

# 不同收穫期對落花生有機栽培農藝性狀及產量之影響

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## 摘要

以落花生台南選9號及台南14號為材料，於98年3月春作與98年8月秋作，二期作皆播種於嘉義縣竹鄉有機農家農田，播種後紀錄始花日期，於始花後50天、60天、70天及80天進行採收，收穫後調查農藝性狀與產量，試驗結果如下：

98年春作不同採收期對有機栽培落花生有機栽培農藝性狀與產量影響：台南選9號與台南14號皆以始花後70天及80天收穫有最高之鮮莢果產量與乾莢果產量及種子產量；不同採收期對無病蟲害管理落花生有機栽培農藝性狀與產量之影響：台南選9號與台南14號皆以始花後70天收穫有最高之鮮莢果產量與乾莢果產量及種子產量，始花後80天收穫鮮莢果產量與乾莢果產量及種子產量則有下降之現象。有無病蟲害管理在不同收穫時期對產量與莢果黑斑病之影響則差異並不顯著，但有病蟲害管理有提高產量與降低莢果黑斑病效果。

98年秋作不同採收期對有機栽培落花生有機栽培農藝性狀與產量之影響：台南選9號與台南14號皆以始花後70天及80天收穫有最高之鮮莢果產量與乾莢果產量及種子產量；不同採收期對無病蟲害管理落花生有機栽培農藝性狀與產量之影響：台南選9號與台南14號皆以始花後70天收穫有最高之鮮莢果產量與乾莢果產量，種子產量則以始花後80天達最大。有無病蟲害管理在不同收穫時期對莢果黑斑病之影響普遍有防治較無防治來得少，且在台南選9號達顯著差異，而有病蟲害管理則產量提高。

## 前言

收穫期早晚影響落花生有機栽培之產量，一般收穫期早產量低，收穫期太晚，產量雖會增加，但品質與病蟲害可能增加，落花生有機栽培適當收穫期對產量影響極大。

田間進行有機栽培除施用有機資材等生物性製劑外，田間無噴施化學農藥之環境下，產生之自然天敵，也能對田間之病蟲害有所抑制。因此在無施用有機資材等生物性製劑之管理下，落花生是否仍有產量，此乃為相當值得關切之問題。

因此本研究擬以落花生有機栽培有機栽培管理、有機栽培無病蟲害管理兩種處理，探討不同收穫期對兩種栽培方式之落花生農藝性狀及產量之影響。

## 材料與方法

以落花生台南選9號(TNS 9)與台南14號(TN14)為材料，試驗採有機栽培有機栽培管理、有機栽培無病蟲害管理2種處理，於98年3月春作及98年8月秋作播種於嘉義縣竹鄉有機農家農田，播種後紀錄始花日期，於始花後50天、60天、70天及80天進行採收，收穫後調查農藝性狀及產量特性。

## 結果

表1. 不同採收期有防治管理對有機栽培落花生台南選9號農藝性狀之影響(98年春作)  
Table 1. Effects of harvest period has prevention on agronomic characters in organic cultural peanut TNS 9 (spring crop of 2009).

Harvest days	Plant height (cm)	No. of branch (no.)	No. of mature pods/plant (no.)	No. of total pods/plant (no.)	Mature fresh pod weight (g)	No. of seeds/plant (no.)	Mature pod dry weight (g)	Weight of seeds (g)
50 days	47.83b	6.8a	10.9a	21.03a	19.16b	20.47a	10.43b	5.72b
60 days	52.75ab	6.81a	12.14a	23.76a	24.09a	21.78a	14.17ab	8.97a
70 days	53.17a	6.60a	10.64a	21.72a	24.21a	20.5a	14.94a	9.65a
80 days	47.93ab	6.54a	10.77a	21.26a	21.84ab	20.37a	13.59ab	9.71a
LSD <sub>0.05</sub>	5.25	2.26	2.76	6.53	2.81	2.81	4.09	1.46
Harvest days	Weight of 100 seeds (g)	Pod yield /plot (g/10m <sup>2</sup> )	Seed yield /plot (g/10m <sup>2</sup> )	Shelling percentage %	First grade seed ratio %	Second grade seed ratio %	Third grade seed ratio %	Pod rot Severity %
50 days	27.95b	3831.2b	1144.5b	54.34a	29.98c	60.69a	9.32a	3.33b
60 days	39.77a	4817.4a	1793.8a	58.94a	68.70b	29.33b	1.89b	7.33a
70 days	45.6a	4842.1a	1929.5a	61.71a	88.47a	10.22c	1.31b	2.33b
80 days	47.45a	4367.2ab	1941.9a	62.98a	81.98a	16.96c	1.07b	7.67a
LSD <sub>0.05</sub>	11.55	561.14	291.61	6.083a	13.09	10.77	4.16	1.63

表2. 不同採收期無防治管理對有機栽培落花生台南選9號農藝性狀之影響(98年春作)  
Table 2. Effects of harvest period has prevention on agronomic characters in organic cultural peanut TNS 9 (spring crop of 2009).

Harvest days	Plant height (cm)	No. of branch (no.)	No. of mature pods/plant (no.)	No. of total pods/plant (no.)	Mature fresh pod weight (g)	No. of seeds/plant (no.)	Mature pod dry weight (g)	Weight of seeds (g)
50 days	45.4c	6.95a	11.18a	20.38a	18.73b	20.72a	9.73b	5.13c
60 days	52.98a	6.83a	11.92a	20.09a	23.93a	21.63a	13.1ab	8.17b
70 days	51.72a	6.67a	11.62a	19.92a	23.92a	21.36a	14.89a	9.17ab
80 days	49.79b	6.43a	9.15b	18.73a	17.18b	16.9b	10.61b	7.66b
LSD <sub>0.05</sub>	1.67	1.65	1.75	6.19	2.08	3.4	3.83	0.91
Harvest days	Weight of 100 seeds (g)	Pod yield /plot (g/10m <sup>2</sup> )	Seed yield /plot (g/10m <sup>2</sup> )	Shelling percentage %	First grade seed ratio %	Second grade seed ratio %	Third grade seed ratio %	Pod rot Severity %
50 days	24.88c	3745.8b	1025.96c	51.99a	32.72c	55.42a	11.86a	7.00bc
60 days	38.45b	4786.7a	1634.0b	56.03a	61.6b	36.60b	6.25b	6.16b
70 days	44.37ab	4784.7a	1833.82a	61.98a	77.48a	19.26c	3.26b	5.00c
80 days	45.1a	3435.8b	1531.25b	61.8a	88.24a	10.38c	1.38b	10.33a
LSD <sub>0.05</sub>	6.34	415.08	181.78	16.81	9.98	8.36	3.26	2.96

表3. 不同採收期有防治管理對有機栽培落花生台南14號農藝性狀之影響(98年春作)  
Table 3. Effects of harvest period has prevention on agronomic characters in organic cultural peanut TN 14 (spring crop of 2009).

Harvest days	Plant height (cm)	No. of branch (no.)	No. of mature pods/plant (no.)	No. of total pods/plant (no.)	Mature fresh pod weight (g)	No. of seeds/plant (no.)	Mature pod dry weight (g)	Weight of seeds (g)
50 days	44.13bc	7.90a	9.23b	19.47a	24.02a	16.17b	12.93b	6.26c
60 days	45.30bc	6.99a	10.23b	17.39a	28.44a	17.62ab	14.47ab	8.03bc
70 days	41.21c	7.04a	10.66ab	17.61a	27.62a	16.28b	15.49a	8.72ab
80 days	49.22a	7.34a	12.32a	18.35a	27.89a	20.03a	15.72a	9.71a
LSD <sub>0.05</sub>	3.84	1.82	3.15	3.43	3.53	2.54	2.54	1.49
Harvest days	Weight of 100 seeds (g)	Pod yield /plot (g/10m <sup>2</sup> )	Seed yield /plot (g/10m <sup>2</sup> )	Shelling percentage %	First grade seed ratio %	Second grade seed ratio %	Third grade seed ratio %	Pod rot Severity %
50 days	37.5c	5003.7a	1252.0c	51.72ab	57.27b	38.26a	4.47a	2.33c
60 days	45.81b	5687.6a	1609.4b	50.78b	78.61a	18.17b	3.22a	6.33b
70 days	53.56a	5823.0a	1743.1ab	56.08a	83.7a	12.57b	3.74a	2.85c
80 days	50.53ab	5572.1a	1686.9a	56.39a	77.06a	19.25b	3.69a	8.33a
LSD <sub>0.05</sub>	6.9	686.85	294.62	4.68	11.95	11.32	1.56	1.69

表4. 不同採收期無防治管理對有機栽培落花生台南14號農藝性狀之影響(98年春作)  
Table 4. Effects of harvest period has prevention on agronomic characters in organic cultural peanut TN 14 (spring crop of 2009).

Harvest days	Plant height (cm)	No. of branch (no.)	No. of mature pods/plant (no.)	No. of total pods/plant (no.)	Mature fresh pod weight (g)	No. of seeds/plant (no.)	Mature pod dry weight (g)	Weight of seeds (g)
50 days	41.01b	7.0a	7.49b	17.14ab	18.59c	12.44c	9.3b	4.19b
60 days	47.51a	7.07a	9.30a	16.93ab	22.85ab	14.43ab	12.9a	7.86a
70 days	39.96bc	7.15a	9.53a	18.62a	25.38a	15.94a	15.8a	9.01a
80 days	38.63c	7.23a	8.73ab	15.83b	14.05b	14.05b	12.48ab	8.43a
LSD <sub>0.05</sub>	1.76	1.21	1.62	2.58	3.62	1.6	3.35	1.36
Harvest days	Weight of 100 seeds (g)	Pod yield /plot (g/10m <sup>2</sup> )	Seed yield /plot (g/10m <sup>2</sup> )	Shelling percentage %	First grade seed ratio %	Second grade seed ratio %	Third grade seed ratio %	Pod rot Severity %
50 days	33.83b	3717.8c	837.50c	50.15a	48.65b	44.71a	6.64a	5.33b
60 days	54.21a	4569.3ab	1572.7a	56.14a	82.18a	25.28b	2.54ab	8.33a
70 days	56.22a	5075.0a	1802.3a	60.80a	86.91a	9.78b	3.31ab	5.33b
80 days	60.16a	3991.4bc	1686.9a	62.2a	85.90a	12.60b	1.50b	7.67a
LSD <sub>0.05</sub>	9.52	724.8	272.87	12.49	10.82	7.2	4.79	2.08

表5. 不同採收期有防治管理對有機栽培落花生台南選9號農藝性狀之影響(98年秋作)  
Table 5. Effects of harvest period has prevention on agronomic characters in organic cultural peanut TNS 9 (autumn crop of 2009).

Harvest days	Plant height (cm)	No. of branch (no.)	No. of mature pods/plant (no.)	No. of total pods/plant (no.)	Mature fresh pod weight (g)	No. of seeds/plant (no.)	Mature pod dry weight (g)	Weight of seeds (g)
50 days	65.90a	6.50a	1.80	14.23b	26.19a	17.47c	11.24b	6.03d
60 days	67.19a	6.12a	8.43c	15.75b	25.25a	21.40bc	13.24b	8.75c
70 days	57.22b	6.20a	10.15bc	18.34a	26.10a	24.23ab	15.73a	11.27b
80 days	51.82b	6.54a	10.80b	19.21a	25.86a	26.79a	17.54a	13.13a
LSD <sub>0.05</sub>	8.08	1.09	14.90a	2.52	3.34	4.49	2.04	1.85
Harvest days	Weight of 100 seeds (g)	Pod yield /plot (g/10m <sup>2</sup> )	Seed yield /plot (g/10m <sup>2</sup> )	Shelling percentage %	First grade seed ratio %	Second grade seed ratio %	Third grade seed ratio %	Pod rot Severity %
50 days	32.85c	6128.7a	1411.6c	53.74b	49.01c	44.12a	6.89a	19.84a
60 days	41.16b	5775.8a	2001.1b	66.35a	66.14b	29.97b	3.89b	14.27a
70 days	46.50ab	5767.6a	2489.4a	71.35a	82.23a	16.12c	1.67c	13.70b
80 days	48.97a	5812.8a	2799.1a	74.89a	78.68a	19.65bc	1.68c	8.22c
LSD <sub>0.05</sub>	5.44	761.15	404.11	11.73	11.40	10.94	1.95	5.44

表6. 不同採收期無防治管理對有機栽培落花生台南選9號農藝性狀之影響(98年秋作)  
Table 6. Effects of harvest period has prevention on agronomic characters in organic cultural peanut TNS 9 (autumn crop of 2009).

Harvest days	Plant height (cm)	No. of branch (no.)	No. of mature pods/plant (no.)	No. of total pods/plant (no.)	Mature fresh pod weight (g)	No. of seeds/plant (no.)	Mature pod dry weight (g)	Weight of seeds (g)
50 days	58.87a	7.63a	11.03a	18.07a	31.23a	22.03b	11.89a	6.89b
60 days	59.55a	7.39a	11.94a	17.72a	28.27a	26.03a	14.10a	9.07ab
70 days	62.04a	6.92a	11.57a	17.15a	24.08b	23.86ab	14.05a	9.62ab
80 days	62.26a	6.63a	12.26a	17.82a	22.84b	26.74a	15.16a	10.53a
LSD <sub>0.05</sub>	8.50	1.62	2.13	2.49	3.38	3.67	3.91	2.78
Harvest days	Weight of 100 seeds (g)	Pod yield /plot (g/10m <sup>2</sup> )	Seed yield /plot (g/10m <sup>2</sup> )	Shelling percentage %	First grade seed ratio %	Second grade seed ratio %	Third grade seed ratio %	Pod rot Severity %
50 days	31.55a	7307.7a	1611.6b	58.21b	39.72c	63.36a	6.92a	22.73a
60 days	34.99a	6468.5b	2076.2ab	64.46ab	50.24b	43.53a	6.23ab	26.67a
70 days	52.95a	5320.7c	2125.6ab	68.46ab	66.62a	46.69a	3.78ab	16.39b
80 days	40.60a	4570.5c	2244.7a	69.70a	66.71a	30.15b	3.13b	14.79b
LSD <sub>0.05</sub>	25.09	748.36	615.71	10.81	10.29	9.97	3.63	5.95

表7. 不同採收期有防治管理對有機栽培落花生台南14號農藝性狀之影響(98年秋作)  
Table 7. Effects of harvest period has prevention on agronomic characters in organic cultural peanut TN 14 (autumn crop of 2009).

Harvest days	Plant height (cm)	No. of branch (no.)	No. of mature pods/plant (no.)	No. of total pods/plant (no.)	Mature fresh pod weight (g)	No. of seeds/plant (no.)	Mature pod dry weight (g)	Weight of seeds (g)
50 days	53.54a	8.67a	13.10a	19.33a	42.14a	18.67a	14.53c	7.58c
60 days	52.16a	8.39a	12.25a	17.66a	35.82b	18.60a	17.47ab	10.46b
70 days	51.13ab	8.52a	10.52b	21.17a	26.80c	15.42b	16.82ab	10.83ab
80 days	42.70b	8.17a	12.90a	17.89a	28.13c	19.10a	12.20a	12.20a
LSD <sub>0.05</sub>	9.30	1.01	1.18	8.77	5.73	2.49	1.76	1.60
Harvest days	Weight of 100 seeds (g)	Pod yield /plot (g/10m <sup>2</sup> )	Seed yield /plot (g/10m <sup>2</sup> )	Shelling percentage %	First grade seed ratio %	Second grade seed ratio %	Third grade seed ratio %	Pod rot Severity %
50 days	41.36b	9859.3a	1773.0b	52.25b	45.08b	49.55a	5.37a	3.45c
60 days	56.16a	8196.3b	2394.1a	59.92ab	80.97a	15.43b	3.69a	8.00b
70 days	62.99a	5923.3c	2393.9a	64.55a	81.63a	16.67b	1.70a	10.90a
80 days	65.02a	5996.6c	2601.8a	63.90a	84.73a	10.65b	4.62a	12.55a
LSD <sub>0.05</sub>	9.90	1323.5	368.34	8.39	9.45	8.23	7.23	2.61

表8. 不同採收期無防治管理對有機栽培落花生台南14號農藝性狀之影響(98年秋作)  
Table 8. Effects of harvest period has prevention on agronomic characters in organic cultural peanut TN 14 (autumn crop of 2009).

Harvest days	Plant height (cm)	No. of branch (no.)	No. of mature pods/plant (no.)	No. of total pods/plant (no.)	Mature fresh pod weight (g)	No. of seeds/plant (no.)	Mature pod dry weight (g)	Weight of seeds (g)
50 days	47.83b	8.70a	9.93c	16.37b	31.84ab	14.77c	14.10c	7.69c
60 days	50.68a	8.42a	13.09ab	19.51a	37.59a	20.42ab	17.36b	10.80b
70 days	49.97ab	8.51a	11.93bc	18.27ab	30.31b	18.18b	16.74b	10.83ab
80 days	80.01b	8.77a	15.20a	20.35a	32.38ab	22.42a	20.81a	13.20a
LSD <sub>0.05</sub>	2.58	0.73	2.48	3.12	6.00	2.87	3.06	1.30
Harvest days	Weight of 100 seeds (g)	Pod yield /plot (g/10m <sup>2</sup> )	Seed yield /plot (g/10m <sup>2</sup> )	Shelling percentage %	First grade seed ratio %	Second grade seed ratio %	Third grade seed ratio %	Pod rot Severity %
50 days	7.49c	50.96a	7451.5ab	1753.75c	53.12a	60.69c	31.07a	3.24a
60 days	10.09b	49.68a	8600.1a	2307.26b	58.15a	67.88c	28.50a	3.62a
70 days	9.95b	54.91a	6698.4b	2199.60b	59.62a	76.83b	21.99b	1.18b
80 days	12.83a	58.09a	6903.6b	2735.62a	62.06a	86.30a	11.18c	2.70ab
LSD <sub>0.05</sub>	0.94	16.69	1315.2	217.22	9.66	8.61	6.36	1.86

## 討論

由結果可知98年春作有、無病蟲害管理台南選9號與台南14號皆以始花後70天及80天收穫有最高之鮮莢果產量與乾莢果產量及種子產量；有無病蟲害管理對莢果黑斑病之影響則差異並不顯著，但有病蟲害管理確有提高產量與降低莢果黑斑病效果。

98年秋作有、無病蟲害管理台南選9號與台南14號皆以始花後70天及80天收穫有最高之鮮莢果產量與乾莢果產量及種子產量。有無病蟲害管理對莢果黑斑病之影響普遍有防治較無防治來得少。因此落花生有機栽培，若不進行有機資材之病蟲害防治，雖收穫量稍有降低，但因無支付防治費用，收益仍較有病蟲害防治者來得佳。落花生有機栽培下田間形成之自然天敵相當多，這些天敵能取食有害生物，使有害生物密度降低，使落花生有機栽培無病蟲害管理下仍有相當不錯之收入。