南部地域에 있어서 播種期 移動에 따른 大豆의 乾物生産 및 生理的 特性 變化에 関한 研究

作物試驗場 木浦支場 朴 爲 龍

Studies on Effects of Planting Dates on the Change of Top Dry Matter Production and Physiological Characteristic of Soybean in Southren Region of Korea .

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〈實驗目的〉

南部地域에서의 播種期 移動에 따른 大豆의 品種別 乾物生産能力 및 生育特性의 變化를 比較 檢討하여 解析함으로써 最適 播種期를 明確히 究明하고자 함.

〈材料 및 方法〉

本試驗은 3年間에 걸쳐 作物試驗場 木浦支場에서 遂行하였으며 供試品種은 黃金豆, 長葉콩, Williams, 短葉콩이었고 播種期는 5月10日, 5月30日, 6月19日, 7月9日, 4처리로 하여 分割区 配置法 3反復으로 實施하였다. 栽植密度는 60cm×15cm(1株 2本), 施肥量은 N-P2O5-K2O=4-7-6 kg/10a를 全量 基肥로 施用하였으며 其他 栽培管理는 標準栽培法에 準하였다.

〈結果 및 考察〉

1. 晩播될수록 開花日數, 成熟期, 開花期間等은 모두 短縮되었으며 品種間 差異도 認定되었고 葉柄은 晩播에 依하여 脈度되는 反面 葉面積은 減少되었고, LAR은 黃葉期를 前後하여 뚜렷한 差異를 나타냈으며 7月9日 播種期는 他 播種期의 50% 內外의 作物生産率을 보였다.

2. 乾物重은 晩播될수록 顯著히 減少되었으나 100粒重을 除外한 收量構成要素는 5月10日과 5月30日間에 비슷한 傾向을 나타냈다.

3. 葉身 總乾物重의 變化에 있어서는 모든 生育時期에서 晩播될수록 總乾物重은 減少하였고 總乾物重에 対한 葉乾物重 比率은 生育初期에는 差異없으나 開花期를 前後하여 漸進的으로 낮아졌다.

4. 葉面積, 乾物重과 收量間의 関係는 生育初期에는 相関이 매우 낮았으나 生育이 進展됨에 따라 相関関係가 높게 나타나서 黃葉期에는 高度의 正相関을 보였으며 最大 收量 變曲点은 葉面積 22,000 cm²/10個体, 乾物重 500 g/10個体에서 나타났다.

5. 10a당 收量은 5月10日 播種区 225 kg, 5月30日 239 kg, 6月19日 108 kg, 7月9日은 101 kg으로 5月30日 播種区의 收量이 가장 높았으며 品種別에는 短葉콩이 播種期 移動에 따른 收量 變異幅이 가장 컸다.

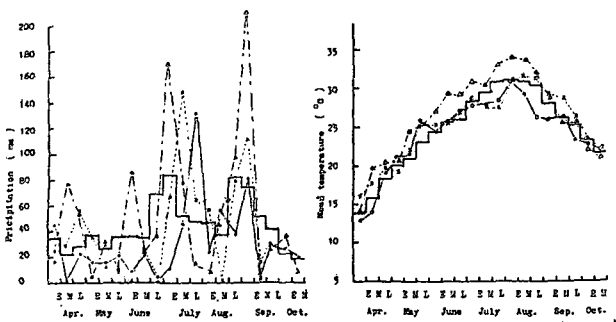

Fig 1. The variation of mean temperature and precipitation during the growing period of soybean (1982-1984)

(—●—: 1982, —x—: 1983, —▲—: 1984 , ⎍ : normal year)

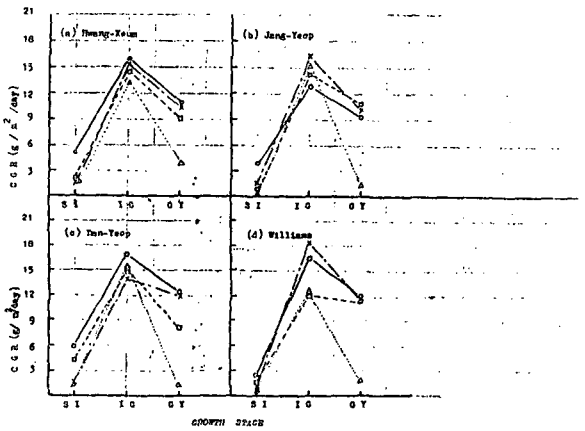

Fig 2. Comparison of CGR for four varieties according to growth stages as affected by planting dates(—●— : 10 May,—x— 30 May,—▲— 19 June, —△— 9 July, SI = the sixth trifoliolate leaf stage to initial flowering stage, IG = initial flowering stage to green bean stage, GY = green bean stage to yellow leaf stage)

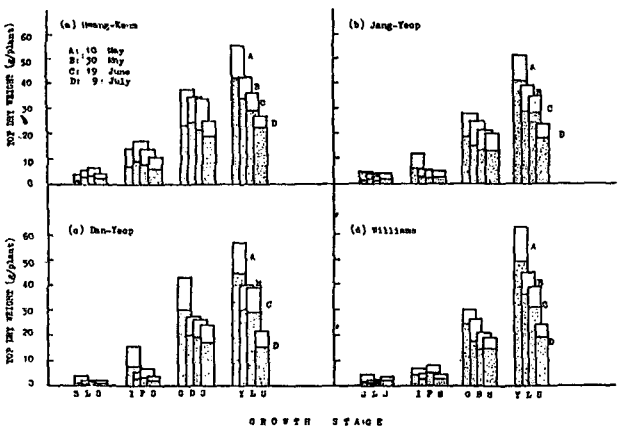

Fig 3. Comparison of top dry weight for four varieties according to growth stages as affected by planting dates(stem + pod + petiole, : leaf,) * The abbreviation in row mean SLG=the sixth trifoliolate leaf stage, IFG=initial flowering stage, GDG= green bean stage, YLG= yellow leaf stage.

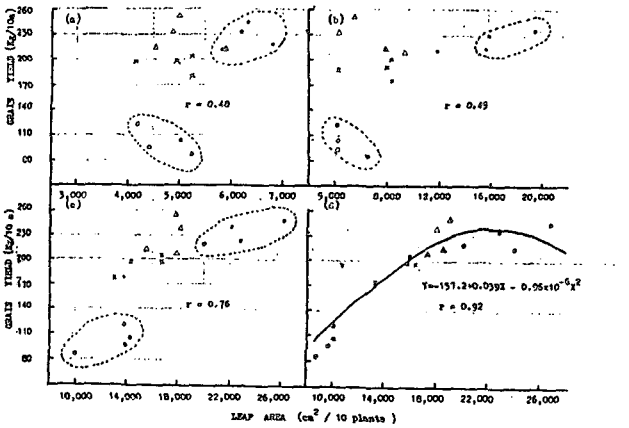

Fig 4. Relationship between leaf area and grain yield for four varieties in soybean according to growth stages as affected by planting dates ((a) The sixth trifoliolate leaf stage, (b) Initial flowering stage, (c) Green bean stage, (d) Yellow leaf stage ; ● :10 May, ▲ :30 May, x : 19 June, ○ : 9 July.)

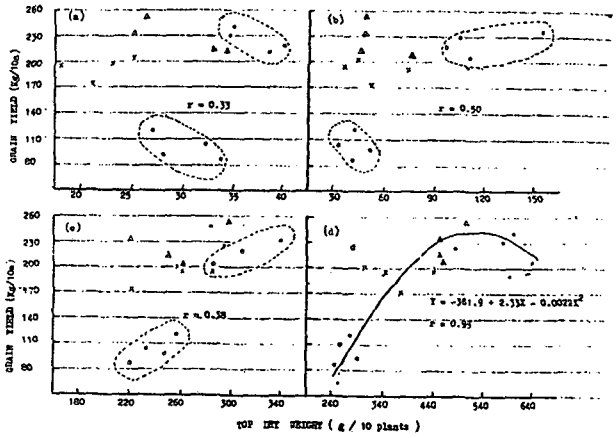

Fig 5. Relationship between top dry weight and grain yield for four varieties in soybean according to growth stages as affected by planting dates. (● :10 May, ▲ :30 May, x :19 June, ○ :9 July)

*(a) The sixth trifoliolate leaf stage, (b) Initial flowering stage, (c) Green bean stage, (d) Yellow leaf stage.

Table 4. Change of Max. mesophyll thickness and leaf area index (LAI) as affected by planting dates.

year	Variety	Mesophyll thickness (mm/cm²)					Leaf area index (LAI)				
		10May	30May	19Jun.	9Jul	Avg.	10May	30May	19Jun.	9Jul	Avg.
1982	Hwang keum	5.06	4.58	5.63	6.09	5.34	5.2	3.1	2.6	1.9	3.2
	Jang yeop	4.73	4.84	4.76	5.90	5.06	5.0	4.1	3.7	2.1	3.7
	Dan yeop	5.11	5.07	5.76	7.37	5.83	5.9	4.2	3.7	2.3	4.0
	Williams	5.23	4.94	5.57	6.23	5.49	4.0	3.2	2.5	1.5	2.8
1983	Hwang Keum	6.11	7.62	7.64	8.55	7.48	5.8	3.9	3.0	2.6	3.8
	Jang yeop	5.71	6.31	7.26	8.58	7.00	5.3	4.0	3.2	2.6	3.6
	Dan yeop	5.97	6.47	7.01	7.13	6.65	4.9	3.9	2.5	1.9	3.3
	Williams	6.77	5.92	6.64	7.96	6.82	3.3	3.2	2.9	2.3	2.9
Avg.	Hwang Keum	5.59	6.10	6.64	7.32	6.41a	5.4	3.5	2.8	2.3	3.5b
	Jang yeop	5.22	5.58	6.01	7.25	6.01b	5.2	4.1	3.0	2.4	3.7ab
	Dan yeop	5.54	5.78	6.39	7.25	6.24a	5.4	4.1	3.1	2.1	3.7a
	Williams	6.0	5.43	6.11	7.09	6.16b	3.7	3.2	2.7	1.9	2.9c

* data in same column followed by the same letter and data in rows underscored by the same line are not siginificantly different at the 5% level of probability according to Duncan's Multiple Range Test.