, Universiti Pertanian Malaysia. Occasional Publication (In Press).
26. Saadon, M.N. (1990). Weather conditions during the Matahari Expedition Matahari '89. Mohsin A.K.M. & Mohd. Ibrahim (eds.). Faculty of Fisheries & Marine Science, Universiti Pertanian Malaysia. Occasional Publication. (In Press).
27. Saadon, M.N. (1990). Sea surface

- and air temperature in the South China Sea. In Ekspedisi Matahari '89. Mohsin A.K.M. & Mohd. Ibrahim (eds.). Faculty of Fisheries & Marine Science. Universiti Pertanian Malaysia. Occasional Publication. (In Press).
28. Siraj S.S., S.H. Cheah, C.R. Saad and K.J. Ang, 1990. Fry rearing of walking catfish, *Clarias batrachus* (L.) with diets containing chicken egg enriched with fish meal. Paper presented at the First Malaysian Applied Biological Symposium. Theme "Current Research in Applied Biology" 27–28th February, 1990. PPPL, UPM.
29. Yusoff, F.M. 1989. Light availability for phytoplankton production in turbid tropical fish ponds. *Pertanika* 12(3) : 329 – 333.
30. Yusoff, F.M. and C.D. Mc Nab 1989. Effects of nutrient availability on primary productivity and fish production in fertilized tropical ponds. *Aquaculture*, 78 : 303 – 319.
31. Yusof, F.M. and K.T. Siow (eds.) 1989. Aquarium Fish Industry-A new frontier. Malaysian Fisheries Society. Occasional Publication No. 2. 110 pp.
32. Yusoff, F.M. 1990. Water quality characteristics in experimental fish ponds, Malaysia p. 193 – 196. In Hirano, R. & I. Hanyu (eds.). Proceeding of The Second Asian Fisheries Forum, Tokyo, Japan.
33. Law, A.T., K.S.S. Chin, K.J. Ang and M.S. Kamarudin (1990) digestibility of low cost ingredients in pelleted feeds by *Macrobrachium rosenbergii* (De Man). In: Reijero Hirano and Isao Hanyu (eds.). The Second Asian Fisheries Forum. The Asian Fisheries Society. Manila, Philippines. P. 333 – 336.
34. Law, A.T. and S.H. Yeong (1989). Petroleum hydrocarbon in the water and sediment of Port Dickson coastal waters, Straits of Malacca. Paper presented at the seminar of Research Priorities for Marine Sciences in the 90's. The Malaysian Society of Marine Science and IPT, Universiti Malaya, 18 Nov. 1989. MU, Kuala Lumpur.
35. Law, A.T. and V. Ravinthar (1989). Petroleum hydrocarbon along the Coastal Areas of Port Dickson. *Pertanika* 12(3) : 345 – 348.
36. Law, A.T. (1990). Chemical nutrients and petroleum hydrocarbons in the coastal water off the ESSO Crude Oil terminal in Kerteh, Kuala Terengganu. In: Noor Azhar Mohd. Shazili, Law Ah Theem, Liew Hock Chark, Mohd. Nasir Saadon and Che Abd. Rahim Mohgamed (eds.). Impacts study of the marine off an EPMI industrial plant in Kerteh, Terengganu, Malaysia. p. 11 – 34.
37. I.G. Anderson, Mariana Nor Shamsudin and G. Nash 1989. A preliminary study on the Aerobic Heterotrophic Bacterial Flora in Giant Freshwater Prawn, *Macrobrachium rosenbergii*, Hatcheries in Malaysia. *Aquaculture*, 81 : 213 – 223.
38. Mariana Nor Shamsudin, K. Tajima, T. Kimura, M. Shariff and I.G. Anderson. 1990. Characterization of the Causative Organism of Ornamental Fish Mycobacteriosis in Malaysia. *Fish Pathology* 25(1) : 1 – 6.
39. Mariana Nor Shamsudin, Aziz Arshad, Fatimah Md. Yusoff and Patimah Ismail. 1990. Water Quality of Two Recreational Lakes of Malaysia, Lake Aman and Titiwangsa. Dibentangkan di Simposium Biologi Gunaan Malaysia pertama. 27–28 Februari 1990, PPPL UPM, Selangor, Malaysia.

# FAKULTI SAINS MAKANAN DAN BIOTEKNOLOGI

## DEKAN

Prof. Dr. Mohamed Mahyuddin Mohd. Dahan

## KAKITANGAN

### Jumlah Kakitangan

Jabatan	Kategori A	Kategori B	Kategori C	Kategori D
Pejabat Dekan	3	—	6	6
Sains Makanan	11	—	9	5
Teknologi Makanan	11	—	9	6
Bioteknologi	10	—	5	5
<b>JUMLAH</b>	<b>35</b>	<b>—</b>	<b>29</b>	<b>22</b>
<b>JUMLAH BESAR</b>				<b>86</b>

## Cuti Belajar

Seramai 6 orang pensyarah sedang mengikuti kursus Ph.D di dalam dan di luar negeri. Seorang sedang mengikuti cuti sabbatical.

## PERKARA AKADEMIK

Seramai 25 orang pelajar mengikut program Ijazah lanjutan iaitu Ph.D – 4, Master Sains – 21.

## Pemeriksa Luar

Seramai 2 orang pemeriksa luar telah bertugas di FSMB, mereka ialah:—

1. Prof. Dr. Mary D. Earle dari Food Food Technology Department, Massey University, Palmerston North New Zealand (02 April, 1989 hingga 15 April, 1989).

2. Prof. Dr. Patrick R. Carnegie dari Mardoch University, Australia (08 April, 1990 hingga 16 April, 1990).

## PENYELIDIKAN

1. Puan Fatimah Abu Bakar

- Kajian tekstur dan perubahan fizik buah ciku – MPKSN. Peringkat ulangan analisis makmal.
  - Kajian kerosakan Udang Harimau menggunakan protamina – JICA/UPM.
  - Paras nitrat dan nitrit dalam pelbagai ulaman – UPM.
  - Kajian aspek mikrobiologi ciku (*Sapota L.*) – MPKSN 50262 – \$3,000/—.
  - Kajian mutu mikrobiologi rempah-rempah di Malaysia – UPM.
- Dr. Gulam Rusul Rahmat Ali
    - Effect of protamines on *Listeria monocytogenes*. Projek MPKSN.
    - Surveillance of *Listeria monocytogenes* in foods. Projek MPKSN.
    - Characterisation of histamine producing bacteria in fish. Projek MPKSN.

3. Dr. Jinap Selamat
  - a. Perubahan fisiko-kimia bagi koko sebelum tuai. UPM/MPKSN 50306.
  - b. Perubahan kimia dan citarasa koko sewaktu fermentasi dan pengeringan. UPM/MPKSN 50306.
  - c. Kinetik dalam fermentasi koko. UPM/National Biotech Program 63191.
  - d. Kandungan kadmium dalam koko dan produk koko. UPM/Lembaga Koko Malaysia 63266.
  - e. Pembentukan ester melalui proses fermentasi UPM/MPKSN 50325.
4. En. Mohamad Nordin Abdul Karim
  - a. Kajian fisiologi kimia dan fisikal buah yang disalut. UPM, 50202-89-15.
  - b. Projek kajian memperbaiki pengeluaran dan amalan lepas tuai pada berbagai jenis buah-buahan tropika. MPKSN, 07-05-20/50262.
5. Dr. Mohd. Nasir Azudin
  - a. Utilisation of local starch resources through chemical and bioconversion, MPKSN, (\$150,000 + \$80,000).
  - b. Product Development, MPKSN (250,000).
  - c. Optimisations of bioconversion of cassava and sago starches to acceptable feedstocks for fermentation systems, ASEAN - AUSTRALIAN Economic Cooperation Programme, (A\$310,000).
6. Dr. Suhaila Mohamed
  - a. Buah-buahan kering (ASEAN Food Project).
  - b. Pengekstrakan pektin dari kulit pisang (ASEAN Biotek Projek).
  - c. Melanjutkan hayat simpanan buah durian (MPKSN - Penyelidikan Tumpuan Teknologi Lepas Tuai).
- d. Kajian ke atas sebatian-sebatian aktif dalam petai (MPKSN - Penyelidikan Tumpuan Perkembangan Hasil Makanan).
- e. Penghasilan dan penjernihan jus jambu batu menggunakan enzim (MPKSN - Industrial and Environmental Biotech).
7. Dar. Mohd Yazid Abd Manap
  - a. Kajian faktor penggumpal susu dari Kesinai (*Streblus asper*) (Punca kewangan: MPKSN - Seed money) Akaun: 50205
  - b. Kajian kawalan mutu susu, Program susu sekolah Kementerian Pendidikan Malaysia. (Punca kewangan: Kementerian Pendidikan Malaysia) Akaun: 63270
  - c. Kajian mikrobiologi susu mentah keluaran Pusat Pengumpulan susu, Jabatan Perkhidmatan Haiwan. (Punca Kewangan MPKSN - Seed money) Akaun: 50218-89-01
8. Dr. Asbi Ali
  - a. "Isolation and Characterization of Pectinesterase from Tropical Fruits"
  - b. "Optimization of Processing Conditions for Guava Juice"
  - c. "Heat and Mass Transfer in Cocoa Beans during Fermentation"
9. Dr. Yaakob Bin Che Man
  - a. Use of acid treated soybean flour in yellow noodle. (M.Sc. project)
  - b. Coconut Oil Extraction using acids and enzymes. (M.Sc. project)
  - c. Triglyceride studies of palm oil products with special reference to

- cloud point behavior.
- d. Physico-chemical characteristics of palm oil - sesame oil blends.

10. Prof. Madya Dr. Yu Swee Yean

- a. Projek Mee Ikan :  
Tajuk :  
Sumber bantuan :  
Kemajuan :
- b. Projek Keropok Ikan :  
Tajuk :  
Sumber bantuan :  
Kemajuan :
- c. Projek Terus MPKSN :  
Tajuk :  
Sumber bantuan :  
Kemajuan :
- d. Projek Biskut Ikan :  
Tajuk :  
Sumber bantuan :  
Kemajuan :

11. Arbakariya Arif, Asbi Ali and Mohd. Nasir Azudin: Rheological changes of sago and corn starch during liquefaction and saccharification. Proc. International Food Conference "Prelude to the 90's", 1989. p. 144-146. Kuala Lumpur.

12. Tee E. Siang, Mohd. Ismail N, Mohd. Nasir Azudin and Khatijah I. Introduction to 'Nutrient Composition of Malaysian Foods', Proc. 7th ASEAN Food Habits Workshop, 19-21 June 1989. Pulau Pinang (in press).

13. Mohd. Nasir Azudin and Alang, Z.A. Properties and potential industrial uses of sago starch. Proc. Seminar "Sago Starch Utilization", 1989, p. 60-70. Sarawak.

14. Dr. Mohd Yusop Abu: Hasil Tenusu berlaktosa rendah (Low-Lactose Dairy Product).

**PENERBITAN**

1. Azizah Osman and Peter B. Dodd: Effects of different levels of preharvest shading on the storage quality of strawberry (*Fragaria x ananassa* Duchesne)

cv. Ostara I. Physical characteristics (Dihantar ke Journal of Horticultural Science). 646 SB4.76

2. Azizah Osman and Peter B. Dodd: Effects of different levels of preharvest shading on the storage quality of strawberry (*Fragaria x ananassa* Duchesne) cv. Ostara II. Chemical characteristics. (Dihantar ke Journal of Horticultural Science).

3. Azizah Osman and Peter B. Dodd: Effects of different levels of preharvest shading of strawberry (*Fragaria x ananassa* Duchesne) cv. Ostara flower trusses grown in the glasshouse on the postharvest life and quality of fruits. (Dihantar ke Journal of Horticultural Science).

4. Abu Bakar, F. and M.N.B. Abdul Karim (1990): Microflora of ciku (*Achras sapota* L.) of variety Jantung. Pertanian.

5. G.G. Birch, Mohd. Nasir Azudin and J. Grigor: Solution properties of oligosaccharides. J. Chemical Senses, 1990. (in press).

6. Abdul Karim MNB and Mohd. Nasir Azudin: Intake and popularity of Malaysian franchised fast food. Proc. Nutr. Soc. Mal., 1989, Vol. 4. p. 19-24, Kuala Lumpur.

7. Abdul-Karim MNB (1989): The effects of propranolol and chlorisondamine on amphetamine hyperthermic action on brown adipose tissue in lean and obese Zucker rats. Nuclear Sc. I. Malaysia (in press).

8. Che Man YB, MNB Abdul-Karim and TK Kun (1989): Development and evaluation of four different high protein low-cost rice-soy snack formulations. Int. J. Food Sc. Tech. (UK) (in press).

9. Abu-Bakar F and MNB Abdul-Karim (1990): Microflora of ciku (*Achras sapota* L.) of variety Jantung. Pertanian (in press).

10. Gulam Rusul Rahmat Ali, Mohamed Mahyuddin Dahan and Mustaffa Dollah:

A Survey of microbiological quality of fish sold in local wet markets. (Telah dihantar ke PERTANIKA).

11. Jinap, S. and Dimick, P.S. 1990: Acidic characteristics of fermented and dried cocoa beans from different countries of origin. *J. Food Sci.* 55(2): 547.

12. Jinap, S. Dimick, S. Acidic characteristics of roasted cocoa from different country of origins and flavor of the resulting chocolate. Presented at the IFT 51th Annual Meeting Chicago, Illinois, US, June 22 – July 1, 1989.

13. Jinap, S. dan Daud, M. 1990: Kandungan kapsaisin dalam kultivar *Capsicum annum*. *PERTANIKA*, April/Mei 1990.

14. Suhaila Mohamed, Zainab Johan and Jamilah Bakar (1989): Chickpea, mungbean, cowpea and groundnuts as a source of beancurds. *International Journal of Food Science and Technology* 24 p. 385 – 394.

15. Suhaila Mohamed, Norakiah Abdullah and Mangayar Karasi Muthu (1989): The Physical properties of keropok (Fried crisps) in relation to the amylopectin content of the starch flours. *Journal of the Sci. of Food and Agriculture*. Vol. 49 p 369 – 377.

16. Suhaila Mohamed, Jamilah Bakar & Rohasni Hussin (1990): Functional properties of mungbean protein isolate. Submitted to *International Journal of Food Science and Technology*.

17. Suhaila Mohamed (1990): Preventing dehiscence and extending the shelf life of fresh ripe durians. Accepted for publication in *.IG ASEAN Food Journal*.

18. Suhaila Mohamed (1990): Factors affecting the extrusion characteristics expanded starch based products. Accepted for *.IG* publication in *J. Food Processing and Preservation*.

19. Azizah bt. Osman (1989): Pre and postharvest factors affecting the post-

harvest life and quality of strawberry (*Fragaria x ananassa* Duchesne) cv. Ostara. Ph.D. thesis, Wye College, University of London. 253 pages.

20. Abdul Karim, MNB, MN Azudin, F. Abu Bakar, S. Yusof, and S. Mohamed, (1989): Notes on Postharvest Physiology of Malaysian Fruits, Faculty of Food Science and Biotechnology. Universiti Pertanian Malaysia.

21. Idris K and MNB Abdul-Karim (1989): Prosiding Bengkel untuk Pengguna Data Komposisi Makanan. Jawatankuasa Kecil Protein: Penyelidikan dan Pengembangan Amalan Makanan. Kuala Lumpur. 90 ms.

22. Che Man YB, MNB Abdul-Karim and BA Ali (1989): Food Processing: Issues and Prospects. Faculty of Food Science 1nd Biotechnology. UPM. 423 pp.

23. "Effect of pH on the kinetics of soybean lipoxygenase" B. Ali Asbi, L.S. Wei and M.P. Steinberg, *J. Food Sci.* 54:1594 1989.

24. "A Research Note: Kinetics of Inactivation of Soybean Lipoxygenase by Acid" B. Ali Asbi, L.S. Wei and M.P. Steinberg, *J. Food Sci.* 54:000 (submitted) 1990.

25. "Effect of Acid Treatment of Whole Soybeans on the Functional Properties of Soy Protein" B. Ali Asbi, L.S. Wei and M.P. Steinberg, *J. Food Sci.* 54:000 (submitted) 1990.

26. "Bioconversion of sago starch to glucose syrup" A. Ariff, Asbi B. Ali, and M.N. Azudin, *N. Y. Academy of Sciences, Annals*, 1990 (submitted).

27. "Processing of fucuk using a forced conversion heater" Y.B. Che Man, Asbi B. Ali, H.D. Sibangan, in *Research Activities at Faculty of Food Science and Biotechnology, Universiti Pertanian Malaysia*, eds. Y.B. Che Man, M.I. Abdul Karim, and Asbi B. Ali, 1989, pp. 124 – 126.

28. "Pectinesterase extraction from Guava" F. Ashraf and Asbi B. Ali, in Research Activities at Faculty of Food Science and Biotechnology, Universiti Pertanian Malaysia, eds. Y.B. Che Man, M.I. Abdul Karim, and Asbi B. Ali, 1989, pp. 137 – 138.
29. "Development of a model for food moisture sorption isotherms" Asbi B. Ali, in Research Activities at Faculty of Food Science and Biotechnology, Universiti Pertanian Malaysia, eds. Y.B. Che Man, M.I. Abdul Karim, and Asbi B. Ali, 1989, pp. 163–165.
30. "Functional properties of soy proteins prepared from acid-treated whole soybeans" B. Ali Asbi, Wei, L.S. and Steinberg, M.P., Paper # 765, 50th Annual Meeting of Institute of Food Technologists (IFT), Chicago, USA, June 19–22, 1988. IFT Program & Abstracts, pp. 273 – 274.
31. "Drying behavior of food powders during penumatic conveying" Asbi B. Ali and J. Lamb, Proceedings, 5th Symposium of Chemical Engineering in Malaysia, Kuala Lumpur, June 1989, pp. 41 – 51.
32. "Mass transfer in a closed-cycle solid liquid extraction unit" B.S.S. Baharin and Asbi B. Ali, Proceedings, 5th Symposium of Chemical Engineering in Malaysia, Kuala Lumpur, June 1989, pp. 52 – 58.
33. "Design of a forced convection heater for fucuk processing" R.A. Rahman, Asbi B. Ali, and Y.B. Che Man, Proceedings, 5th Symposium of Chemical Engineering in Malaysia, Kuala Lumpur, June 1989, pp. 415 – 421.
34. "Thermal applications in food processing operations" Asbi B. Ali, Proceedings, 2nd National Conference Malaysian Institute of Thermal Engineering and Sciences, Kuala Lumpur, August, 1989, pp. 164 – 170.
35. "Thermal efficiency of a cabinet drier" Asbi B. Ali and W. Said, Proceedings, 2nd National Conference Malaysian Institute of Thermal Engineering and Sciences, Kuala Lumpur, August, 1989, pp. 92 – 97.
36. "Process improvement for soybean protein-lipid film production" Y.B. Che Man and Asbi B. Ali, in Food Processing: Issues and Prospects, eds. Y.B. Che Man, M.N.A. Karim and Asbi B. Ali, 1989, pp. 129 – 138.
37. "Soy Proteins and Products for Food Use" B. Ali Asbi, Y.B. Che Man and L.S. Wei, Symposium on "Soybeans in South-East Asia", Phytelphas, Le Havre, France, 1990.
38. "Inhibition Kinetics of Soybean Lipoxygenase-1" B. Ali Asbi, L.S. Wei and M.P. Steinberg, 51st Annual Meeting of Institute of Food Technologists (IFT), Chicago, USA, June 19–22, 1988, IFT Program & Abstracts.
39. "Process Improvement for Fucuk Making" R. Abdul Rahman, Y.B. Che Man and Asbi B. Ali, Berita Penyelidikan, Universiti Pertanian Malaysia, in press.
40. "Research Activities at Faculty of Food Science and Biotechnology, Universiti Pertanian Malaysia." edited by Y.B. Che Man, M.I. Abdul Karim and B. Ali Asbi, Universiti Pertanian Malaysia, Serdang, 1989.
41. "Food Processing: Issues and Prospects" edited by Y.B. Che Man, M.N. Abdul Karim and B. Ali Asbi, Universiti Pertanian Malaysia, Serdang, 1989.
42. Dr. MOhd. Yazid Abd Manap: The effects of thermisation on milk and its properties. Food processing, issues and prospects. Publ. Faculty of Food Science and Biotechnology, UPM. Ed. Che Wan et al. 1989, pp. 72 – 81.
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50. Yusof, S. (1989): Physico-chemical characteristics of some guava varieties in Malaysia. *Symposium Tropical Fruit in International Trade.* Hawaii. 4–9 Jun, 1989.
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53. Dr. Mohd Yusop Abu: High Protein Yoghurt – cereal-legume based products.
54. Dr. Mohd Yusop Abu: A preliminary investigation on the practical application of ultrafiltration systems for milk concentration process – kedua-dua kertas teknikal tersebut telah dibentangkan dalam seminar penyelidikan fakulti FSMB pada 3 – 4 April 1989.
55. Yu, S.Y. Effect of fish: Flour ratio on the chemical composition, linear expansion and acceptability of fish crackers ('keropok'). *Dihantar ke International Journal of Food Science and Technology (U.K.)* pada 27 Oktober, 1989.
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59. Yu, S.Y. (1989): Product Development from freshwater fish. Akan diterbitkan dalam *Proceedings of the Seminar on Handling and Processing: The Selling Point in Malaysian Fisheries,* 27–28 Mac, 1989, K.L., LKIM/M'sian Fisheries Society.
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61. Yu, S.Y. (1990): Surimi Noodles.

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low-cost rice-soy snack formulations. Inter. J. Food Sc. & Tech. Review paper No. 2389.

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83. Che Man, Y.B., Wei, L.S., Nelson, A.I. and Yamshita, N. 1990: Effect of soaking of soybean in dilute acids on lipoxigenase, trypsin inhibitor and urease activities. Presented at 51th Annual Meeting of IFT, Anaheim, CA.

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85. Abdul Karim, M.N.B., Che Man, Y.B. and Taufik. 1990: Development of Ciku Leather. Berita Penyelidikan.

86. Asbi, B.A., Che Man, Y.B. and Wei, L.S. 1990: Soy proteins and products for food use. Presented at Soybeans in South-East Asia Conference, 5 - 6 March, Le Havre, France.

87. Che Man, Y.B. 1990: Food Processing. Seminar Pemeriksaan Premis Makanan. 8 March, ASEAN Planti, Serdang.

88. Che Man, Y.B., Asbi, B.A. and

Russley Ab. Rahman. 1990: Process improvement for fucuk making. Berita Penyelidikan.

89. Suhaila Mohamed (July 1989): Halal and haram makanan dari pandangan Islam. Kaum Ibu Kampong Teras Jernang, Bangi.

90. Suhaila Mohamed (July 1989): Makanan berkhasiat dan ulam. Seminar Kekeluargaan dan Penceraian Anjuran Persatuan Pegawai-pegawai Islam Lembaga Letrik Negara, Pusat, Jalan Bukit Pantai, Kuala Lumpur.

91. Suhaila Mohamed and Fathaiyah Jamaluddin: Hypoglycaemic activities of petai papan (*Parkia speciosa*). Presented at the VI National Seminar Natural Products Research. Universiti Teknologi Malaysia, Johore Bahru. 19-20 Jun 1989.

92. Suhaila Mohamed and Eshah Othman (1989): Effect of packaging, modified atmosphere, and chemical treatments on the shelf life of fresh rambutan. Food Processing - Prelude to the 90's National Seminar. Putra World Trade Center, 12-14 September 1989. Ed. Y.B. Che Man, M.N.B. Abdul Karim, B.A. Asbi.

93. Suhaila Mohamed. (1989): Penggunaan bahan-bahan penambah makanan yang halal dan tidak halal di dalam pemprosesan makanan. Majlis Taklimat dan Perjumpaan dengan Pengusaha Makanan. 23.10.89 - Kota Kinabalu - 24.10.89. Tawau - 25.10.89 - Sandakan - 5.2.90 - Kuching.

# KAMPUS BINTULU

## PENGARAH KAMPUS

Professor Madya Dr. Ibrahim bin Mohd. Yusof J.B.K., P.B.S., K.M.N., Dip. Agric (Malaya), M.S. (Florida), Ph.D (Louisiana State)

## KAKITANGAN

### Jumlah Kakitangan

Bahagian	Kategori			
	A	B	C	D
Pentadbiran	9	2	9	50
Kewangan	2	2	8	3
<b>JUMLAH</b>	11	4	17	53
<b>JUMLAH BESAR</b>				85

## PUSAT PENGAJIAN SAINS ASASI

### DEKAN

Dr. Ramli bin Ibrahim. Drs. (Bandung I.T.), Ph.D (Essex)

## KAKITANGAN

### Jumlah Kakitangan

	Kategori			
	A	B	C	D
Pusat Pengajian Sains Asasi	17	—	1	16
<b>JUMLAH BESAR</b>				34

## Perlantikan Baru

Seramai 3 pensyarah dan seorang pembantu makmal (sambilan).

## Perletakan Jawatan

Seorang pembantu makmal (sambilan) dan 2 orang pembantu am rendah (sambilan).

## Cuti Belajar

Seramai 2 orang tutor sedang mengikut kursus di luar negeri (Ph.D = 1 & Master = 1).

## PENYELIDIKAN

1. Awangku Abdul Rahman bin Pengiran Haji Yusof: Penggunaan Laser Mengesan Kecacatan Di Dalam sesuatu sampel.
2. Dr. Lau Seng:
  - a. Degradasi Lignin Kayu Terproses Pada Suhu Ambien.
  - b. Gula Dari Palma Dipah. (*Nypa Fructicans*)
  - c. Menguji Kandungan Kanji Di Dalam Tepung Sago Dengan Menggunakan FTIR.
  - d. Menguji Kandungan Nitrogen Di Dalam Tumbuhan - Tumbuhan dengan Menggunakan CHN - Elemental Analyzer.
3. Dr. Ramli bin Ibrahim: Degradasi Lignin Kayu Terproses Pada Suhu Ambien.
4. Rozita bt. Johari: Concurrent Programming: Differences Between Concurrency In ADA (Focusing On A Different Aspect Of Task Interaction).
5. Dr. Kasing Apun:
  - a. Taburan Mikroorganisma Pada Lada Semasa Pemprosesan (Penyelidikan Teras Lada).
  - b. Menguji Kandungan Nitrogen Di Dalam Bahan Tumbuh-tumbuhan Dengan Menggunakan CHN - Elemental Analyzer.

6. Dr. Cheksum Supiah bt. Tawan: Marfologi Dan Anatomi Rizom *Imperata cylindrica* Pada Jenis Tanah Yang Berbeza.

7. Gwendoline Ee Cheng Lian:

- a. Kajian Lanjutan Mengenai Gula Dari Palma Nipah (*Nypa Fructicans*).
- b. Kadar Penyerapan Galian Dan Logam Berat Oleh Cendawan Tiram Yang Ditanam Substrak Kertas Cetakan.

8. Sinin bin Hamdan: Kajian Ke Atas Bahan-Bahan Dan Prinsip Simenfero.

9. Mohamad Rushdan bin Md. Said: Fungsi O - Euler Dan Fungsi Unitari.

## PENERBITAN

1. Cheksum Supiah Tawan (1989): **Systematic Studies Of The Subfamily Gonystyloideae Pomke**. Ph.D. Thesis. University Of Reading, United Kingdom.

2. Lau Seng (1989): "Popularisation Of Science And Technology Of Malaysia", Report Of The Unesco Regional Workshop A Public Awareness Of Science And Technology Seoul, 1989, pg. 113 - 123.

3. K.C. Wong, Ibrahim Yusof, Jamal Talib, Lau Seng, D.A. Tayan, "Memperkembangkan Potensi Buah Isau Sebagai Longan Tropika Di Malaysia", **Berita Penyelidikan**, Jilid 3, Julai 1989, m.s, 5.

4. Ramli Ibrahim, M. Badri, W.M. Daud, Karen A. Croise dan Shaharin Hitam (1989): "Karbon Diaktifkan Sebagai Simpanan Berliang Untuk Elektrod Rujukan" kertas kerja dan **Simposium Kimia Analisis Kebangsaan Ketiga**, 18 - 20 Sept. 1989, UTM.

5. M. Badri, W.M. Daud, R. Ibrahim, K.A. Crouse dan S. Hitam (1989): "Activated Carbon As Junction For Reference Electrodes" **Journal Of Islamic Academy Of Science** 2: 244 - 246, 1989.

6. Mohd. Razali Abdul Kadir, Abdul Halim Ghazali, Sinin Hamdan (1990): "An Experience With Ferrocement Construction" Seminar Kebangsaan Simenfero, 16 – 17 Januari 1990, m.s. 91.

7. Sinin Hamdan, Abang Abdulrahim Abang Ali (1990): "Bangku dan Kubah Simenfero" Kursus Simenfero Untuk Pembangunan Industri 13 – 16 Mac 1990, m.s. 32.

## PUSAT PENGAJIAN SAINS GUNAAN

### DEKAN

Dr. Jamal bin Talib, Dip. Agric (Malaya), B.S. (Louisiana State)

### KAKITANGAN

#### Jumlah Kakitangan

Program	Kategori			
	A	B	C	D
Pejabat Dekan	1	—	—	2
Perhutanan	7	1	6	7
Pertanian	16	—	9	8
<b>JUMLAH</b>	<b>24</b>	<b>1</b>	<b>15</b>	<b>17</b>
<b>JUMLAH BESAR</b>				<b>57</b>

#### Perlantikan Baru

Seramai 4 orang tutor dan seorang pensyarah kontrak telah dilantik.

#### Perletakan Jawatan

Seorang pensyarah dan seorang pembantu am rendah telah meletak jawatan.

#### Cuti Belajar

Seramai 3 orang pensyarah dan 6 orang tutor sedang mengikuti kursus di dalam dan luar negeri. (Ph.D = 6 & Master = 3)

#### PENYELIDIKAN

1. Tonga Noweg: Kajian Sumbangan Ekonomi Perhutanan kepada Masyarakat Desa di Sarawak.

2. Abas bin Said: Kajian Permintaan Penggunaan Rekreasi di Taman Negara Bako.

3. Othman bin Boj6: Kajian ke atas Komposisi dan Taburan Spesis Pokok Kayu di Hutan Pengajaran, Universiti Pertanian Malaysia, Kampus Bintulu.

4. Ismail Adnan bin Abdul Malik: Kajian terhadap Kaedah dan Produktiviti Merakit Balak di Sarawak.
5. Tonga Noweg, Ismail Adnan bin Abdul Malek dan Mohd. Zaki bin Hamzah: Kajian Kos Pengakutan Balak di Sarawak.
6. Jugah bin Kadir: Kajian Awal Status Penyakit Mati – Rosot terhadap *Acacia mangium* Wild. di Sarawak.
7. Khamarudin bin Mohd. Noor: Kajian Lokasi Industri Berasaskan Kayu di Sarawak.
8. Encik Sinsoon bin Jabu: Nibong (*Oncosperma tigillarum*) as a construction Material for Park Shelter in Landscape Architecture.
9. Puan Siti Hajjah bte Abdullah Sani: Kandungan Galian dan Logam Berat dalam Cendawan Tiram yang ditanam di atas beberapa jenis Substrat.
10. Puan Siti Hajjah bte Abdullah Sani: Aetiology and Control of Soft Rot of French Beans (*Phaseolus vulgaris* L.).
11. Dr. Isa bin Ipor: Ciri-ciri Anatomi dan Morfologi Rizom Lalang pada siri tanah yang berlainan di Sarawak.
12. Dr. Sulaiman bin Hanapi: Reaction of host, *Plutella xylostella*, to multiple oviposition by *Apanteles piutellae* and its implication on the ikatters survival.
13. Encik Andrew Alek Tuen: Nutrient intake studies, IRPA \$16,900.00, dalam peringkat penulisan dan analysis data.
14. Puan Zamaliah bte Mohd. Marjan: Penilaian Taraf Pemakanan dan Kesihatan Kanak-kanak Peringkat Umur 0 – 4 Tahun dibiayai oleh R & D MPKSN.
15. Arumugam, P.T. Kajian ekologi kolam semaian di Pusat Pembiak-biak Pejabat Perikanan, Bukit Tinggi, Pahang. Projek MPKSN dengan kerjasama Pejabat Perikanan.
16. Arumugam, P.T. & S.H. Cheah: Kajian tabiat makanan dan ekologi fri. Projek MPKSN.
17. Dr. Sulaiman b. Hanapi, Encik Adzemi b. Mat Arshad, Dr. Cheksum bt. Tawan, Encik Douglas Alau Tayan, Encik Hamdan bin JOI, Encik Jugah bin Kadir Dr. Kasing Apun, Encik Othman b. Bojo, Puan Siti Hajjah bte Abdullah Sani, Encik Tonga ak. Noweg, Encik Ahmad b. Katang, Dr. Isa bin Ipor. Projek Teras Lada Hitam.

## PENERBITAN

1. Andrew Alek Tuen: "Digestion of *Asystasia intrusa* by sheep" (1990) Jurnal Veterinar Malaysia (in press).
2. Andrew Alek Tuen: Utilisation of rice straw by goats. "Improving Sheep and Goat Productivity with the Aid of Nuclear Techniques" (1990) LAEA Publications – in press.
3. Arumugam, P.T. (1990): A continuous-flow chamber to study prey preferences of golden perch (*Macouaria ambigua* RICHARDSON) larvae. *Hydrobiologia* 190(3):
4. Arumugam, P.T., S.H. Cheah & S. Yamazaki (in press). Stomach contents of *Puntius gonionotus* dry reared in the "Biophysico-chemical hatchery tank system" in Malaysia. In: *Advances in Fisheries and Marine Sciences – the JICA/FPSS (UPM) Experience*. 10 – 11 March, 1989, Malacca, Malaysia. 13 p.
5. Cheah, S.H., S. Yamazaki, P.T. Arumugam, K.J. Ang & Z.A. Aizam (in press). A preliminary study on the use of the Bio-physico-chemical hatchery tank system for larval rearing of lampam jawa (*Puntius gonionoyus*). In: *Advances in Fisheries and Marine Science – the JICA/FPSS (UPM) Experience*. 10 – 11 March, 1989, Malacca, Malaysia. 10p.
6. Kuppan, P. & P.T. Arumugam (in press). Some common phytoplankters in the "Bio-physico-chemical hatchery tank system", Malaysia. In: *Advances in*

Fisheries and Marine Sciences – the JICA/FPSS (UPM) Experience. 10 – 11 March, 1989, Malacca, Malaysia. 7 p.

7. Kupan, P. & P.T. Arumugam (in press): Some common zooplankters in the “Bio-physico-chemical hatchery tank system”, Malaysia. In: Advances in Fisheries and Marine Sciences – the JICA/FPSS (UPM) Experience. 10 – 11 March, 1989, Malacca, Malaysia. 9 p.

8. Siraj, S. S., S. H. Cheah, P. T. Arumugam & K.J. Ang (in press): Preliminary observations on the growth and survival of walking catfish, *Clarias batrachus* (Linnaeus) fry fed on prepared diets. In: Advances in Fisheries and Marine Sciences – the JICA/FPSS (UPM) Experiences. 10–11 March, 1989, Malacca, Malaysia. 7 p.

9. Hanapi, S.B. & R.R. Askew: The Biology of *Potania collactanea* (1990) Entomologist Monthly Magazine, (in press).

10. Tonga Noweg (1989): “Land Classification and Rights and Their Relations to Social Forestry Issues In Sarawak”, Paper presented at Workshop On Social Forestry, 6 – 7 December 1989, UPM, Serdang.

11. Hamsawi Sani and Jugah Kadir (1989): “Early Growth of *Acacia mangium* and *Gmelina arborea* On Sub-Soil of Nyalau Soil Series in Bintulu,” Paper presented at Regional Symposium On Recent Development in Tree Plantations On Humid/Subhumid Tropics of Asia, 5–9 June 1989, UPM, Serdang.

### SEMINAR/BENGGEL/KURSUS

1. Kursus Penggunaan dan Pengurusan Racun-Racun Perosak pada 22 – 24 Ogos 1989, untuk pegawai-pegawai kategori B dan C termasuk kumpulan separa profesional dan pembantu-pembantu ladang yang terlibat secara langsung di dalam penggunaan racun-racun perosak. (Peringkat Seluruh Negeri Sarawak).

## PUSAT PENGAJIAN SAINS SOSIAL DAN PENGURUSAN

### DEKAN

Encik Rahim bin Abdullah Dip. Acct. (UOP), B.S. (Urbana), M.B.A. (Woodbury)

### KAKITANGAN

#### Jumlah Kakitangan

Bahagian / Unit	Kategori A	Kategori B	Kategori C	Kategori D
Pejabat Dekan	1	–	1	4
Pengurusan Perniagaan	4	–	–	–
Sosiologi	2	–	–	–
Bahasa	4	–	–	1
Pengembangan	6	2	1	–
<b>JUMLAH</b>	<b>17</b>	<b>2</b>	<b>2</b>	<b>5</b>
<b>JUMLAH BESAR</b>				<b>25</b>

## Perlantikan Baru

Seorang pensyarah telah dilantik.

## Cuti Belajar

Seramai 9 orang pensyarah dan tutor sedang mengikuti kursus di dalam dan luar negeri (Ph.D = 4 & Master = 4)

## PENYELIDIKAN

1. En. Empading Sanggin, En. Douglas Alau Tayan dan En. Ahmad bin Borhan: Training Needs of Agricultural Extension Agents In Sarawak.

2. En. Ahmad bin Borhan: Studies And Research On Local Languages And Dialect Of Sarawak.

3. Puan Bibi Aminah, Cik Aishah dan Dr. Esmawi bin Hj. Othman: Sosio Budaya Dan Bahasa: Satu Kajian Mengenai Kaum Melanau.

4. Cik Aishah bt. Edris dan En. Jegak Uli: Penglibatan Komuniti Perladangan Dalam Pertubuhan-pertubuhan Luar Bandar Negeri Sarawak: Kajian Kes Pertubuhan Perladang Kawasan Bintulu.

5. En. Jegak Uli, En. Peter Songan dan En. Douglas Alau Tayan: Menilai Program Pendidikan Pengembangan Yang Dilaksanakan oleh UPMKB di Kpg. Pengembangan.

6. En. Jegak Uli, En. Rahim b.

Abdullah dan En. Douglas Alau Tayan: Kajian Tekno-Ekonomi Tanam-tanaman Utama di Kampung Pengembangan UPMKB.

7. Dr. Esmawi bin Othman: Perbandingan Sikap Di Antara Petani Maju dan Kurang Maju di Bahagian Bintulu.

8. En. Jegak Uli: Kesan Penggunaan Rancangan Pelajaran Terhadap Stor Penilaian Pertunjukan Kaedah.

9. En. Rahim b. Abdullah, En. Mohd. Mansor Ismail dan En. Shazali bin Abu Mansor: The Economic Potential of Bee-keeping In The District of Kabong, Sarawak.

10. Dr. Esmawi bin Othman dan En. Rahim bin Abdullah: Kajian Sosio-Ekonomi Nelayan Bumiputera dan Perkembangan Perikanan Laut di Bahagian Bintulu.

11. En. Shazali bin Abu Mansor, En. Rahim bin Abdullah dan En. Mansor bin Ismail: Marketing Prospects of Honey In Sarawak.

## PENERBITAN

1. Mohd. Mansor bin Ismail dan Md. Nasir Shamsudin "Economic Feasibility of Beekeeping", Presented at the Seminar on Beekeeping Development, UPM. Sept., 1989.

## PENYELARAS BAHAGIAN (LADANG)

Encik Ahmad bin Katang

## PENDAHULUAN

Bahagian Ladang, Universiti Pertanian Malaysia. Kampus Bintulu memainkan peranan yang aktif bagi tahun akademik 1989 - 1990 berkaitan dengan pelaksanaan pembangunan Ladang dan pelaksanaan aktiviti-aktiviti akademik.

Secara amnya, unit-unit tanaman dan ternakan berikut telah dan sedang dibangunkan:

**KAWASAN/UNIT****LUAS KAWASAN (Hek.)**

Akuakultur	1
Buah-buahan	104
Cendawan	—
Getah	48
Hortikultur & Landskap	130
Kelapa	2
Kelapa Sawit	106
Ladangkongsi	10
Sayur-sayuran	2
Tanaman Minuman	8
Tanaman Musiman	15
Tanaman Rempahan	15
Ternakan Bukan Ruminan	2
Ternakan Ruminan & Pastura	100
Ulat Sutera & Lebah Madu	6
Infrastruktur Ladang & Lain-lain Kawasan	650

Dalam bidang akademik pula, kursus-kursus yang berikut telah ditawarkan dengan jayanya.

<b>KOD</b>	<b>NAMA KURSUS</b>	<b>JUMLAH KREDIT</b>
LLK 201	Ladangkongsi 1	2
LLK 202	Ladangkongsi 2	2
LKL 211	Berkebun Sayur	1
LKL 212	Penanaman Buah-buahan	1
LKL 213	Tanaman Hiasan & Landskap	1
LKL 221	Tanaman Estet	1
LKL 222	Tanaman Ladang	1
LKL 231	Pengurusan Perosak	1
LKL 241	Ternakan Ruminan	1
LKL 242	Ternakan Bukan Ruminan	1
LKL 251	Mekanisasi Ladang	1
LKL 252	Bengkel Kerjaladang	1

**KAKITANGAN****Jumlah Kakitangan Bahagian Ladang**

<b>Kategori A</b>	<b>Kategori B</b>	<b>Kategori C</b>	<b>Kategori D</b>	<b>Jumlah</b>
3	7	13	64	87

## Perlantikan Baru

Seorang Penolong Pegawai Veterinar (Sambilan), seorang Juruteknik Pertanian (Sambilan) dan enam (6) orang Pekerja Am (Sambilan) telah dilantik.

Manakala seorang Juruteknik Pertanian Tingkatan Biasa telah dilantik ke Juruteknik Pertanian Tingkatan Kanan dan seorang Juruteknik Rendah telah dilantik menjadi Juruteknik.

## Perletakan Jawatan

Seorang Pekerja Am (Sambilan) telah meletak jawatan, sementara seorang lagi Pekerja Am (Sambilan) telah diberhentikan.

## PENYELIDIKAN

1. Ahmad bin Katang: Kesan N terhadap komponen hasil dan hasil lada sula yang ditanam bersama **D. trifolium**.

A	B	C	D
1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40
41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80
81	82	83	84
85	86	87	88
89	90	91	92
93	94	95	96
97	98	99	100

# LADANG

## PENGARAH LADANG

Prof. Madya Dr. Sheikh Awadz bin Sheikh Abdullah A.I.S.P., Dip. Agric. (Malaya), B.S. (Louisiana State), M.S., Ph. D (Arkansas)

## KAKITANGAN

### Jumlah Kakitangan

Cawangan	Kategori (orang)			
	A	B	C	D
Pejabat Pengarah Ladang	11	1	18	27
Tanaman Hortikultur	4	4	16	110
Tanaman Perladangan	4	5	14	24
Pengurusan Perosak	1	1	1	1
Ternakan	2	5	14	95
Kejuruteraan Ladang	5	3	25	113
<b>JUMLAH</b>	<b>27</b>	<b>19</b>	<b>88</b>	<b>371</b>
<b>JUMLAH BESAR</b>				<b>505</b>

### Perlantikan Baru

Seorang Pegawai Pertanian, seorang Pembantu Teknik, tiga orang Penolong Pegawai Pertanian dan tiga orang Juruteknik telah dilantik.

### Kenaikan Pangkat

Dua belas orang berjawatan Juruteknik Rendah telahpun dinaikkan pangkat secara lantikan kepada jawatan Juruteknik.

### Perletakan Jawatan

Seorang Pemandu dan seorang Pembantu Makmal Penyelidikan Luar telah bersara. Seorang Juruteknik Pertanian Tingkatan Tertinggi telahpun bersara secara pilihan sendiri.

### Cuti Belajar

Tiga orang pensyarah sedang mengikuti program Ph.D di dalam dan di luar negeri.

### Perkara Akademik

Bahagian Ladang menguruskan kursus-kursus teras dan kursus-kursus pilihan di peringkat Diploma dan Ijazah kepada pelajar-pelajar Universiti. Kursus-kursus berkredit yang ditawarkan adalah bercorak latihan amali kerja ladang dan ladangkongsi di bawah kod LLK dan LKL sebanyak 14 kursus seperti pada lampiran 1.

### PENYELIDIKAN

Bahagian Ladang secara am memberi kerjasama dan menyediakan berbagai kemudahan untuk pensyarah, penuntut-penuntut dan penyelidik dalam bidang pengeluaran tanaman, ternakan ruminen dan bukan ruminen, kejenteraan dan khidmat lain seperti berikut:—

- i. Perkhidmatan tapak dan kawasan penyelidikan
- ii. Perkhidmatan bahan-bahan penyelidikan

- iii. Perkhidmatan peralatan dan mekanisasi
- iv. Perkhidmatan pengangkutan

Kesemua perkhidmatan yang ditawarkan adalah terhad bergantung kepada kemampuan yang sedia ada di Bahagian Ladang.

### SEMINAR/BENGGEL/KURSUS

Bahagian Ladang menganjurkan seminar bulanan sebanyak 4 kali (Jun 1989 – Mei 1990) mengikut tajuk-tajuk berikut:—

- i. Kualiti kerja mengikut pandangan Islam oleh Dr. Hassan Ali dari Unit Penyelidikan Sosioekonomi JPM pada 9 Disember 1989.
- 2. Umat Islam dan peranannya masa kini oleh Ustaz Abd. Ghani bin Shamsuddin dari Persatuan Ulama Malaysia pada:—
  - a. 13 Januari 1990
  - b. 10 Februari 1990
  - c. 17 Mac 1990
- 3. Puasa membentuk peribadi Muslim oleh Ustaz Ismail Kamus dari Pusat Islam, JPM pada 7 April 1990.

- 4. Hidup sesudah mati oleh Al-Ustaz Nur Salam dari Indonesia pada 23 Jun 1990
- 5. Pada 12–17 Jun 1989 Bahagian Ladang telahpun menganjurkan Bengkel Asas Hortikultur Landskap yang ke 5 yang dihadiri oleh 18 orang peserta.
- 6. Pada 28–31 Mei 1990 Bahagian Ladang menganjurkan Bengkel Asas Hortikultur Landskap ke 6 yang dihadiri oleh 21 orang peserta.

### PENERBITAN

- 1. Hand Book Universiti Farm – 2,000 naskah 19.1.1990
- 2. Nota kerjaladang – Tanaman ladang LKL 222
- 3. Nota tanaman sayur 12,7,90 – LKL 211 – 500 naskah
- 4. 5/12/89 – Broshure Bahagian Ladang – 5,000 keping
- 5. Koleksi kertas kerja seminar bulanan Bahagian Ladang 88/89 – 220 naskah 15/6/89.

Lampiran 1

### KURIKULUM BAHAGIAN LADANG

Kod	Nama Kursus	Jam Kredit
LLK 201	Pengeluaran Tanaman	2 (0 + 2)
LLK 202	Pengeluaran Tanaman dan Ternakan	2 (0 + 2)
LLK 203	Akuakultur Bersepadu	Julai (0+2) Disember (0 + 2)
LLK 204	Pemprosesan dan Pemasaran Hasil Ikan	2 (0 + 2)
LKL 211	Berkebun sayur	1 (0 + 1)
LKL 212	Penanaman Buah-Buahan	1 (0 + 1)
LKL 213	Tanaman Hiasan dan Landskap	1 (0 + 1)

LKL 221	Tanaman Estet	1 (0 + 1)
LKL 222	Tanaman Ladang	1 (0 + 1)
LKL 231	Perlindungan Tumbuhan	1 (0 + 1)
LKL 241	Ternakan Ruminen	1 (0 + 1)
LKL 242	Ternakan Bukan Ruminen	1 (0 + 1)
LKL 251	Mekanisasi Ladang	1 (0 + 1)
LKL 252	Bengkel Kerja Ladang	1 (0 + 1)

# PERPUSTAKAAN

## KETUA PUSTAKAWAN

Syed Salim Agha B.Sc. (Madras), A.L.A. (London)

## PENDAHULUAN

Perpustakaan telah maju selangkah ke hadapan dengan pelaksanaan sistem katalog dan sistem pinjaman buku berkomputer. Kedua-dua kemudahan tersebut dilaksanakan serentak mulai 3 Julai 1989, setelah mengambil masa lebihkurang 15 bulan untuk membina pangkalan data katalog dan juga rekod pengguna serta persediaan lain seperti menampal lebel kod palang di semua buku perpustakaan dan di kad pengguna. Dengan adanya sistem katalog dalam talian, maka katalog dalam bentuk kad telah dimansuhkan walaupun katalog dalam bentuk mikrofilm masih dikekalkan. Sistem pinjaman berkomputer mempercepatkan proses peminjaman dan pemulangan buku, tanpa memerlukan pengguna mengisi slip pinjaman.

Sebagai langkah untuk memberi perkhidmatan serta menyediakan bahan dan kemudahan yang dapat memenuhi keperluan pengguna di tahap yang tinggi pihak perpustakaan telah melaksanakan konsep penghubung fakulti. Mengikut konsep ini seorang pustakawan ditugaskan sebagai penghubung di antara perpustakaan dengan sesebuah fakulti. Tugas penghubung fakulti antara lain ialah membuat kajian maklumat pengguna, memberi perkhidmatan maklumat, membina pangkalan data, menyediakan direktori, mengajar kaedah pencarian maklumat, memberi khidmat nasihat, membantu membangunkan koleksi perpustakaan yang seimbang dan lain-lain lagi. Pihak perpustakaan telah berusaha memperkenalkan konsep tersebut kepada fakulti dengan cara mengadakan pertemuan khas di mana wakil perpustakaan telah memberi taklimat khusus mengenai konsep tersebut kepada fakulti.

Untuk memenuhi salah satu objektif perpustakaan iaitu mewujudkan masyarakat kampus yang berkebudayaan

membaca, pihak Jawatankuasa Perpustakaan telah mewujudkan satu Jawatankuasa Kecil Penggalakan Pembacaan UPM. Jawatankuasa ini bertanggungjawab untuk mengadakan kegiatan-kegiatan yang menggalakkan pembacaan di kampus. Selain itu Jawatankuasa Perpustakaan juga telah meluluskan cadangan untuk meluaskan liputan koleksi Bacaan Ringan Pelajar dengan menggabungkan Koleksi Kanak-Kanak yang kemudian dikenali sebagai Koleksi Bacaan Ringan Mahasiswa/Kanak-Kanak. Koleksi ini telah mendapat sambutan yang menggalakkan daripada kalangan pelajar mahu pun daripada kanak-kanak di kampus.

## KAKITANGAN

Sehingga 31 Mei 1990, jumlah kakitangan Perpustakaan ialah:

### KATEGORI

A	B	C	D	JUMLAH
36	—	33	77	146

### Perlantikan Baru

Pustakawan : 2 orang  
Juruteknik : 1 orang  
Pelukis : 1 orang  
Pembantu Percetakan : 1 orang  
Pembantu Am Rendah : 3 orang  
Pustakawan Sambilan : 2 orang

### Tamat Perkhidmatan

Seorang pustakawan sambilan telah tamat perkhidmatannya.

### Pertukaran Jabatan

En. Amaluddin bin Abd. Rahman (Penolong Pendaftar) telah bertukar ke Pusat Islam pada 3 Julai 1989 dan digantikan oleh En. Ab. Malek bin Simon.

### Cuti Sabatikal

Tuan Syed Salim Agha bercuti sabatikal di IDRC, Kanada dari 15 April 1990 hingga 15 Oktober 1990.

## CERAMAH/KURSUS YANG DIADAKAN DI PERPUSTAKAAN

Demonstrasi Katalog alam Talian untuk pegawai akademik dan pegawai am UPM pada 19 – 30hb. Jun, 1989.

Kursus Pengenalan Menggunakan Perpustakaan bagi penuntut Universiti Pertanian Malaysia pada 3 – 15hb. Julai, 1989.

Demonstrasi Katalog Dalam Talian untuk penuntut tahun kedua ke atas pada 17 – 22hb. Julai, 1989.

Kursus Perpustakaan untuk Fasilitator Minggu SuaiKenal pada 24hb. Jun, 1989.

Kelas Menggunakan Perpustakaan untuk Penuntut Baru pada 24hb. Jun, 1989.

Mohamed Ghazali bin Haji Ali, Ketua Penolong Pendaftar, Bahagian Perjawatan, UPM telah memberi ceramah Disiplin Dalam Organisasi pada 8hb. September, 1990.

Amir Hussain Md. Ishak dan Muzaffar Shah Kassim, Pustakawan-Pustakawan, Perpustakaan UPM telah memberi kursus Alat Bahan Pandang-dengar pada 14hb. Oktober, 1989.

Badilah Saad, Kamariah Abdul Hamid dan Sukinah Ibrahim, Pustakawan-Pustakawan, Perpustakaan UPM telah memberi kursus Pembantu Perpustakaan Peringkat 3 pada 1 – 4hb. November, 1989.

Yaacob Ibrahim, Pensyarah Fakulti Ekonomi dan Pengurusan telah memberi ceramah Peningkatan Produktiviti pada 4hb. November, 1989.

Pegawai Syarikat Jurudata Sdn. Bhd. telah memberi kursus Pagemaker dan Microsoft Word pada 8 – 9hb. November, 1989.

Gina Phan dari Syarikat Solsis Sdn. Bhd. telah memberi Ceramah mengenai VTLS-89 pada 16hb. Januari, 1990.

Sharifah Azah dari Syarikat Solsis Sdn. Bhd. telah memberi latihan WORDSTAR

4.0 pada 17 – 18hb. Januari, 1990.

Rosmarie dari Syarikat Solsis Sdn. Bhd. telah memberi latihan LOTUS 1-2-3 pada 18 – 19hb. Januari, 1990.

Gina Phan dan Shahabudin telah memberi latihan modul 'Acquisitions and Fund Accounting System' pada 22 – 24hb. Januari, 1990.

Ommei Kalsom S. Rautar, Pensyarah, Fakulti Ekonomi dan Pengurusan telah memberi ceramah Pengurusan Masa pada 3hb. Februari, 1990.

Dr. Salihan Siais, Pensyarah, Fakulti Sains dan Pengajian Alam Sekitar telah memberi ceramah Teknik Membaca Berkesan pada 22hb. Februari, 1990.

Aishah Mohd. Nasir, Pustakawan, Perpustakaan UPM telah memberi latihan Perisian CDS-ISIS pada 26 – 28hb. Februari, 1990.

Yaacob Ibrahim, Pensyarah, Fakulti Ekonomi dan Pengurusan telah memberi ceramah Meningkatkan Produktiviti pada 17hb. Mac, 1990.

Halijah Mohd, Halimatun Halaliah Mokhtar dan Sidek Mohd. Noah, Pensyarahan-Pensyarah, Fakulti Pengajian Pendidikan telah memberi Kursus Motivasi pada 6hb. Mac, 1990.

## PENERBITAN

1. Asliah Abu dan Nor Zaidah Mohd. Hashim (1989): "Proposal to Improve the Availability of Publications in the Muslim World" dibentang di 3rd Congress of Muslim Librarians and Information Scientists anjuran COMLIS pada 24-26 Mei 1989 di Istanbul, Turki.

2. Wan Mohd. Ghazali Wan Mansor (1989): "Specialized Information Centres in Muslim Countries: Ideals and Reality" dibentang di 3rd Congress of Muslim Librarians and Information Scientists anjuran COMLIS pada 24-26

Mei 1989 di Istanbul, Turki.

3. Sumangala Pillai (1989): "Scholarly Publishing Malaysia" dibentang di Persidangan Editing into the Nineties pada 14hb. September, 1989 di Ottawa, Canada.

4. Syed Salim Agha (1989): "Sistem Pembekalan Penerbitan: Halacara Masa Depan" dibentang di Sesi Dialog Sistem Pembekalan Penerbitan anjuran Perpustakaan Negara Malaysia pada 18 Oktober 1989 di Kuala Lumpur.

## KEMAJUAN KOLEKSI

Bagi koleksi monograf, jumlah judul dan naskhah yang dipesan dalam tempoh Jun 1989 hingga Mei 1990 adalah seperti berikut:

	<u>Judul</u>	<u>Naskhah</u>
Buku Serdang	7133	9028
Buku Terengganu	214	291
Bacaan Kanak-Kanak (BK)	1067	1130
Bacaan Ringan (BR)	1326	1383
Jumlah	<u>9740</u>	<u>11832</u>

Sementara itu judul dan naskhah yang telah diterima adalah seperti berikut:

	<u>Judul</u>	<u>Naskhah</u>
Buku Serdang	5882	6964
Buku Terengganu	156	243
Bacaan Kanak-Kanak (BK)	1019	1036
Bacaan Ringan (BR)	926	927
Jumlah	<u>7983</u>	<u>9170</u>

Bagi koleksi bahan pandang dengar, Bahagian Perolehan telah menerima bahan-bahan berikut:

	<u>Pesanan</u>	<u>Hadiah</u>
Video	6 unit	7 unit
Slide	- unit	1 unit
Mikrofis	1982 unit	275 unit
Kaset	18 unit	- unit
Tape	9 unit	- unit
Peta	767 unit	- unit
Poster	- unit	3 unit
Kad	2 kotak	-

Bagi koleksi bahan terbitan bersiri pula. Bahagian Perolehan telah melanggan sebanyak 85 judul baru sementara 12 judul telah dibatalkan. Sehingga bulan Mei 1990, jumlah judul yang dilanggan adalah seperti berikut:

<u>Langganan</u>	<u>Serdang &amp; Terengganu</u>
Lama	2146
Baru	+ 85

Batal	—	2231
		12
Jumlah:		<u>2219</u>

Di samping itu sejumlah 1769 judul atau 2047 naskah buku dan 4363 naskah jurnal diterima sebagai hadiah. Sejumlah 16 judul adalah jurnal baru.

## PERPUSTAKAAN PUSAT SERDANG

### Koleksi Serdang Hingga April 1990

#### Buku (naskah)

Buku Am	192877
Jurnal Berjilid	41252
Koleksi Bibliografi	7397
Koleksi Rujukan	19332

#### Koleksi Malaysiana (KM):

— Buku	3380
— Jurnal:	
— Judul	544
— Berjilid	1981
— Belum berjilid	1936

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JUMLAH	268699
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#### Terbitan Bersiri (Jurnal)

Dilanggan	2238
Hadiah	3690

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JUMLAH	5928
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Koleksi Buku Berbintik Merah (KBBM) (Termasuk buku, tesis, laporan projek, laporan ladangkongsi, artikel, kertas peperiksaan dan jurnal)	21011
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Koleksi Buku Berbintik Kuning (KBBK)	11088
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#### Bahan Pandang Dengar (Unit)

	Judul	Unit
Filem	886	911
Filem Gelung	568	622
Filem Relung	151	224
Filem Slaid	272	16001
Pita Suara	82	470
Pita Video	81	92
Mikrofilem	339	1856
Mikrofis	21562	28659
Peta Topografi	1184	1724
Buku bpd/peta	2599	4040
Carta	102	239

Lutsinar	80	1372
Kad	9	300
Gambarfoto Udara	75	744
Peta Laut	88	100
Kit	165	224
<b>JUMLAH</b>	<b>28243</b>	<b>57578</b>

## PENGUNAAN PERKHIDMATAN PERPUSTAKAAN

### Keahlian

<b>Kumpulan</b>	<b>Dari Jun 1989 Hingga April 1990</b>	
Pegawai Akademik UPM	776	
Pegawai Am UPM	605	
Ahli Luar	283	
Siswazah Lanjutan	444	
Pelajar Tanpa Ijazah	21	
Penuntut	6,574	
Pegawai Sementara	286	
Ahli Rujukan	211	
<b>JUMLAH</b>	<b>9,200</b>	

### Pinjaman Dan Pemulangan

	<b>Dari Jun 1989 Hingga April 1990</b>
Pinjaman buku dan jurnal berjilid	49,196 **
Pemulangan buku dan jurnal berjilid	69,072 **
Tempahan buku dan jurnal berjilid	2559
Panggilan semula buku dan jurnal berjilid	1318
Pinjaman jurnal belum berjilid (kk)	67,270
Pinjaman buku berbintik merah (KBBM)	104,147
Pinjaman bahan pandang- dengar (BPD)	6278

Pinjaman alat pandang-  
dengar (BPD)

3163

\*\* Data ini direkodkan apabila buku dipinjam/dipulangkan secara manual sahaja. Jumlah pinjaman/pemulangan secara berkompouter tidak boleh dibuat lagi sehingga kini

### Pinjaman Antara Perpustakaan

	Dari Jun 1989 Hingga April 1990
Permohonan dari dalam	2050
Dipenuhi	1657
Kadar kejayaan	80.8%
Permohonan dari luar	563
Dipenuhi	300
Kadar Kejayaan	53.3%

## CAWANGAN SARAWAK

Kemajuan Koleksi Perpustakaan Cawangan Sarawak.

Koleksi	Pada Akhir 1988/89	Pada Akhir 1989/90	Tambahan Bahan Dalam 1989/90
Buku (naskhah)	41,973	50,678	8,705
Jurnal Berjilid	1,308	2,107	799
Abstrak & Indeks Berjilid	288	457	169
<b>Jumlah</b>	<b>43,569</b>	<b>53,242</b>	<b>9,673</b>
<b>Terbitan Bersiri (Judul)</b>			
Langganan	327	343	16
Hadiah	292	325	33
<b>Jumlah</b>	<b>619</b>	<b>668</b>	<b>49</b>
<b>Bahan Pandang Dengar (Unit)</b>			
Filem	51	51	—
Filem Gelung	7	7	—
Filem Relung	13	13	—
Filem Slaid	95	95	—
Mikrofis	100	547	447
Mikrofilem	51	51	—
Carta	18	18	—
Peta Topografi	221	221	—
Kit	30	37	7
Kaset	133	137	4
Pita Audio	78	80	2
Pita Video	99	203	104
<b>Jumlah</b>	<b>896</b>	<b>1,460</b>	<b>564</b>

Penggunaan Perkhidmatan Perpustakaan

### Keahlian

Di akhir tahun akademik 1989/90 ahli berdaftar adalah seperti berikut:—

Kumpulan	Bilangan 1988/90	Bilangan 1989/90
Pegawai Akademik	91	109
Pegawai Am	123	128
Ahli Luar	12	14
Penuntut	699	679
<b>JUMLAH</b>	<b>925</b>	<b>930</b>

## Perkembangan Penggunaan Koleksi Perpustakaan

### Pinjaman dan Pemulangan

Di bawah diperturunkan butir-butir lanjut mengenai pinjaman dan pemulangan bahan-bahan Perpustakaan.

	1988/89	1989/90
Pinjaman buku dan jurnal berjilid	14,587	13,745
Pinjaman buku berbintik merah	4,648	3,689
Pinjaman Risalah	799	427
Pinjaman Ahli Luar	102	50
Pinjaman bahan pandang dengar	83	70
Pemulangan buku dan jurnal berjilid	13,792	13,486
Bilangan buku-buku dipanggil semula	84	124
Bilangan Tempahan	277	303

### Pinjaman Antara Perpustakaan

Kedudukan Pinjaman Antara Perpustakaan secara perbandingan adalah seperti berikut:

	1988/89	1989/90
Permohonan dari dalam dipenuhi	222 114	255 138
kadar kejayaan	51.35%	54.12%
Permohonan dari luar dalam negeri dipenuhi	20 19	11 10
kadar kejayaan	95%	90.9%

## CAWANGAN TRENGGANU

Koleksi	Pada Akhir Jun 89	Pada Akhir Mei 90	Tambahan Bahan Dalam Jun 89–Mei 90
<b>Buku (naskhah)</b>			
Buku Am & Jurnal Berjilid	3,595	3,796	201
Bibliografi	152	152	—
Koleksi Rujukan	586	607	21
<b>Jumlah</b>	<b>4,333</b>	<b>4,555</b>	<b>222</b>
<b>Bahan Pandang Dengar (Unit)</b>			
Mikrofis	6	6	—
Carta	2	2	—
Kad	2	2	—
Filem	7	7	—
Filem Gelung	31	31	—
Peta	20	20	—
Mikrofilem	6	6	—
Gambarfoto udara	166	166	—
<b>Jumlah</b>	<b>240</b>	<b>240</b>	<b>—</b>

### Penggunaan Perkhidmatan Perpustakaan

#### Keahlian

Di akhir tahun akademik Jun 89/Mei 90 ahli berdaftar adalah seperti berikut:

Kumpulan	Bilangan Jun 89	Bilangan Mei 90
Pegawai Akademik UPM	23	23
Pegawai Am UPM	41	42
Siswazah Lanjutan	—	2
Penuntut	11	6
<b>Jumlah</b>	<b>75</b>	<b>73</b>

## PERKHIDMATAN PENDIDIKAN PENGGUNA DAN SERANTA

### Pameran Bahan-Bahan Perpustakaan

Pameran 'The American Electoral Process' di Perpustakaan UPM, pada 17hb. Julai 1989.

Pameran 'Seni Silat Cekak' di Perpustakaan UPM, pada 17hb. – 23hb. Julai 1989.

Pameran buku-buku dari Lincoln Resources Centre di Perpustakaan UPM, pada 21hb. – 30hb. Ogos 1989.

Pameran sempena 'Kempen Derma Darah' di Perpustakaan UPM, pada 5hb. – 14hb. September 1989.

Pameran sempena 'Hari Literasi Antarabangsa' di Perpustakaan UPM, pada 8hb – 16hb. September 1989.

Pameran mengenai penyakit 'AIDS' di Perpustakaan UPM, pada 11hb. – 24hb. Disember, 1989.

### PUSAT KEBANGSAAN AGRIS MALAYSIA

Dalam tahun Akademik 1989/90 input untuk AGRINDEX berjumlah 786 dan 104 untuk AGRIASIA. Ke semua input dihantar dalam bentuk 'Cakera liut' dengan menggunakan perisian CDS/ISIS.

Dua keluaran Buletin Maklumat Pertanian Malaysia telah diterbitkan dalam tahun ini. Seperti juga keluaran-keluaran terdahulu, buletin ini diedarkan percuma kepada kira-kira 3,000 pengguna.

### Percetakan

Sebanyak 298 permohonan untuk mendapatkan perkhidmatan percetakan telah diterima pada tahun 1989/90. Sebanyak 888,436 muka surat telah dicetak. Kegiatan percetakan meliputi cetakan Borang, Jadual, Surat Standard, Pekeliling, Minit Mesyuarat, Senarai Perolehan, Buletin Maklumat Pertanian, Risalah, Panduan Perpustakaan dan sebagainya.

### Pemikrofileman

Sejumlah 163 keping mikrofilm dan 2131 salinan Diazo telah dapat disiapkan dalam tempoh 1989/90. Pemikrofileman Perpustakaan meliputi kerja-kerja membuat mikrofilm tesis dan laporan projek dan salinan Diazo untuk tesis, laporan projek, Komfis Katalog Kamus, Induk dan Susunan Rak.

### Arkib

Koleksi Arkib bertambah dengan penerimaan fail-fail pelajar dari Bahagian Kemasukan, fail-fail dari Jabatan Perpustakaan dan terbitan-terbitan UPM dan sehingga kini sepanjang 410 meter rekod telah disimpan. Ini merupakan pertambahan sebanyak 16 meter dalam setahun.

### Penerbit UPM

Dalam tempoh 1989/90 sebanyak 7 judul buku telah diterbitkan. Di samping menerbitkan buku teks Penerbit UPM menerbitkan juga 4 isu 'Berita Penyelidikan', 3 isu jurnal 'PERTANIKA' dan 2 isu surat berita 'OPTION'.

### PENERBITAN

Buletin Maklumat Pertanian Malaysia. 4 isu setahun.

Buku Panduan Perpustakaan Universiti Pertanian Malaysia – Jun 1989.

Senarai Perolehan Perpustakaan Universiti Pertanian Malaysia. Bulanan.

Agricultural Waste Abstracts, Regional Information Centre on Management and Utilization of Wastes (MUWIC), Universiti Pertanian Malaysia, 1989.

Bibliografi Pertanian Malaysia: Malaysian Agricultural Bibliography 1900 – 1950, Pusat Kebangsaan AGRIS Malaysia, Perpustakaan, Universiti Pertanian Malaysia, 1990.

Senarai Penerbitan Pegawai-pegawai UPM 1989. April 1990.

Buku Terbitan Penerbit UPM.

1. Asas Pembelanjawan Modal, Shamsher Mohamed, Shamsudin Ismail & Annuar Md. Nasir, 1989, 197 hlm., M\$31.00 ISBN 967-9952-48-7.

2. Assets - Liabilities + Owners' Equities: A Case Study, A'amir Nordin, Arfah Salleh, Sakinah Abdullah, 1990, 26p., \$10(kn), ISBN 967-9952-58-4.

3. Kaedah Pengiraan Permintaan dan Penilaian Rekreasi Luar, M. Clawson (pengarang); Ahmad Shuib (penterjemah), 1989, 45 hlm ISBN 967-9952-53-3.

4. Kayu Struktur, sifat dan penggunaan, H.E. Desch (pengarang) Mohd. Zin Jusoh & Mohd. Hamami Sahri (penterjemah), 1989, 478 hlm., ISBN 967-9952-50-9.

5. Pengenalan Kaedah Pengoptimuman, Dr. Malik Hj. Abu Hassan & Dr. Ismail Mohd., 132 hlm. 1989 ISBN 967-9952-49-5.

6. Research Abstracts UPM, 1988. Universiti Pertanian Malaysia, 1989.

7. Termodinamik Untuk Juruteknik, D.H. Bacon & R.C. Stephens (pengarang). Fuad Abas (penterjemah). 110 p. (ISBN 967-9952-55-x).

# PUSAT KOMPUTER

## PENGARAH

Encik Mohamad Isa b. Mansor

## KAKITANGAN

### Jumlah Kakitangan

Kategori A	14 orang
Kategori B	19 orang
Kategori C	16 orang
Kategori D	21 orang
<b>JUMLAH BESAR</b>	<b>70 orang</b>

### Perlantikan Baru

Seramai 2 orang Juruanalisa Sistem, seorang Pengaturcara Komputer dan seorang Operator Komputer telah dilantik.

### Perletakan Jawatan

Seorang Juruanalisa Sistem Tingkatan Biasa, seorang Pengatur Program Komputer dan seorang Juruteknik telah meletakkan jawatan sementara seorang Juruanalisa Sistem Tingkatan Kanan dan seorang Juruanalisa Sistem Tingkatan Biasa (kontrak) telah mengemukakan notis untuk meletakkan jawatan.

### Kenaikan Pangkat

Seorang Juruanalisa Sistem Tingkatan Biasa telah dinaikkan pangkat ke jawatan Juruanalisa Sistem Tingkatan Kanan sementara seorang Pekerja Am telah dinaikkan pangkat ke jawatan Pembantu Am Rendah (PAR).

### Perpindahan

Seorang Pekerja Am telah berpindah tugas dari Pusat Komputer ke Fakulti Pertanian.

## PENERBITAN

1. Mohamad Isa Mansor, (1989), 'Agricultural Policy Research in Univer-

siti Pertanian Malaysia', Paper presented at IBM APG Executive Education Conference, Bangkok, 23-25 Ogos 1989.

2. Mohamad Isa Mansor, Bambang Sunaryo Suparjo, Lee Jenn Huei, (1989), 'Logic Minization Simulator'. Paper presented at Regional Conference on the Use of CAD/CAM/CAE in industry & Education, PJ, Hilton, KL, 14-15 November 1989.

3. Mohamad Isa Mansor, Shattri Mansor, and Azni Hassan, 'Evaluating Recreational Resources of Southeast Johor Using Remotely Sensed Data'. Paper presented at 10th Asian Conference on Remote Sensing, 23 - 29 November 1989, KL.

## SEMINAR/BENGGKEL/KURSUS

1. Kursus Introduction to SPSS/PC 4 untuk Pengguna-pengguna SPSSUPM diadakan pada 6-8/12/89.

2. Kursus dan Bengkel 'Query Management Facility' (QMF) diadakan pada 23-25/1/90.

3. Bengkel Literasi Komputer diadakan pada 30-1/2/90.

4. Kursus PLP

5. Kursus Asas Operasi Komputer I (BCOI) dan Kursus Wordstar I (WS) pada 5-7/2/90.
6. Kursus Asas Operasi Komputer dan Kursus Wordstar pada 13-15/2/90.
7. Kursus Asas Operasi Komputer dan Kursus Wordstar pada 20-22/2/90.
8. Kursus Operasi Komputer II (BCOII) dan Kursus Asas D Base I pada 5-7/3/90.
9. Kursus Asas Operasi Komputer II (BCOII) dan Kursus Lotus I pada 12-14/3/90.
10. Kursus Asas Operasi Komputer I dan Wordperfect pada 10-12/4/90.
11. Kursus Asas Operasi Komputer I dan Wordstar I pada 17-19/4/90.
12. Kursus Operasi Asas Komputer II dan D Base I pada 15-17/5/90.

