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Selection of bird chilli (*Capsicum frutescens*) for commercial scale planting

[Pemilihan cili padi (*Capsicum frutescens*) untuk penanaman komersial]

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Key words: selection, bird chilli or 'cili padi', *Capsicum frutescens,* commercial scale

Abstrak

Sepuluh aksesi cili padi dinilai secara bersiri untuk ketinggian hasil, kematangan awal dan pembuahan serentak. Pada semua peringkat penilaian hasil, tiga aksesi CP 170, CP Kandis dan CP Raub senantiasa menunjukkan prestasi yang baik dalam kesemua kriteria pemilihan, termasuk pengeluaran hasil melebihi sasaran iaitu 500 g sepokok untuk cili padi. Ketiga-tiga aksesi didapati matang dan hasil pertama sedia dipungut 3 bulan selepas ditanam berbanding dengan lebih 3 bulan untuk matang bagi aksesi yang lain. CP Kandis menunjukkan pembuahan yang tidak serentak dan tanpa kemuncak pengeluaran, manakala CP 170 menunjukkan puncak pungutan 4 – 5 bulan selepas diubah ke ladang, yang menggambarkan pembuahan serentak. Bentuk buah CP 170 dan CP Raub hampir sama, tetapi buah CP Raub lebih besar dan liat dipetik. Disebabkan kelemahan ini, CP Raub tidak dipilih walaupun hasilnya baik. Aksesi CP 170 yang menunjukkan pembuahan serentak, matang awal dan tangkai tidak liat dipetik didapati paling sesuai untuk penanaman secara besar-besaran. Oleh itu, CP 170 merupakan satu pilihan yang lebih baik berbanding dengan CP Kandis.

Abstract

Ten bird chilli (cili padi) accessions were serially evaluated for high yield, early maturity and synchronized fruiting habit. In all trials CP 170, CP Kandis and CP Raub showed consistently good performance for all the selection parameters, including producing yields significantly higher than the targeted yield of 500 g/plant for bird chilli. The three bird chilli accessions were ready for first harvest at 3 months after transplanting compared to more than 3 months in other tested accessions. CP Kandis showed non-synchronized fruiting habit with no peak production, whilst fruiting in CP 170 showed a peak production 4 – 5 months after transplanting, indicating synchronized fruiting. Both CP 170 and CP Raub had similar fruit shape but the pods of CP Raub were comparatively bigger and were not easily detachable from the fruit axil. Because of these drawbacks, CP Raub was not selected despite being superior in yield. Accession CP 170 with synchronized fruiting, early maturity and easily detachable fruit stalks, is considered most suitable for large scale planting. CP 170, therefore, constitutes a better alternative compared to CP Kandis.

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Introduction

Bird chilli (*Capsicum frutescens*) is classified as one of the most pungent chillies in the world, next to the habanero (*Capsicum chinensis*). The pods of bird chilli are small and elongated. They are normally referred to as 'cili padi' or 'cili api' or 'cili burung' interchangeably in Malaysia. For convenience, bird chilli will be referred to as cili padi in this paper. Most of the bird chilli belongs to *C. frutescens* but Thai cili padi on the other hand, showed typical characteristics of *Capsicum annuum.* Bird chilli that belongs to *C. frutescens* has unique flavour and is more aromatic compared to those that belong to *C. annuum*.

Unlike fresh chilli (*C. annuum*), cili padi remains less in importance and is not grown on a large scale in this country. Locally, cili padi is normally grown as backyard crop until lately when the erstwhile steady negligible area of cili padi suddenly increased to 205 ha (Anon. 1999) and the import values showed a sharp rise to about RM39 million (Mohamad Noh Samek, DOA, pers. comm. 1999), mainly from Thailand. The sudden increase in demand of cili padi appeared to coincide with the rise in demand for this commodity as raw material in sauce industry.

The good price of local cili padi attracts more prospective growers; consequently more and more vegetable growers are now growing cili padi locally. Needless to say, the existing varieties/land races of cili padi are poor yielding and late maturing. With these inferior varieties, it is doubtful that the local cili padi production is able to meet the growing local demand for this commodity. This problem of low production, however, can be remedied by up-scaling the production and by planting superior varieties. Characters that favour commercial planting such as ease of plucking, prolific and synchronized fruiting habit which can facilitate harvesting, possibly mechanical harvesting are important considerations in addition to high yield and early maturity. Generation of new superior varieties with all these characters ensures high production, enough to meet the local demand and consequently reduces the import of cili padi.

Some work on varietal improvement of local chilli had been initiated locally (Chew 1992; Melor 1992; Mahir and Ahmad 1996; Melor 1999a; Melor 2000) but on cili padi, other than as donor parents in breeding for anthracnose resistance (Chew et al. 1992), negligible work has been reported. Despite being one of the world's most commercially important species of *Capsicum*, comparatively, very little work on varietal development of *C. frutescens* is documented probably because of little variability existed within the species.

In view of the increasing popularity of cili padi, selection work for suitable cili padi varieties for commercial planting was initiated. The fact that pungency, the most typical attribute of chilli due to the presence of capsaicin, is greatly affected by environmental conditions during the growing period of the crop (Bosland 1993; Estrada et al. 1999) complicates selection work. On the other hand, the negative and positive correlationships between pod size and conversion (fresh to dry) rates to pungency respectively (Melor 1999b) help in formulating selection strategies. This paper illustrates the selection procedure that led to the identification of new potential cili padi varieties with characteristics for commercial planting such as ease of plucking, prolific fruiting, early maturing and synchronised fruiting to facilitate harvesting, possibly mechanical harvesting.

Materials and methods

Varietal identification

The screening and the subsequent yield trials evaluating the selected materials were conducted at MARDI Jalan Kebun. To begin with, 13 accessions of local and exotic varieties of bird chilli *(Table 1)* were subjected to preliminary selection for desirable agronomic traits such as high yield, earliness to maturity, synchronized

Table 1. Genotypes of cili padi subjected to preliminary screening and subsequent selection process

Genotype/Source	Pungency	Selected for		
		PYT (1998–1999)	IYT (2000)	AYT (20001)
CP 1/Local (Kg. Baru, S'gor)	Very hot	*	–	–
CP 2/Local (Kg Baru, S'gor)	Very hot	*	*	–
CP 3/Local (Kg Baru, S'gor)	Very hot	*	–	–
CP 170/Exotic (Mexico)	Very hot	*	*	*
CP Kandis/Local (S'gor)	Very hot	*	*	*
CP Srdg/Local (S'gor)	Very hot	*	–	–
CP Habanero/selection (exotic)	Hot	*	*	–
Ch 286/Local (Melaka)	Very hot	*	*	–
CP Raub/Local (Raub)	Very hot	*	*	*
CP Sadao/Exotic (Thailand)	Very hot	*	–	–
Huey Sithon/Exotic (Thailand)	Very hot	–	–	–
Cili burong Sarawak	Very hot	–	–	–
CP Tlg/Local (NS) – check	Very hot	*	*	–

CP Sadao and Huey Sithon represent Thai cili padi; *Selected for evaluation process
Pungency level was determined through organoleptic mean, from 30 respondents
PYT = Preliminary Yield Trial, IYT = Intermediate Yield Trial, AYT = Advance Yield Trial

fruiting habit and low disease and pest incidence rating. Based on these selection criteria, 10 accessions were identified and subsequently selected through Single Plant Selection. For each selected plant, only one fruit was harvested. The selected fruits formed the elite materials. These elite materials were subjected to further advancement and purification for one more season. The stabilized genotypes were then subjected to a series of replicated varietal evaluations, starting with preliminary yield evaluation in 1998.

The preliminary yield trial was followed by intermediate and advance yield trials in that order. The yield trials were laid down in RCBD with four replications. The incidence of diseases and pests was monitored at all levels of the yield trials, and disease infection index and pest infestation scored accordingly. To raise the pH of the experimental site to pH 5.5, ground magnesium limestone at the rate of 2.5 t/ha to increase pH by 0.15 unit was applied 2 weeks before transplanting.

The seedlings were raised in the nursery for 7 weeks before they were transplanted on beds in the open field at planting distance of 1 m apart within row and 1.5 m between rows. The beds were covered with silver coated plastic mulch with the silvery surface facing outwards and the black surface facing inside as recommended by Mohamad Roff and Ong (1991). Routine maintenance for the chilli crop as given in the *Vegetable Manual* (Anon. 1997) was adopted throughout the trial. The chilli pods were considered ready for first harvest when a few of them turned red. However, for the subsequent harvests, still green but fully matured pods were also harvested.

In the Preliminary Yield Trial, 10 varieties represented by the 10 accessions selected in the screening trial were evaluated. The local cili padi from Kg. Talang, Negeri Sembilan, CP Tlg, was used as a check. For each genotype, 10 plants were planted per replicate. This evaluation trial was conducted over two seasons. The accessions were selected for earliness to bloom, earliness to attain 50% harvest, prolific fruiting and yield higher than the check, and showing pest and disease tolerance. Those that met the selection

criteria were again selected for further testing in the Intermediate Yield Trial.

In the Intermediate Yield Trial, the number of genotypes was reduced to seven *(Table 1)* but the number of plants per genotype was increased to 20 plants per replicate. Similar to the previous trial, those genotypes that showed prolific and synchronized fruiting habit and produced yields higher than 500 g/plant (targeted yield of local bird chilli) and which showed pest and disease tolerance were retained and further evaluated in an Advance Yield Trial. With only three genotypes remaining, the number of plants per genotype was increased to 105 per replicate.

Determination of pungency level

Pungency, the typical attribute of chilli, was determined through organoleptic mean from 30 respondents. Each respondent was given a sample set of the three genotypes. The respondents were requested to classify the pungency into three levels namely very hot, hot and mild.

Data analysis

Data were analysed using analysis of variance (ANOVA) procedures to test the significant effect of major parameters, while means were separated by Duncan multiple range test (DMRT) using the statistical package of SAS Institute Inc. U.S.A.

Results and discussion

Preliminary trial

Separate analyses for seasons 1 and 2 data in *Table 2* and *Table 3* on agronomic parameters such as maturity, yield and its components respectively showed similar varietal ranking in all these parameters with all the accessions consistently showing significantly better performance than the check. Combined analysis of the two seasons revealed that in all parameters, season 2 recorded significantly higher means than season 1. This indicated that the change in environment also had some influence on the performance of these parameters.

In terms of earliness, CP 170, CP Kandis, CP Habanero and CP Raub were ready for first harvest in less than 3 months

Table 2. Means of some agronomic traits of 10 cili padi evaluated in Preliminary Yield Trial for 2 seasons

Variety	Maturity period (days) (Transplanting to first harvest)			Crop duration (days) (Transplanting to last harvest)			Productive period (days) (First harvest to last harvest)		
	1st	2nd	Mean	1st	2nd	Mean	1st	2nd	Mean
CP Kandis	87.0b	87.0a	87.0c	260.0a	260.0a	260.0a	173.0a	173.0a	173a
CP 170	87.0b	87.0a	87.0c	155.0c	260.0a	207.5a	68.0c	173.0a	120a
CP Srdg	99.8a	89.8a	94.8ab	146.8cd	253.0a	199.9bc	47.0c	163.3a	105bc
CP 2	102.5a	89.8a	96.1a	144.0cd	253.0a	198.5bc	41.5cd	163.3a	103bc
CP 3	108.3a	87.0a	97.6a	149.5cd	260.0a	204.8bc	41.3cd	173.0a	107bc
Ch 286	102.0a	89.8a	95.9a	144.0cd	218.3ab	181.1c	42.0cd	128.5ab	85c
CP Raub	89.8b	89.8a	89.8bc	194.25b	194.3b	194.8bc	104.5b	104.5b	105bc
CP 1	104.3a	92.5a	98.4a	128.8d	246.0a	187.4bc	24.5d	153.5a	89c
CP Tlg (check)	102.5a	87.0a	94.8ab	144.0cd	231.0ab	187.5bc	41.5cd	144.0ab	93c
CP Sadao	102.5a	87.0a	94.8ab	135.3cd	260.0a	197.6bc	32.8d	173.0a	103bc
CP Habanero	88.0b	88.0b	88.0b	196.0b	238.5ab	217.3a	113.0b	155.5a	134a
Season Means#	99.2a	88.7b	93.6	158.13b	243.5a	201.9	58.9b	154.9a	104
CV (%)	5.7	4.6	5.1	7.93	10.95	11.11	21.2	17.3	19
Significance level	***	ns	***	***	*	***	***	*	***

Mean values with same letters in the same column are not significant at 5% level according to DMRT
#Mean values with same letters in the same row are not significant at 5% level according to DMRT
ns = not significant, *Significant at 5%, ***Significant at 0.1%

Table 3. Means of yields and yield component of 10 cili padi evaluated in Preliminary Yield Trial for 2 seasons

Variety	Yield (g/plant)			Mean fruit no./plant			Yield (g/plot)		
	1st	2nd	Mean	1st	2nd	Mean	1st	2nd	Mean
CP Kandis	560.8a	560.8a	560.8a	567.3a	567.3a	567.3a	4 867.3a	4 867.3a	4 867.3a
CP 170	491.7a	523.8a	507.8a	532.0a	683.5a	608.3a	4 426.8a	4 857.5a	4 642.1a
CP Srdg	42.4b	162.7bc	126.2b	138.0b	151.0c	154.0bc	992.8b	992.8d	992.8cd
CP 2	91.0b	278.4bc	184.7b	95.5b	332.3bc	213.9b	1 011.5b	2 606.3bc	1 808.9bc
CP 3	111.3b	234.4bc	172.9b	86.4b	183.1bc	134.8bc	984.0b	1 715.3cd	1349.6bcd
Ch 286	106.5b	132.2c	119.3b	158.3b	212.4bc	185.4bc	1 068.0b	1 070.8d	1 069.4cd
CP Raub	89.0b	341.8b	215.4b	77.0b	372.9b	224.9b	878.3b	3 359.5b	2 118.9b
CP 1	17.3b	225.7bc	121.5b	10.2b	167.5c	88.9e	54.0b	1 913.0cd	983.5cd
CP Tlg (check)	42.4b	162.7bc	102.5b	91.4b	286.1bc	188.8bc	437.0b	1 521.8cd	979.4cd
CP Sadao	59.4b	185.2bc	122.3b	48.7b	192.8bc	120.7bc	175.8b	1 516.5cd	846.7d
CP Habanero	335.7ab	472.7ab	404.0ab	203.8ab	200.8bc	203.8b	3 553.8ab	4 040.0ab	3 796.9ab
Season Mean#	168.4b	277.12a	223.35	180.58b	314.89a	248.38	1 619.2b	2 442.05a	1 461.47
CV (%)	52.4	39.7	44.96	50.65	38.9	43.78	49.17	36.82	46.69
Significance level	***	***	***	***	***	***	***	***	***

Means with same letter are not significant at 5% level according to DMRT
#Means with same letter in the same row are not significant at 5% level according to DMRT
***Significant at 0.1%

i.e. 87, 87, 88 and 89 days after transplanting respectively. All other tested varieties took more than 3 months after transplanting to be mature enough for harvest *(Table 2).*

The production distribution pattern in *Figure 1* shows only genotypes CP 170, CP 2 and CP 1 produced obvious peak harvest. CP 170 produced peak harvest (5 050 g/plot) at the fifth week of harvest (between 4 months and 5 months after transplanting) after which the production dropped to around 2 000 g/plot and remained so until the last harvest. CP 2, like CP 170, is an early variety with slight harvest peak at the fifth week of harvest while CP 1, showed delay peak harvest at the seventh week after transplanting. Other genotypes including the top yielder CP Kandis did not produce noticeable harvest peak. CP Kandis instead showed very narrow fluctuation around 2 000 g/plot per harvest for more than 4 months. The existence of a harvest peak in CP 170, CP 1 and CP 2 reflects the synchronized fruiting habit of these genotypes.

A look at combined yields in *Table 3* indicates that all tested varieties produced higher yields than the check with two accessions, namely CP Kandis (560 g/plant) and CP 170 (507 g/plant), producing exceptionally high yields above all other tested accessions.

In *Table 4,* it is interesting to see that both the biggest fruited accession, CP Habanero, with pod size of 2.0 g each and the smallest fruited CP Tlg, with pod size of 0.5 g showed similar fruit indices of 4.5 and 4.4 respectively. On the other hand, accessions with similar fruit weight namely CP 170 and CP Raub, exhibited significantly different fruit indices of 7.7 and 4.1 respectively. The fruit index does not reflect the size of the pods but it is indicative of the shape of the pods. The highest fruit index (7.0–8.2) was exhibited by CP 170, accession with the slim long pods, while the lowest mean fruit index of 3.3 was exhibited by CP Kandis with short and stout pods. In cili padi, pod size is an important consideration, the smaller the pod the more desirable is the genotype. Therefore varieties such as CP Srdg, CP 1, CP 3 and CP Sadao, *(Table 4)* exhibiting pod size greater than one gramme, were considered undesirable and were to be discarded unless the

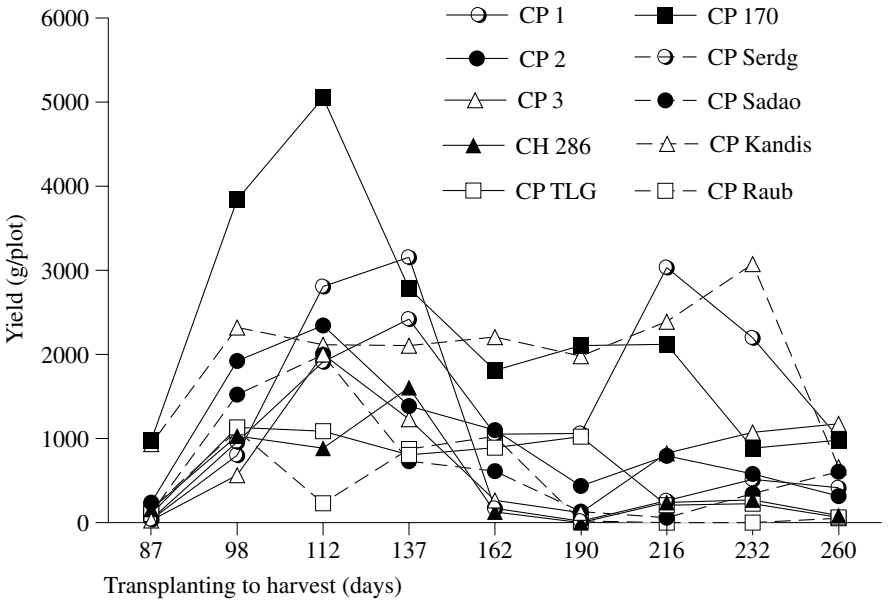

Figure 1. Distribution by harvest in the Preliminary Yield Trial

Table 4. Means of fruit characters and growth habit of 10 cili padi evaluated in Preliminary Yield Trial for 2 seasons

Variety	Fruit size (weight per fruit in g)			Fruit index (fruit length/fruit width)			Growth habit (Plant height/plant spread)		
	1st	2nd	Mean	1st	2nd	Mean	1st	2nd	Mean
CP Kandis	1.00bcd	0.99b	1.00dc	3.3f	3.3f	3.3e	0.88cb	0.89ab	0.88cd
CP 170	0.92de	0.75cd	0.84d	8.2a	7.08a	7.7a	0.72c	0.75b	0.74e
CP Srdg	1.16bc	0.94b	1.05c	4.3bc	4.6bcde	4.5bc	0.97ab	0.78b	0.87cd
CP 2	0.82de	0.84bc	0.84d	4.3bc	4.9bc	4.6bc	1.14a	0.93ab	1.03a
CP 3	1.30b	1.32a	1.30b	4.5b	4.97b	4.8b	0.90bc	0.80ab	0.85de
Ch 286	0.60ef	0.63de	1.05c	4.6b	4.7bcd	4.7b	1.05ab	0.82ab	0.94abc
CP Raub	0.89de	0.89cd	0.89cd	4.1bcd	4.1de	4.1cd	0.99ab	0.99a	0.9abcd
CP 1	1.8a	1.35a	1.60a	3.7de	3.97e	3.8d	0.97ab	0.82ab	0.89bcd
CP Tlg (check)	0.45f	0.55e	0.50c	4.0b	4.7bcd	4.4bc	1.06ab	8.97a	1.02ab
CP Sadao	1.10 bcd	0.96b	1.03c	3.6de	4.0de	3.8d	0.97ab	0.88ab	0.92abcd
CP Habanero	2.11a	2.02a	2.0a	4.5b	4.5cd	4.5bc	0.96ab	0.86a	0.90abcd
Season Means#	1.0a	0.92b	0.97	4.57b	4.65a	4.59	0.97a	0.86b	0.91
CV (%)	20.3	10.9	16.3	10.32	9.81	9.9	11.07	13.38	13.2
Significance level	***	***	***	***	***	***	**	ns	***

Means with same letter within same column are not significant at 5% level according to DMRT
#Means with same letter in the same row are not significant at 5% level according to DMRT
ns = not significant, **Significant at 1%, ***Significant at 0.1%

Table 5. Means of some agronomic traits of 10 cili padi evaluated in Intermediate Yield Trial

Variety	Yield per plant		Yield per plot		Fruit size (g)	Maturity (days)	Duration of harvest (days)	Crop duration (days)
	Fruit no.	Fruit wt (g)	Fruit no.	Fruit wt (g)				
CP Kandis	508.9bc	525.0b	10 559bc	10 967bc	1.04bc	86.0a	170.5ab	256.5d
CP 170	1 263.1a	868.5a	23 683a	16 333ab	0.66c	83.0a	191.0a	281.0a
CP Habanero	207.7c	444.3bc	4 154c	9 149c	2.07a	83.0a	134.2bc	217.3bc
CP 2	538.7bc	425.0bc	10 774bc	8 471cd	0.84bc	86.0a	139.3bc	227.3abc
Ch 286	276.3c	236.1bc	5 319c	4 607cd	0.93bc	83.0a	63.2d	146.3d
CP Raub	937.7ab	1 025.0a	18 743bc	2 0556a	1.25b	83.0a	182.5ab	265.5ab
CP Tlg	199.9c	97.8c	4 039c	2 012d	0.56c	91.5a	85.3dc	176.8cd
Means	557.5	517.7	11 038.6	9 406.4	1.05	85.02	224.35	139
CV (%)	49.8	44.5	47.6	39.7	31.14	6.46	15.69	24.45
Significance level	***	***	***	***	**	ns	***	***

Means with same letter within the same column are not significant at 5% level according to DMRT
ns = not significant, **Significant at 1%, ***Significant at 0.1%

genotype (such as CP Habanero) showed other desirable characters.

Taking all selection criteria under consideration, genotypes namely CP Kandis, CP 170, CP 2, CP Raub and Ch 286 were retained for further evaluation in the Intermediate Yield Trial. CP Habanero being one of the top yielders was still included in the evaluation despite its undesirable big pod size. CP 3 with yellow colour fruits was dropped despite considerably superior in other attributes. CP Tlg was again included in this trial as the check.

Intermediate Yield Trial

Comparison of the data from the Intermediate Yield Trial and the Preliminary Yield Trial showed little differences in maturity, duration of harvest and duration of crop. However, a considerable improvement above those recorded in the previous trial was observed in yield of some accessions *(Table 5).* Three accessions produced yields above the targeted yield of 500 g/plant; they were CP Raub, CP 170 and CP Kandis. The highest yielder, CP Raub recorded mean yield of 1 025 g/plant. Next was CP 170 with 868 g/plant followed by CP Kandis with yield of 525 g/plant. However, with regard to fruit number, the smallest fruited CP 170 outperformed the others by producing 1 263 fruit/plant; second was CP Raub with 938 fruit/plant, and third CP Kandis 509 fruit/plant. No drastic change was observed in pod size among accessions; CP Raub produced the biggest pods followed by CP Kandis and CP 170 in descending order. As in the previous trial, CP Raub, CP 170 and CP Kandis showed early harvest at less than 3 months or at 83, 83 and 86 days, respectively, after transplanting.

The top three yielders met the selection criteria and hence were selected for further evaluation in the Advance Yield Trial. It is interesting to see here that parameters such as pod size and fruit index appeared not to be greatly affected by environment during growing period.

Advance Yield Trial

Mean yields of CP 170 (813.4 g/plant) were not significantly different to CP Raub (723.3 g/plant) but both were significantly higher than CP Kandis, which had a yield of 529 g/plant *(Table 6).* As in the previous trials, CP 170 still produced the smallest (0.64 g each) fruit. Besides producing a yield of more than 500 g/plant, all three accessions, CP 170, CP Raub and CP Kandis, matured at about 3 months after transplanting. They respectively recorded long crop durations of

Table 6. Means of some agronomic traits of 3 cili padi evaluated in advance yield trial

Variety	Yield per plant		Yield per plot (g/plot)	Fruit size (g)	Maturity (days)	Duration of harvest (days)	Crop duration (days)
	Fruit no.	(g/plant)					
CP 170	1 263.1a	813.4a	8 180a	0.66c	93.5a	155.0a	250.0a
CP Raub	937.7ab	723.3a	7 230a	1.25b	91.7a	150.7ab	247.5a
CP Kandis	508.9bc	401.0b	3 912b	1.04bc	97.0a	133.0ab	230.0b
Means	645.9	517.7	6 440.7	1.05	94.08	145.08	243.5
CV (%)	26.9	44.5	26.76	31.14	2.77	0.77	2.99
Significance level	*	***	*	**	ns	***	*

Means with same letter within same column are not significant at 5% level according to DMRT
ns = not significant, *Significant at 5%, **Significant at 1%, ***Significant at 0.1%

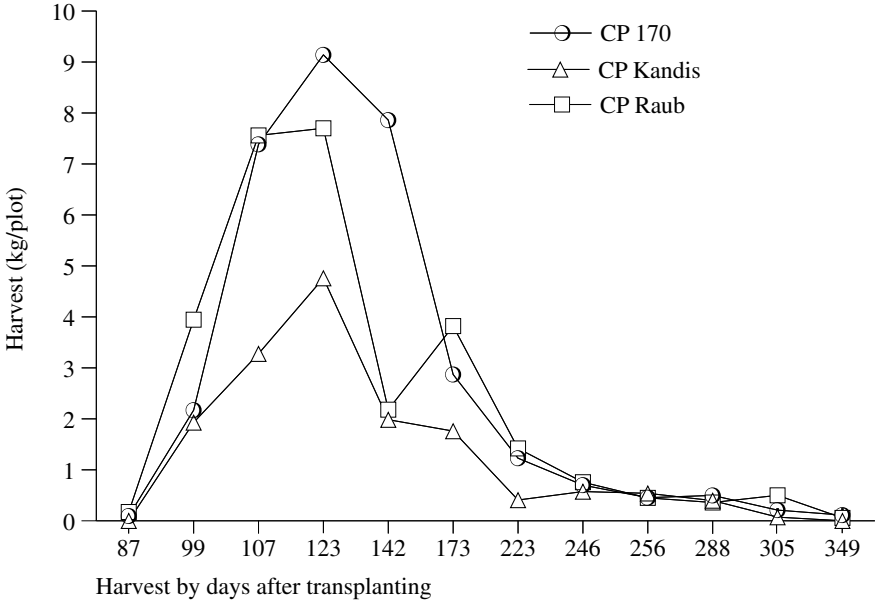

Figure 2. Distribution of harvest of three cili padi varieties in Advance Yield Trial

281, 265 and 256 days with respective harvest durations of 191, 182 and 170 days. A look at *Figure 2* indicates that the production pattern was similar to that in the preliminary trial *(Figure 1).* As before, CP 170 recorded a harvest peak at one month after commencement of harvest and declined to a plateau until the fifth month of harvest. As in the previous result, CP Kandis recorded a less obvious harvest peak indicating its continuous fruiting habit.

Both CP 170 and CP Kandis were easily detached from the fruit axil. CP Raub on the other hand, appeared to have resilient fruit stalks and extra exertion was required to pluck the fruits. As a consequent, longer time was taken to harvest same quantity of pods of CP Raub compared to that of the other two varieties.

A simple market survey indicates that, CP 170 and CP Kandis were more preferred and fetched better price (RM6–7/kg ex-farm) compared to CP Raub (RM4/kg), which is often confused with Thai cili padi because of the similarity in shape.

Conclusion

Based on yield production exceeding the target yield of 500 g/plant for cili padi, only three accessions showed the potential for large scale production. They are CP 170, CP Raub and CP Kandis. They showed high mean seasonal yields of 730 g/plant (507–868 g/plant), 654 g/plant (126–1025 g/plant), and 538 g/plant (401–560 g/plant) respectively in descending order. CP170 and CP Kandis showed very small fluctuations in yield but CP Raub on the other hand showed the widest yield range indicating the instability of this variety due to environmental influence.

All the three accessions (CP 170, CP Raub and CP Kandis) were ready for harvest at 3 months after transplanting and had a crop duration ranging between 155 days and 281 days depending on the environment during the growing period. CP Raub however, did not show ease of plucking. The pods that were not easily detachable consequently might incur extra harvesting cost and hence not suitable for large scale production. CP Raub therefore, was not selected despite being superior in other attributes. CP Kandis had no obvious harvest peak, whilst CP 170 showed a distinct harvest peak at the 4–5 months after transplanting, indicating synchronized fruiting.

The most economical crop duration for CP 170, CP Kandis and CP Raub is about 8 months from transplanting or about 5 months of harvesting. CP 170 constitutes a good alternative to the local CP Kandis in terms of yield and earliness to harvest.

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