

PRELIMINARY STUDIES ON THE INTRODUCTION OF RAPESEED IN SOUTHERN AND CENTRAL SPAIN. WINTER AND SPRING VARIETIES, ROW SPACINGS AND SEED DOSES

By Antonio R. Villalba Cabello
Koipesol S.A. - Sevilla - Spain

Spain is a country deficient in vegetable oils and proteins.

Rapeseed could lower some of the imports, as well as represent a clear advantage to the farmers in the dry lands of Spain. Also rapeseed could replace other crops which require many field workers and other cultivation since the profit would be bigger than that from sunflower that in 1977 was sown on about 650.000 has.

Since 1973 Koipesol S.A. has developed a short and rapid experimentation which has enabled us to know the basic data and that has made it possible for us to initiate a definite implantation of this crop in Spain. Already in the period 1976/77 the crop reached about 1.600 has, and in 1977/78 about 2.900 has. Koipesol S.A. has played an important part in this introduction, having contracted more than 85 % of the total area.

Initially over a period of two years and in two different areas of Andalucia (Southern Spain), comparison was made of three different cultivars of rapeseed: Span, Tower and Primor, with the crops of similar cycles in the area: wheat and barley, being sown at three different dates (Table 1).

TABLE 1

	Sowing: 13-XI		Sowing: 8-XII		Sowing: 6-II	
	Kgs/ha	Days mat.	Kgs/ha	Days mat.	Kgs/ha	Days mat.
Span	1.418	186	1.641	168	707	114
Tower	1.630	196	1.856	174	831	120
Primor	1.356	214	1.035	192	-	-

Wheat	2.119	219	1.621	197	-	-
Barley	2.804	205	2.105	185	-	-

From the beginning the following conclusions were reached:

- a) The rapeseed crop is possible and competitive in the south of Spain.
- b) The spring varieties can be used for autumn sowing.
- c) The winter varieties are worse adapted to cultivation in southern Spain, since only a variable percentage of the plants reach the flowering stage.

With the initial object of fixing the ideal sowing date for the spring varieties, tests were carried out in 3 locations of Andalucia over a period of 2 years, with intervals of 20 days between the sowing, and spanning the entire possible period for sowing, since it is quite impossible to sow before Oct. 10th, owing to lack of moisture in the soil (Table 2).

The earliest sowings have been shown to be the most productive because the slower rate of maturing takes place in a cooler period than that of the later sowing.

At the same time, we carried out tests to discover the ideal distance of

TABLE 2

	Kgs/ha	% oil	Days flow.	Days mat.	W-1000
15 - X	2.305	44,6	133	213	3,711
2 - XI	2.014	44,2	128	200	3,444
22 - XI	1.579	44,1	121	184	3,390
13 - XII	1.500	42,4	114	168	3,069
DS 0.05	245	-	2	2	0,279

row-spacings, taking into consideration the conditions in the south of Spain. We tested separation distances from 15 cms up to 60 cms introducing, in 1976/77, spacing of double rows (62+15 cms) which, with an average distance between rows of 38 cms, allows mechanical weeding and minimizes the evaporation of moisture through the cracks in the clayey soil (Table 3).

TABLE 3

	1975/76				1976/77			
	Kgs/ha	1.000 plants/ha	No of branches/plant	Siliquas/plant	Kgs/ha	1.000 plants/ha	No of branches/plant	Siliquas/plant
16	1.586	1.604	4,3	114,2	1.671	819	3,8	97,5
33	1.687	817	5,6	156,7	1.735	489	4,1	103,7
62 + 15	-	-	-	-	1.729	515	4,1	103,5
60	1.508	547	5,7	176,0	1.624	355	4,5	113,5
DS 0.05	-	233	0,2	30,2	-	201	0,2	12,3

Table 3 demonstrates the most significant results obtained in the 4 row-spacings. At the same time we carried out studies on the interrelation between row-spacing and seed doses. The results are shown in Table 4.

TABLE 4

	4 Kgs/ha		8 Kgs/ha		16 Kgs/ha		AVERAGE	
	Kgs/ha	1.000 plants/ha	Kgs/ha	1.000 plants/ha	Kgs/ha	1.000 plants/ha	Kgs/ha	1.000 plants/ha
16	1.634	492	1.758	730	1.772	1.181	1.721	801
33	1.615	271	1.833	501	1.911	647	1.786	473
62+15	1.633	357	1.869	610	1.818	976	1.773	648
60	1.589	271	1.541	375	1.681	534	1.604	393
AVERAGE	1.618	348	1.750	554	1.795	835	1.721	579

With these results, and although the differences are not significant, we would recommend the sowing between 8 and 16 Kgs/ha to avoid the problem of difficult emergence which is so common in Andalusia. With respect to row-spacing, other factors have to be taken into account e.g. strong winds, weed control.

With the aim of finding the varieties most suited to the different areas of Spain, we have tested 6 varieties in 2 areas of Spain. The results are given in Tables 5 and 6.

TABLE 5 (SOUTH)

	1974/75 (1 trial)		1975/76 (3 trials)		1976/77 (6 trials)		Days cycle	W-1.000
	Kgs/ha	% oil	Kgs/ha	% oil	Kgs/ha	% oil		
Tower	2.633	47,1	2.331	47,1	1.395	46,7	180	3,456
Erglu	2.442	45,6	1.475	46,1	1.299	45,7	185	3,644
Cresor	2.983	45,4	-	-	1.781	45,8	182	3,762
Romeo	-	-	-	-	1.650	42,9	179	3,295
Oro	2.833	44,4	2.414	45,2	1.591	44,5	181	3,126
Midas	2.502	47,2	1.792	48,0	1.407	47,1	180	3,677
DS 0.05	293	1,5	318	1,3	261	0,8	2	0,300

TABLE 6 (CENTRAL)

	1976/77 (6 trials)			
	Kgs/ha	% oil	cycle	W-1.000
Primor	1.609	47,5	252	4,209
Lesira	1.364	45,8	254	4,169
Erglu	1.222	47,6	248	3,366
Cresor	1.262	43,7	247	4,842
Tower	1.303	47,1	244	4,306
Span	615	40,4	211	2,619
DS 0.05	242	1,1	2	0,311

Other tests carried out in 1976/77 compared 24 varieties from different countries. These tests were carried out in 6 different localities, 3 being situated in Andalucia, and the other 3 in Central Spain. The average results of the 3 tests are given in Table 7, to indicate the different response to the different climatic zones.

CONCLUSIONS

- In Andalucia the spring varieties which are sown in the autumn, are more productive.
- The winter varieties are better adapted to the Central Zone.
- The earliest sowing dates yield the best results.
- There are no significant differences in production between row-spacing 15 cms/40 cms.
- The seed doses most adequate are those between 8 and 16 Kgs/ha to assure a good emergence.

TABLE 7

	Andalucia				Central			
	Kgs/ha	% oil	cycle	W-1.000	Kgs/ha	% oil	cycle	W-1.000
Span	554	42,3	175	2,515	851	43,7	187	2,552
Torch	533	41,6	176	2,419	535	43,0	187	2,447
Midas	1.805	48,6	188	3,988	1.176	47,0	215	4,588
Oro	1.626	44,8	189	3,320	1.132	44,5	214	4,139
Tower	1.552	47,6	187	3,513	1.540	46,6	214	4,373
Maris H.	1.664	45,6	189	3,282	1.481	44,3	216	4,263
Cresor	1.719	45,1	191	3,869	1.525	43,6	218	4,824
Romeo	1.755	43,3	187	3,516	1.300	42,1	216	3,779
Orpal	1.777	45,0	188	3,893	1.520	44,1	217	4,904
Brutor	1.566	46,0	188	3,782	1.766	45,0	215	4,138
Erglu	1.440	46,3	196	2,707	1.298	47,2	216	3,349
Vega	1.879	46,3	188	3,196	1.616	44,4	215	3,968
Gulliver	1.844	48,5	187	3,422	1.670	46,9	215	4,324
Primor	678	43,9	208	3,374	1.488	46,4	223	4,377
Jet Neuf	572	43,1	207	3,376	2.142	43,7	223	4,614
R-10	578	42,1	208	3,522	1.375	43,7	223	4,655
R-40	1.193	43,8	203	3,600	1.888	44,4	221	4,777
Quinta	1.142	44,6	205	3,396	1.893	44,8	223	4,469
Rapora	805	45,2	206	3,510	1.666	44,7	224	4,599
Lesira	1.376	46,2	203	3,349	1.473	43,9	222	4,323
Erra	1.189	45,0	204	3,388	1.655	43,5	224	4,523
Status	750	44,3	209	3,457	1.164	44,6	223	4,339
Brink	1.420	47,3	202	3,335	1.112	46,1	220	4,108
Sipal	1.232	45,6	203	3,450	1.509	45,7	218	4,489