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Performance of Oats and Legumes Sown in Pure Stands and Mixtures

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ABSTRACT

In a field trial of 1975–76 and 1976–77, oats and two legume species, Vetch and Egyptian clover were grown in pure stands and mixtures. Egyptian clover in pure stand gave the highest forage yield. The percentage of dry matter increased with increasing oats in the mixture. Forage yield was increased with increasing legume component in the mixture. The percentage of crude protein, ether extract and mineral matter was higher in Egyptian clover than those of oats, vetch in pure stand, and in the different combinations of mixture.

INTRODUCTION

Mixed planting of legumes and other crops, such as cereals and grasses for increasing forage production, is followed by many farmers in different parts of the world. Many workers noted that using legumes in the mixture increased both the yield and protein content of the associated species (4,5,6,10,11,12).

Wagner (12) indicated that sowing of cereals or others with leguminous plants tend to increase the nitrogen rate in dry matter more than non-leguminous mixture. From a greenhouse study, Roberts and Olson (11) reported that when one species in a legume-grass mixture produced more dry weight than when grown alone, the other species produced less in mixture compared with its growth in pure stands. McCloud and Mott (6) working with legume-grass mixture found that there was a marked influence of well established legumes in increasing the yield, protein and carotene content of associated grasses. Rao, Reddi and Venkateshawri (10) found from their trials of jower, bajra, cowpeas and soyabeans in pure stands, and jowar or bajra in mixture with any legume, gave average fresh fodder yields of 1.28–2.83 t/ha, and yields were highest in jowar and lowest in soyabeans. The crude protein content was highest 23.4% in soyabeans and lowest 9.9% in bajra.

El-Ghayaty (5) from his studies on the effect of the mixtures of barley, rye grass and Egyptian clover with different seeding rate on forage yield, reported that the highest yield of green matter obtained from Egyptian clover when grown alone as well as from the mixtures. The protein content of different mixtures increased with increasing Egyptian clover ratio in the mixture. Egyptian clover when grown alone has the highest amount of protein content when compared with different mixtures. Abdel Gawad *et al.* (1) from their field trials to study the effect of Egyptian clover and oat seed mixtures on nutritive value and forage yield, found that the highest green forage was obtained by planting Egyptian clover alone. The percentage of protein and ether

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extract of Egyptian clover was higher than the percentage of protein and ether extract in oats, or oats with some other mixture.

The present study was conducted for comparative evaluation of oats and legume species such as vetch and Egyptian clover, both sown in pure stands and in mixtures, with the object of finding out the forage production as well as its nutritional value.

MATERIALS AND METHODS

A field trial was conducted at the Experimental Farm of the Faculty of Agriculture, Tripoli, during 1975–76 and 1976–77 season. In 12 November, 1975 and 9 November, 1976 mixtures of oats (*Avena sativa*), Vetch (*Lathyrus sativa*) and Egyptian clover (*Trifolium alexandrinum*) were seeded in plots 3 × 3 meters in a randomized block design with five replications.

The treatments were:

T_1—100% oats
T_2—100% vetch
T_3—100% Egyptian clover
T_4—40% oats, 30% vetch and 30% Egyptian clover
T_5—50% oats, 25% vetch and 25% Egyptian clover
T_6—70% oats, 15% vetch and 15% Egyptian clover

Compound fertilizer, 12-24-12 at the rate of 500 kg/ha was added to each plot in three applications. The first application was added to the plots at the seeding time. The second and the third were added after the first and the second cuts, respectively.

The seeding rate was 54 g/plot (60 kg/ha) for oats, 36 g/plot (40 kg/ha) for vetch and 18 g/plot (20 kg/ha) for Egyptian clover. Germination percentage of the seeds were tested in laboratory and recorded 95% for oats, 80% for vetch and 82% for Egyptian clover. Sprinkler irrigation was uniformly followed, whenever needed, to all plots.

Three harvests were made in each trial. In both years, the first harvest was done on 15 March, about 125 days after seed sowing, and the other two harvests were done after a month's interval. Green weight from each plot was recorded in the field just after harvest. Samples of each plot at each harvest were saved for moisture percentage, and proximate analysis. The samples from each plot were then oven-dried at 70°C for 24 hours and calculated for dry matter in tons per hectare. The percentage of crude protein (N × 6.25), crude fibre, ether extract, mineral matter and nitrogen-free extract from the oven-dried samples of the three cuts were determined by the weende method as described in the A.O.A.C., for the season 1976–77 only. Oats and vetches when grown alone did not produce any forage in the third cuttings for both years.

The data for green weight as well as oven dried weight were analyzed statistically.

RESULTS AND DISCUSSION

Forage yield:

The total yield of forage (t/ha) on green weight basis as well as oven-dried weight for the seasons 1975–76 and 1976–77 is presented in Table 1. From the combined analysis of the green weight as well as dry weight, it was found that the forage yield was significantly affected by treatments, years and treatments × years interaction. From the mean yields of two years, the highest yield in green weight was obtained from treatment T_3 (43.25 t/ha) by sowing Egyptian clover alone and the lowest yield was from T_2 (16.86 t/ha) when vetch was grown alone. The yield of treatment T_3 was significantly higher than all the treatments except treatment T_4. Again when the yields of two years were compared, it was found that the yield of 1975–76 season was significantly higher than the yield of 1976–77 season. This may be due to higher rainfall, irrigation facilities and other cultural activities.

Table 1 The mean green and dry weights of oats and legume species grown alone and in mixtures after grouping the readings of the three cuts for 1975–76 and 1976–77.

Treatments	Green weight (tons/ha)			Oven-dry weight (tons/ha)			% of oven-dried weight in green forage
	1975–76	1976–77	Mean	1975–76	1976–77	Mean	
T_1	19.47	17.87	18.67	4.90	4.56	4.73	25.33
T_2	13.43	20.29	16.86	2.97	3.49	3.23	19.16
T_3	49.88	36.62	43.25	10.87	7.58	9.23	21.34
T_4	48.96	31.35	40.16	10.37	7.03	8.70	21.66
T_5	48.66	27.55	38.11	10.14	6.66	8.40	22.04
T_6	46.17	27.91	37.04	9.70	7.00	8.35	22.54
Mean	37.76	26.93	32.35	8.15	6.05	7.10	21.95

LSD at 0.05 for treatments = 3.60 tons
LSD at 0.05 for years = 1.84 tons
LSD at 0.05 for Tr × Years = 4.50 tons (between two years of the same treatment)
LSD at 0.05 for Tr × Years = 4.60 tons (between two treatments of the same year)

LSD at 0.05 for treatments = 0.99 ton
LSD at 0.05 for years = 0.35 ton
LSD at 0.05 for Tr × Year = 0.88 ton (between two years of the same treatment)
LSD at 0.05 for Tr × Year = 0.98 ton (between two treatments of the same year).

When the treatments were compared in individual years, it was found that during 1975–76 season the highest yield was obtained from treatment T_3 (49.88 t/ha) and the lowest was from treatment T_2 (13.43 t/ha). The yield of T_3 was significantly higher than the yield of T_1 and T_2. In 1976–77 season, the highest yield was from T_3 (36.62 t/ha) and was significantly higher than all other treatments.

From the mean dry weight for both seasons, it was found that the highest yield was obtained from T_3 (9.23 t/ha) and the lowest was from treatment T_2 (3.23 t/ha). Treatment T_3 was significantly higher than the treatment T_1 and T_2. The mean yield of forage in 1975–76 season is significantly higher than the mean yield of 1976–77 season. Among the treatments of the same year, treatment T_3 was the highest and significantly higher than T_1 and T_2 in both years. Again among the years of the same treatment, the yield of treatments T_3, T_4, T_5, and T_6 of 1975–76 season were significantly higher than the treatments of 1976–77 season.

When the yield of the mixtures of the treatments T_4, T_5 and T_6 were considered, it was found from both green as well as dry weight that the forage was increased due to the higher percentage of Egyptian clover in the mixtures. This information agrees with the findings obtained by El-Ghayaty (5) and Abdel Gawad *et al.* (1) who found highest yield of green forage for Egyptian clover when grown alone. They concluded that the Egyptian clover percentage in the mixture had the effective factor on the amount of mixed forage produced.

Table 2 represents the effect of treatments and number of cuttings on green forage production for both independent years. Significant differences in yields between the treatments, cuts and treatments × cuts interaction were found in each year. In 1975–76 trials, the highest mean yield was obtained from treatment T_3 (16.62 t/ha) and was significantly higher than the treatments, T_1 and T_2. From the mean of all treatments in each cut, the highest yield was obtained from the first cut (16.35 t/ha) and the lowest was in the third cut (12.68 t/ha). The yield in the first cut was significantly higher than the second and third cuts. When the yields were compared among the treatments in the same cut, the highest yield was obtained from treatment T_5 (21.16 t/ha) in the first cut and the treatments were found significantly different from each other except between T_3 and T_6 and between T_4 and T_6. In the second cut, the highest yield was obtained from treatment T_4 (17.49 t/ha). None of the treatments was found significant from each other, except between the treatment T_2 and T_3. In the third cut, the highest yield was from T_3 (14.81 t/ha) and the differences in yield were significant for all treatments except between the treatments T_3 and T_6 and between T_4

Table 2 Mean green yield of three cuts of oats and legume species grown alone and in mixtures.

Treatments	1975–76				1976–77			
	1st cut t/ha	2nd cut t/ha	3rd cut t/ha	Mean	1st cut t/ha	2nd cut t/ha	3rd cut t/ha	Mean
T_1	12.27	7.20	0.00	9.73	10.95	6.92	0.00	8.93
T_2	7.62	5.81	0.00	6.71	19.79	0.50	0.00	10.14
T_3	17.94	17.13	14.81	16.62	14.98	11.94	9.70	12.20
T_4	19.82	17.49	12.35	16.55	18.37	7.94	5.04	10.45
T_5	21.16	17.27	10.55	16.32	16.53	6.74	4.28	9.18
T_6	19.26	16.06	13.05	16.12	14.91	8.52	4.48	9.30
Mean	16.35	13.49	12.68	13.68	15.92	7.09	5.87	10.03
LSD at 0.05 for treatments = 1.41 tons					LSD at 0.05 for treatments = 1.77 tons			
LSD at 0.05 for cuts = 0.84 tons					LSD at 0.05 for cuts = 1.39 tons			
LSD at 0.05 for tr × cuts = 1.60 tons (between two treatments of the same cut)					LSD at 0.05 for tr × cuts = 2.49 tons (between two treatments of the same cut)			
LSD at 0.05 for tr × cuts = 2.06 tons (between two cuts of the same treatment)					LSD at 0.05 for tr × cuts = 3.42 tons (between two cuts of the same treatment)			

and T_6. Again when the yield was compared among the cuts in each treatment it was found that the yields in all the treatments were significantly decreased gradually from first to the third cuts.

In 1976–77 season trial, the highest mean yield was from treatment T_3 (12.20 t/ha) and was significantly higher from all the treatments except the treatment T_4. Among the mean yields in cuts, the highest yield was in the first cut (15.92 t/ha) and decreased significantly in the third cut (5.87 t/ha). When the treatments were compared in the same cut, the highest yield was obtained from treatment T_2 (19.79 t/ha) and the difference in yield was found significant in treatments T_1, T_2 and T_3 in the first cut. In the second cut, the significant differences in yield were found among treatments T_1, T_2 and T_3 in the third cut, the highest yield was from treatment T_3 (9.70 t/ha) and the differences between T_3 and all other treatments were significant. Again among the cuts in the same treatments, the yields were found significantly decreased from first cut to the second cut in all treatments. The yields in the third cut was less than the second cut but the difference in yield between the second and third cut was significant only in treatment T_6.

A similar trend of yield on oven-dried weight basis in the cut for all treatments was found in both years as in green weight (Table 3). In 1975–76 trial, among the treatment means, the highest yield was obtained from treatment T_3 (3.63 t/ha) and was significantly higher than treatments T_1 and T_2. Among the mean yield from the treatments in each cut, the highest yield was obtained from the first cut (3.70 t/ha) and gradually decreased significantly from the first to the third cut. Between the treatments in each cut, the highest yield was obtained from treatment T_5 (4.90 t/ha) and was significantly higher than all the treatments in the first cut. In the second cut, the highest yield was obtained from treatment T_4 (3.84 t/ha) and was significantly higher than treatment T_1, T_2 and T_6. In the third cut, the highest yield was obtained from treatment T_3 (3.40 t/ha) and the treatments were significantly different from each other. Among the cuts in each treatment, the yield was found to be decreased from first cut to the third cut in treatments T_4, T_5 and T_6.

In 1976–77 trial, the highest mean yield was obtained from treatment T_3 (2.53 t/ha) and was significantly higher than treatments T_2, T_5 and T_6. The highest mean yield was obtained from the first cut (3.32 t/ha) and significantly decreased to the third cut (1.16 t/ha). Among the treatments in each cut, the highest yield was obtained from treatment T_4 (4.22 t/ha) in the first cut and the difference in yield between treatments T_3, T_4, T_5 was significant. In the second cut, significant differences were found

Table 3 Mean dry yield of three cuts of oats and legume species grown alone and in mixtures.

	1975–76				1976–77			
Treatments	1st cut t/ha	2nd cut t/ha	3rd cut t/ha	Mean	1st cut t/ha	2nd cut t/ha	3rd cut t/ha	Mean
T_1	3.19	1.80	0.00	2.49	2.84	1.72	0.00	2.28
T_2	1.62	1.35	0.00	1.48	3.35	0.14	0.00	1.75
T_3	3.90	3.59	3.40	3.63	3.29	2.74	1.55	2.53
T_4	4.36	3.84	2.34	3.51	4.22	1.66	1.15	2.34
T_5	4.90	3.79	1.68	3.46	3.14	1.48	0.94	1.85
T_6	4.20	3.35	2.70	3.42	3.13	1.70	1.03	1.95
Mean	3.70	2.95	2.53	2.99	3.32	1.57	1.16	2.12
LSD at 0.05 for treatments = 0.32 ton					LSD at 0.05 for treatments = 0.43 ton			
LSD at 0.05 for cuts = 0.19 ton					LSD at 0.05 for cuts = 0.29 ton			
LSD at 0.05 for tr × cuts = 0.37 ton (between two treatments of the same cut)					LSD at 0.05 for tr × cuts = 0.53 ton (between two treatments of the same cut)			
LSD at 0.05 for tr × cuts = 0.47 ton (between two cuts in the same treatment)					LSD at 0.05 for tr × cuts = 0.70 ton (between two cuts in the same treatment)			

between treatments T_1 and T_3; T_3 and T_4. In the third cut, significant differences existed between treatments T_3 and T_5 only. Among the cuts in each treatment, the yield in each treatment was significantly decreased from first cut to the second cut except the treatment T_3. The yields in the third cut were found to be less than the second cut but the difference in yield was significant only in treatment T_3.

Nutritional value of the forage

The mean percentage of crude protein was found to be the highest in treatment T_3 (18.03%) and the lowest in treatment T_1 (9.56%), Table 4. The treatments were found to be significantly different from each other except between treatments T_4 and T_5. Among the cuts, the highest mean percentage was found in the first cut (13.54%) and there were significant differences between the first and second cut and between second and third cuts, but the difference between the first and the third was not significant. The interaction between the treatments and cuts was significant. Among the cuts of each treatment, all the cuts were found to be significantly different from each other except for treatments T_1 and T_6 and also between the first and second cut of treatment T_4. Within the treatments of the same cut, highest percentage of crude protein in the first cut was obtained from T_3 (21.04%), and the lowest was from T_1 (9.81%). The percentage of crude protein of treatment T_3 was found significantly different from all other treatments. In the second cut, the highest percentage of crude protein was found from treatment T_3 (15.76%) which was significantly different from all other treatments. In the third cut, the treatment T_3 was the highest in percentage of crude protein (17.30%) and significantly different from all other treatments.

The percentage of crude protein in the mixtures was decreased in the forage by increasing the percentage of oats. The mean percentage of crude protein was found to be produced by the mixtures as 12.68, 12.11 and 10.67 per cent for treatments T_4, T_5 and T_6, respectively. So the high protein percentage in the forage was obtained by decreasing the oat-seed ratio and increasing the leguminous species. These results agree with the result of El-Ghayty (5) and Abdul Gawad *et al.* (1) who obtained higher crude protein percentages in the Egyptian clover and they concluded that the protein percentage was increased as the ratio of seed of Egyptian clover was increased in the mixture.

The mean crude fibre percentage was found higher in treatment T_1 (24.74%) and the lowest was in treatment T_2 (19.49%). The mean percentage of crude fibre was found

Table 4 Nutritional value of forage in pure stands and in mixtures.

Treatments	Crude protein (%)				Crude fibre (%)				Ether extract (%)				Mineral matter (%)				Nitrogen-free extract (%)			
	1st cut	2nd cut	3rd cut	Mean	1st cut	2nd cut	3rd cut	Mean	1st cut	2nd cut	3rd cut	Mean	1st cut	2nd cut	3rd cut	Mean	1st cut	2nd cut	3rd cut	Mean
T_1	9.81	9.31	0.00	9.56	22.26	27.22	0.00	24.74	2.75	2.39	0.00	2.57	9.22	8.50	0.00	8.86	43.24	46.61	0.00	44.92
T_2	16.42	12.93	0.00	14.67	16.25	22.74	0.00	19.49	3.17	2.58	0.00	2.87	9.50	12.75	0.00	11.12	39.82	36.44	0.00	38.13
T_3	21.04	15.76	17.30	18.03	17.85	26.20	22.63	22.23	3.21	3.61	3.85	3.56	11.33	14.30	16.31	13.98	36.03	37.19	35.74	36.32
T_4	11.56	12.39	14.10	12.68	21.77	24.37	22.50	22.88	3.05	3.28	3.50	3.28	10.58	11.37	12.62	11.52	43.42	43.53	40.13	42.36
T_5	11.60	14.01	10.72	12.11	21.35	25.60	23.32	23.42	2.97	3.50	2.25	2.91	10.01	12.75	10.36	11.04	45.53	42.41	43.85	43.93
T_6	10.81	9.68	11.53	10.67	22.62	24.40	25.31	24.11	2.81	3.10	3.50	3.14	11.95	11.38	9.72	11.01	44.31	45.50	43.27	44.36
Mean	13.54	12.34	13.41	12.95	20.35	25.08	23.44	22.81	2.99	3.07	3.27	3.05	10.43	11.84	12.25	11.09	42.05	41.94	40.74	41.67
	LSD at 0.05 for treatments = 1.32 tons				LSD at 0.05 for treatments = 1.58 tons				LSD at 0.05 for treatments = 0.50 ton				LSD at 0.05 for treatments = 0.78 ton				LSD at 0.05 for treatments = 0.92 ton			
	LSD at 0.05 for cuts = 0.77 ton				LSD at 0.05 for cuts = 0.39 ton				LSD at 0.05 for cuts = 0.25 ton				LSD at 0.05 for cuts = 0.46 ton				LSD at 0.05 for cuts = 0.83 ton			
	LSD at 0.05 for tr × cuts = 1.88 tons (between two cuts in the same treatment)				LSD at 0.05 for tr × cuts = 0.97 ton (between two cuts in the same treatment)				LSD at 0.05 for tr × cuts = 0.63 ton (between two cuts in the same treatment)				LSD at 0.05 for tr × cuts = 1.13 tons (between two cuts in the same treatment)				LSD at 0.05 for tr × cuts = 2.04 tons (between 2 cuts in the same treatment)			
	LSD at 0.05 for tr × cuts = 1.48 tons (between two treatments of the same cut)				LSD at 0.05 for tr × cuts = 1.24 tons (between two treatments of of the same cut)				LSD at 0.05 for tr × cuts = 0.52 ton (between two treatments of the same cut)				LSD at 0.05 for tr × cuts = 0.88 ton (between two treatments of the same cut)				LSD at 0.05 for tr × cuts = 1.46 tons (between two treatments of the same cut)			

significantly different between treatments T_1, T_2 and T_3. Between the cuts, the highest percentage of mean crude fibre yield was obtained from the second cut (25.08%), and there was significant differences in percentage among the three cuts. The interaction between the cuts and treatments was found significant. Among the cuts in each treatment, it was found that all the cuts showed significant differences in crude fibre percentages from each other, except in treatment T_4 between the first and third cuts, and in treatment T_6 between the second and third cuts. Among the treatments in each cut, the highest percentage of crude fibre was obtained from the treatment T_6 (22.62%) and the lowest was from T_2 (16.25%) in the first cut. In the second cut, significant differences were found among all the treatments. Significant difference existed between treatments T_5 and T_6 in the third cut.

The percentage of crude fibre in the mixtures was increased by increasing the percentage of oats. So the high crude fibre percentage in the forage mixture was obtained by increasing the oat-seed ratio. McDonald, Edwards and Greenhalgh (7), found a higher percentage of crude fibre in oats (32.9%) than in clover (31.9%) and vetches (27.7%).

The mean percentage of the ether extract was found the highest in treatment T_3 (3.56%) and the lowest was from the treatment T_1 (2.57%). Significant differences were found between treatments T_2 and T_3 and also between T_3 and T_5. The highest mean percentage was found in the third cut (3.27%) and it was significantly higher than the first cut. Among the treatments of the same cut, the highest percentage of ether extract was from treatment T_3 (3.21%) and none of the treatments was significant from another for the first cut. In the second cut, treatment T_3 was significantly different from T_1 and T_2. Significant differences existed between treatment T_5 and all other treatments in the third cut. Again, among the cuts of the same treatment, significant differences were found for treatments T_3, T_5 and T_6 between the first and third cuts. McDonald, Edwards and Greenhalgh (7) received higher amounts of ether extract in clover (3.3%) than oats (2.6%) and vetches (2.7%), which agree with our findings.

The mean percentage of mineral matter was found to be highest in treatment T_3 (13.98%) and was significantly different from all other treatments. Among the cuts, the highest mean percentage was found in the third cut (12.25%) and the lowest was from the first cut (10.43%). The percentage has significantly increased from first cut to the third cut. Among the treatments in the same cut, the highest percentage was found in treatment T_3 (11.33%) and significant differences existed between treatments T_2 and T_3 and between T_3 and T_5 in the first cut. In the second cut all the treatments were significantly different from each other except between T_4 and T_6 and between T_2 and T_5. Significant differences existed between treatments in the third cut except between treatments T_5 and T_6. Among the cuts in the same treatments, the percentages of mineral matter have significantly increased from the first cut to the third cut except for treatments T_1 and T_6, and between the second and third cuts of T_5.

McDonald, Edwards and Greenhalgh (7) mentioned that the percentage of mineral matter was 7.1%, 6.7% and 6.9% for clover, oats and vetch respectively. This is in agreement with the trend of our findings.

The percentage of nitrogen-free extract was found the highest in treatment T_1 (44.92%) and the lowest was from treatment T_3 (36.32%). The treatments showed significant differences from each other except between treatments T_5 and T_6.

Among the cuts, the highest mean percentage was found in the first cut (42.05%) and there were significant differences between the first and third cuts, and between the second and third cuts. Among the treatments of the same cut, there were significant differences between all the treatments except between T_1 and T_4 and between T_5 and T_6 in the first cut. In the second cut, the highest percentage was found in treatment T_1 (46.61%) and the lowest was from T_2 (36.44%). Significant differences existed between the treatments except between T_2 and T_3 and between T_4 and T_5. Significant differences were found among treatments T_3, T_4 and T_5 in the third cut. From the cuts of

the same treatments, significant differences were found for treatments T_1, T_2 and T_5 between the first and second cuts, and for T_4 and T_6 between the second and third cuts.

This result agrees with the trend of the findings of Morrison (8) who mentioned that the nitrogen-free extract was 44.4%, 43.2% and 39.9% for oats, vetch and clover respectively.

This trial has shown that oats when grown with legume species especially Egyptian clover and vetches produced more forage than when grown alone. The highest forage yield was obtained from Egyptian clover when grown in pure stand. The percentages of crude protein, ether entract and mineral matter were higher in Egyptian clover than those in oats, vetches and in mixtures. Thus it may be recommended that the highest forage yield and nutritive value can be obtained by planting Egyptian clover alone.

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" سلوك نبات الشوفان وبعض الاعلاف البقولية التى زرعت منفردة وفى مخاليط "

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د. ابو حمد مجيب الرحمن

المستخلص

اجريت هذه التجربه خلال موسمى ٧٥ - ١٩٧٦ ، ٧٦ - ١٩٧٧م ، لدراسة سلوك نباتات الشوفان والجلبانة والبرسيم المصرى عند زراعتها منفرده ومخلوطة بنسب مختلفة . وقد دلت النتائج على ان زراعة البرسيم المصرى منفردا أعطيت أعلى محصول علفى وان النسبه المئوية للمادة الجافه فى الانسجه النباتية فى العلف المنتج قد زادت بزيادة نسبة الشوفان فى المخلوط ومن ناحية اخرى زاد محصول العلف المنتج للهكتار بزيادة نسبة الاعلاف البقولية فى المخاليط . كذلك فان نسبة البروتين الخام ، والمواد الدهنية والمواد المعدنية قد تفوقت فى العلف الناتج من البرسيم المصرى غير المخلوط عن الاعلاف الناتجة من الشوفان والجلبانه منفردة او الناتجة من المخاليط المختلفة .