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STUDIES ON TREATMENTS RESULTS FROM COWS WITH OVARIAN DISORDERS IN RELATION TO YEAR AND SEASON

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ABSTRACT. The studies were performed in the dairy farm from Dancu Research and Development Station for Cattle Breeding, Iaşi, Romania, for a period of 5 consecutive years (2007- 2011), an effective annual rolled of 450 cows Bălțată cu Negru Românească (Romanian Black Spotted) breed.The experimental groups were composed of cows with anoestrus in 60 days postpartum interval, diagnosed by rectal examination with various ovarian disorders: persistent corpus luteum - group E1-162 cows and luteal cysts- group E2-138 cows. The treatments according to diagnosis were applied: PGF2α-,500 mcg/cow- group E1 and Gn-RH, (Receptal, 5 ml/cow-group E2). In relation to the year in which treatments were applied some variations in reproduction indices were found. Regarding to average intervals from treatment to first insemination and from treatment to conception respectively, significant differences were not found. Regarding to average conception rates after treatments, significant differences were found: in E1group, conception rate at the first insemination was 30,9% (with annual variations between 15,0% in 2008 and 41,1% in 2009) ($p<0,01$); per total insemination was 64,42 % (with annual variations between 44,7% - 2011 and 76,9% - 2007) ($p<0,001$) and pregnancy index was of 2,4 (with annual variations between 1,9 - 2009 and 2,8 – 2008); in E2 group, conception rate to first insemination was 25,96% (with annual variations between 16,66% - 2011 and 40% - 2010) ($p<0,01$); per total insemination was 77,88% (with annual variation between 52,17% - 2008 and 85,0% - 2010) ($p<0,001$) and pregnancy index of 2,4 (with annual variations between 2,1 - 2007 and 2,6 - 2008 and 2009). In relation to season in which treatments were applied, we found different variations in conception rates: in group E1, the average conception rates at the first insemination were between 24,24 % (autumn) and 40,7% (summer) ($p<0,05$) and per total inseminations between 75,0% (spring) and 85,71% (autumn) ($p<0,05$); in group E2, the average conception rates at the first insemination were between 5,3% (summer) and 48,5% (spring) ($p<0,001$) and per total inseminations between 68,4% (summer) and 81,8% (spring) ($p<0,05$). We believe that annual and seasonal variations found in this work are due to some deficiencies of management system in

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dairy farms, such as the stalls prolonged maintenance and lack of active movement in the cold season, inadequate microclimate of shelters, heat stress and deficiencies in cows feeding , especially those with higher milk production.

Key words: Dairy cows; Anoestrus; Treatment; Persistent corpus luteum; Ovarian cyst; Year; Season.

REZUMAT. Studii privind rezultatele tratamentelor la vaci cu tulburări ovariene în funcţie de an şi sezon. Studiile au fost realizate în ferma de vaci de lapte de la Staţiunea de Cercetare-Dezvoltare pentru Creşterea Bovinelor Dancu, Iaşi, pe o perioadă de 5 ani consecutivi (2007-2011), pe un efectiv rulat anual de 450 de vaci din rasa Bălţată cu Negru Românească. Loturile experimentale au fost alcătuite din vaci cu anestru în perioada de 60 zile postpartum, diagnosticate prin examen transrectal cu diferite tulburări ovariene: corp luteal persistent - lot E1-162 capete şi chişti luteinici, lot E2-138 capete. Tratamentele au fost aplicate conform cu diagnosticul stabilit: PGF2α - 500 mcg/vacă - lot E1 şi Gn-RH, (Receptal, 5 ml / vacă) - lot E2. În funcţie de anul în care tratamentele au fost aplicate s-au constatat unele variaţii privind indicii de reproducţie realizaţi. În privinţa intervalelor medii de la tratament la prima inseminare şi, respectiv, până la concepţie nu s-au constatat diferenţe semnificative. În privinţa ratelor de concepţie după tratament s-au constatat diferenţe semnificative: în lotul E1, rata concepţiei la prima însămânţare a fost de30,9% (cu variaţii anuale între 15,0% în 2008 şi 41,1% în 2009 ($p<0,01$), pe total însămânţări a fost 64,42% (cu variaţii anuale între 44,7% în anul 2011 şi 76,9% în 2007 ($p<0,001$) şi un indice de gestaţie în medie de 2,4 (cu variaţii anuale între 1,9 - 2009 şi 2,8 - 2008); în lotul E2, rata concepţiei la prima însămânţare a fost de 25,96% (cu variaţii anuale între 16,66% - 2011 şi 40,0% - 2010) ($p<0,01$); pe total însămânţări a fost de 77,88%, (cu variaţii anuale între 52,17% - 2008 şi 85,0% - 2010) ($p<0,001$) şi un indice de gestaţie în medie de 2,4 (cu variaţii anuale între 2,1 - 2007 şi 2,6 - 2008-2009). În funcţie de sezonul în care au fost efectuate tratamentele s-au constatat, de asemenea, variaţii în privinţa ratelor de concepţie: în lotul E1, rata concepţiei la prima inseminare a variat între 26,66% (iarna) şi 34,48% (vara), iar pe total inseminări, între 71,87% (primăvara) şi 85,71% (toamna), cu diferenţe statistic semnificative ($p<0,05$); în lotul E2, rata concepţiei la prima însămânţare a prezentat variaţii între 5,3% (vara) şi 48,48% (primăvara), iar pe total inseminări, valori medii cuprinse între 68,42% (vara) şi 81,80% (primăvara) ($p<0,001$). Considerăm că variaţiile anuale şi sezoniere constatate în prezenta lucrare sunt datorate unor deficienţe ale sistemului de management al fermei de vaci, cum ar fi sistemul de întreţinere în stabulaţie prelungită şi lipsa mişcării active în sezonul rece, microclimatul din adăpost, stresul caloric, precum şi furajarea vacilor, în special a celor cu producţii mai mari de lapte.

Cuvinte cheie: vaci de lapte; anestru; corp luteal persistent; chişti ovarieni; tratament; an; sezon.

INTRODUCTION

Various studies indicate that in the last two decades have shown decreased reproductive performances while raising milk production on cow. Causes that decreased fertility indices in cows with higher milk production are polifactorial, but in most cases are involved the general management of the farm and nutritional metabolic factors (Cavestany and Galina, 2001; Cernescu, 1995; Mwaanga and Janowski, 2000; Roche *et al.,* 2000; Ruginosu *et al.,* 2003; Sheldon *et al.,* 2006).

Lack of oestrus in the range of 60-80 days postpartum, considered pathological anoestrus is an important cause of decrease in cows fertility indices. Many factors are involved in anoestrus etiopathogenesis, such as: dystocia, postpartum uterine infections, including pyometra, higher milk production in early lactation, heat stress. There are indicated uterine or ovarian causes, functional, trophic or inflammatory (Cavestany and Galina, 2001; Cernescu, 1995; Peter *et al.*, 2009; Roche *et al.,* 2000).

Anoestrus caused by ovarian causes is due to a persistent corpus luteum, ovarian cyst LH or an ovarian hypotrophy. Anoestrus caused by a persistent corpus luteum is characterized by a prolonged luteal phase due to lack postpartum luteal regression. The recommended treatment consists in injecting a dose of prostaglandin F2 alpha, or two doses in an 11 days interval and inseminated to showed estrus. It also recommends a dose of Gn-RH analogue at 48-56 hours after PGF2 alpha for to stimulate of ovulation (Day, 1991; Groza, 2006; Hooijer *et al.,* 1999).

Anoestrus caused by cystic ovarian disease is characterized by lack of pre-ovulatory LH wave or its appearance outside the maturing dominant follicle time. Studies have shown that a clear distinction between follicular cysts and luteal cysts could not be done only by rectal examination. Furthermore this distinction was considered of less importance, because both types of cysts are equally sensitive to same treatment, namely Gn-RH (Douthwaite and Dobson, 2000; Drost and Thatcher, 1992).

Methods of treatment of ovarian cysts consist in the injecting of LH activity products, chorionic gonadotropin or progesterone. The most effective treatments proved the Gn-RH analogues, which have the advantage of minimum antigenicity. Treatment with Gn-RH is more recently used and recommended for cows with ovarian cysts, with a variable recovery of animals after treatment from one author to another located between 61-80% of treated cows (Day, 1991; Drugociu , 2001; Groza, 2006; Hooijer *et al.,* 1999; Kesler and Garverick, 1982). Other preparations, such as prostaglandin F2α (PGF2α) and progesterone (vaginal device or implant ear) were also recommended, but with variable results (Drost and Thatcher, 1992).

Results of treatments applied to cows with ovarian disorders vary from one author to another, depending on farm type, the condition of management, environment, heat stress. Aim of this study was to determine the effectiveness of different treatments performed in cows with ovarian disorders according to different factors of variation, such as year and season.

MATERIALS AND METHODS

The studies were performed in a dairy farm from Dancu Research and Development Station for Cattle Breeding, Iaşi, for a period of 5 consecutive years (2007-2011), an effective annual rolled of

450 cows Bălţată cu Negru Românească breed.

The system of cows maintenance was mixed, free, in summer camp in hot season and tied into the shelter during the cold season. Body condition of the animals was good and the average annual milk production was between 6200-6300 liters/normal lactation /cow.

The experimental groups were composed of cows with anoestrus in 60 days postpartum interval, diagnosed by rectal examination with various ovarian disorders: persistent corpus luteum- group E1-161 cows and ovarian cysts- group E2-138 cows. The treatments were applied according to diagnosis: PGF2α-500 mcg /cow- group E1 and Gn-RH, (Receptal, 5 ml/cow) - group E2.

After treatments the following indices breeding were established: interval from treatment to the first artificial insemination, interval from treatment to conception, pregnancy index, conception rates at first artificial insemination, the first two inseminations and per total artificial insemination.

The results were expressed in average values and statistical values and the interpretation was done by Student test.

RESULTS AND DISCUSSION

Analyzing the results of treatments applied to cows with postpartum anoestrus during the 2007 – 2011, interval were found different variations of reproduction indices, depending on the diagnosis, year and seasons when they were made.

Cows with anoestrus due to a persistent corpus luteum (E1group) were inseminated (AI) in an average interval of 14,2 days after treatment, with a range of annual variations between 9,8 days (in 2011) and 17 days (2009) and were diagnosed as pregnant in an average interval of 63,72 days, with a range of annual variation between 53,4 days (2009) and 71,8 days (2011).

Conception rates after treatment had an average value of 30,9% at the first insemination, with the annual variations between 15,0% (2008) and 41,10% (2009), with significant differences ($p<0,01$), after the first two insemination, conception rate has an average value of 50%, with limits of variation ranging from 39,13% (2011) and 61,76% (2009), ($p<0,01$), and per total insemination an average value of 64,42% with annual variations between 44,7% (2011) and 76,9% (2007) with very significant differences ($p<0,001$). Pregnancy index had an average value of 2,4 with a range of annual variations between 1,9 (2009) and 2,8 (2008) (*Fig. 1, Table 1*).

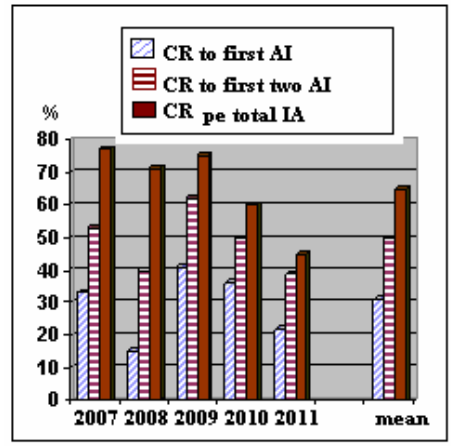

Figure 1- Conception rate (CR) after treatment of cows from E1 group in 2007- 2011 period

Table 1 - The results of treatments made to cows with persistent corpus luteum (E1 group) in 2007-2011 period

Specified	UM	Years					Total
		2007	2008	2009	2010	2011	
cows treated	No.	26	24	39	35	38	161
cows inseminated after treatment	No.	21	20	34	28	23	126
	%	80,7	83,3	85,0	80,0	60,5	78,26
average interval from calving to treatment	days	99,2	116,2	112,4	108,4	100,3	107,3
	min/max	70-150	58-197	61-192	63-198	56-185	56-198
average interval from treatment to first AI	days	14,2	12,9	17,0	16,8	9,8	14,14
	min/max	3-36	5-30	3-34	2-42	2-32	2-42
average interval from treatment to conception	days	62,8	69,0	53,4	61,6	71,8	63,72
	min/max	3-189	5-129	3-181	3-166	4-170	3-189
pregnant cows, total	No.	20	17	30	21	17	105
	%	**76,9*****	70,8	75,0	60,0	**44,7**	64,42
of which: the first insemination	No.	7	3	14	10	5	39
	%	33,3	**15,0**	**41,1****	35,7	21,7	30,9
the first two insemination	No.	11	8	21	14	9	63
	%	52,38	40,00	**61,76****	50,00	**39,13**	50,00
gestation index	No.	2,6	2,8	1,9	2,2	2,5	2,4
	min/max	1-5	1-5	1-4	1-6	1-6	1-6
average interval from calving to conception (SP)	days	164,8	188,7	165,6	169,3	184,5	174,6
	min/max	82-263	83-268	68-312	82-280	112-256	68-312

AI - artificial insemination; * p<0,05 significant differences;** p< 0,01 – distinct significant differences.

Table 2 - The results of treatments made to cows with ovarian cysts (E2 group) in 2007-2011 period

Specified	UM	Years					Total
		2007	2008	2009	2010	2011	
cows treated	No.	27	23	32	31	25	138
cows inseminated after treatment	No.	18	17	31	20	18	104
	%	66,66	73,91	96,87	64,51	72,0	75,36
average interval from calving to treatment	days	126,8	132,4	117,7	110,5	128,2	123,12
	min/max	67-207	62-224	65-186	61-179	69-199	61-224
average interval from treatment to first insemination	days	26	27,1	31,2	22,9	19,1	25,26
	min/max	7-50	9-52	9-57	7-56	7-30	7-56
average interval from treatment to conception	days	60,71	67,7	93,74	61,47	70,70	70,86
	min/max	7-159	10-141	13-200	7-155	7-146	7-200
pregnant cows, total	No.	15	12	23	17	14	81
	%	83,3	**52,17**	74,19	**85,0*****	77,77	77,88
of which: after the first insemination	No.	5	4	7	8	3	27
	%	27,77	23,52	22,58	**40,0****	**16,66**	25,96
after the first two insemination	No.	12	6	12	9	8	47
	%	**66,66*****	**35,29**	38,70	45,0	44,44	45,19
gestation index	No.	2,1	2,6	2,6	2,2	2,5	2,4
	min/max	1-5	1-6	1-7	1-5	1-6	1-6
average interval from calving to conception (SP)	days	172,9	194,6	209,4	181,6	202,5	192,2
	min/max	104-264	90-269	129-298	93-299	88-328	88-328

* p<0,05 significant differences; ** p< 0,01 - distinct significant differences.

Cows with anoestrus due to ovarian cystic (E2 group) were inseminated in an average interval of 25,26 days after treatment, with a range of annual variations between 19, 1 days (2011) and 31,2 days (2009) and were diagnosed as being pregnant in an average interval of 70,86 days, with a range of annual variations between 60,71 days (2007) and 93,74 days (2009).

Conception rates after treatment had an average values of 25,9% in the first insemination, with the annual variations between 16,1% (2011) and 40% (2010), with distinct significant differences ($p<0,01$), after the first two insemination, conception rate has an average value of 35,29% (2008) and 66,66% (2007), and per total insemination an average value of 77,8%, with annual variations between 52,17% (2008) and 85% (2010), with very significant differences ($p<0,001$). The number of inseminations for pregnancy had an average value of 2,4 with a range of annual variations between 2,1 (2007) and 2,6 (2008 and 2009) (*Fig.2, Table 2*).

Analyzing the *indices of reproduction in relation to season* in cows with various ovarian disorders were found variations, in some cases with statistical significance.

Thus, *cows with anoestrus due to persistent corpus luteum (E1 group)* showed the *estrus* average intervals ranging from 12,07 ± 1,541 days in the spring season and 15,59 ± 1,954 days in summer and were diagnosed pregnant at the average interval after treatment between 50, 41 ±8,927 days in summer and 71,38 ±11,190 days in autumn, the differences being statistically not significant (*Table 3*).

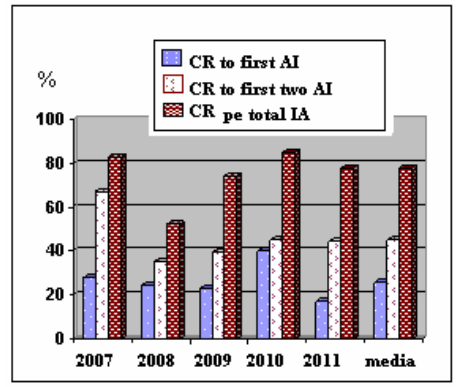

Figure 2 - Conception rate (CR) after treatment of cows from E2 group in 2007- 2011 period

Conception rates showed average values ranging from 26,66% the first insemination (winter) and 34,48% (summer), the first two inseminations values ranged between 43,75% (spring) and 57,20% (autumn) and the total insemination from 71,87% (spring) and 85,71% (autumn), the differences being significant ($p<0,05$) (*Fig. 3, Table 4*).

From *cows with anoestrus due to ovarian cysts (E2 group)* were also found seasonal variations also. The first insemination after treatment period showed to average values ranging from 21,90 ± 1,98 days (winter) and 29,4 ± 2,57 days (summer), and the interval from treatment to conception interval had mean values ranging between 54,33 ± 8,75 days (spring) and 97,80 ± 12,91 days (autumn) (*Table 5*).

Table 3 - Reproductive parameters from cows with corpus luteum (E1 group) after treatment in relation to season

Specified	Estimated statistical	SEASONS				Differences between seasons					
		Sp spring	Su summer	Au autumn	W winter	Sp/Su	Sp/Au	Sp/W	Su/Au	Su/W	Au/W
		n	n	n	n	n	n		n	n	n
interval from calving - treatment	$\overline{X}$ days	103,40	119,70	100,50	100,20	-16,3	+2,9	+3,2	+19,2	+19,5	+0,3
	s^2	23,66	41,93	28,37	26,94						
	$s_{\overline{X}}$	4,47	7,655	4,664	4,208						
	V%	22,87	35,03	28,21	26,88						
	min./max	65/140	55/225	58/174	61/164						
interval from treatment - the first AI	$\overline{X}$ days	12,07	15,59	15,27	15,28	-3,52	-3,2	-3,21	+0,32	+0,31	-0,01
	s^2	8,009	10,15	10,43	10,52						
	$s_{\overline{X}}$	1,541	1,954	1,816	1,989						
	V%	66,33	65,11	68,32	68,86						
	min./max	2/32	3/36	2/38	2/42						
Interval from treatment - conception	$\overline{X}$ days	66,42	50,41	65,96	71,38	+16,01	+0,46	-4,96	-15,2	-20,97	-5,42
	s^2	56,24	43,73	50,69	71,38						
	$s_{\overline{X}}$	12,27	8,927	9,579	11,19						
	V%	84,66	86,74	76,84	79,93						
	min/max	2/189	3/166	3/200	3/181						
calving interval	$\overline{X}$ days	168,47	167,40	167,20	169,90	+1,07	+1,27	-1,43	+0,2	-2,5	-2,7
	s^2	53,672	56,22	62,74	46,98						
	$s_{\overline{X}}$	11,71	11,02	12,07	9,214						
	V%	31,857	33,58	37,53	27,64						
	min/max	85/260	82/293	68/312	88/283						

Table 4 - Conception rates from cows with corpus luteum (E1 group) after treatment in relation to season

Specified		UM	SEASONS				Differences between seasons					
			Sp spring	Su summer	Au autumn	W winter	Sp/Su	Sp/Au	Sp/W	Su/Au	Su/W	Au/W
cows treated		No	38	36	42	46						
cows inseminated after treatment		No	32	29	35	30						
		%	**84,21**	**80,55**	**83,33**	**65,21**	**-3,66**	**-0,88**	**+19,00***	**+2,78**	**+15,34***	**+18,12 ***
pregnant cows, total of which:	total	No	23	24	30	22						
		%	**71,87**	**82,75**	**85,71**	**73,33**	**-10,88***	**-13,84***	**-1,46**	**+2,96**	**+9,42**	**+12,38***
	G1	No	9	10	12	8						
		%	**28,12**	**34,48**	**34,28**	**26,66**	**- 6,36**	**-6,16**	**+1,46**	**+0,2**	**+7,82**	**+7,62**
	G2	No	5	5	8	7						
		%	**16,66**	**17,24**	**22,86**	**23,33**	**-0,58**	**-6,2**	**+6,67**	**-5,09**	**-6,09**	**-0,47**
	G1+G2	No	14	15	20	15						
		%	**43,75**	**51,72**	**57,20**	**50,00**	**-7,97**	**-13,45***	**-6,25**	**+5,48**	**+1,72**	**-7,20**
gestation index		$\overline{X}$	**2,57**	**1,961**	**2,464**	**2,346**	+0,609	+0,106	+0,224	-0,503	-0,385	-0,118
		s^2	1,567	1,341	1,373	1,412						
		$s_{\overline{X}}$	0,342	0,263	0,259	0,277						
		V%	60,95	68,36	55,75	60,20						
		min/ max	1/ 6	1/ 5	1/ 6	1/ 5						

* p<0,05 significant differences; ** p< 0,01 - distinct significant differences.

Table 5 - Reproductive parameters from cows with ovarian cysts (E2 group) after treatment in relation to season

Specified	estimated statistical	SEASONS				Differences between seasons					
		Sp spring	Su summer	Au autumn	W winter	Sp/Su	Sp/Au	Sp/W	Su/Au	Su/W	Au/W
		n	n	n	n	n	n		n	n	n
Interval calving-treatment	$\overline{X}$ days	116,46	123,70	119,10	114,50	-7,24	+2,64	+1,96	+4,6	+9,2	+4,6
	s^2	37,97	45,76	41,20	38,15						
	$s_{\overline{X}}$	5,930	9,542	6,774	6,745						
	V%	32,60	36,99	34,58	33,30						
	min./max	62-199	67-208	64-216	57- 207						
Interval treatment to the first AI	$\overline{X}$ days	29,12	29,42	25,69	21,90	-0,3	+3,43	+7,22	+3,73	+7,52	+3,79
	s^2	20,303	11,200	8,235	9,104						
	$s_{\overline{X}}$	3,482	2,571	1,615	1,986						
	V%	69,728	38,09	32,05	41,563						
	min./max	7-199	12-56	11-37	3- 37						
Interval treatment - conception	$\overline{X}$ days	54,33	77,46	97,80	76,50	-23,13	-43,47	-22,17	-20,34	+0,96	+21,3
	s^2	45,50	14,00	40,84	54,98						
	$s_{\overline{X}}$	8,75	3,616	12,91	13,74						
	V%	83,74	18,07	41,76	71,87						
	min/max	7-199	17-129	21-155	7-189						
Calving interval	$\overline{X}$ days	174,40	200,70	205,20	189,20	-26,3	-30,8	-14,8	-4,5	+11,5	+16,0
	s^2	45,82	46,27	58,12	51,69						
	$s_{\overline{X}}$	8,65	12,83	12,99	12,92						
	V%	26,27	23,04	28,32	27,31						
	min/max	88-272	109-273	93-299	108-298						

Table 6 - Conception rates from cows with ovarian cysts (E2 group) after treatment in relation to season

Specified		UM	SEASONS				Differences between seasons					
			Sp spring	Su summer	Au autumn	W winter	Sp/Su	Sp/Au	Sp/W	Su/Au	Su/W	Au/W
cows treated		n	43	24	39	32						
cows inseminated after treatment		n	33	19	26	21						
		%	**76,74**	**79,17**	**66,66**	**65,62**	**-2,43**	**+10,08***	**+11,12***	**+12,51***	**+14,12***	**+1,04**
pregnant cows, total of which:	total	n	27	13	20	16						
		%	**81,8**	**68,42**	**76,92**	**76,19**	**+13,38***	**+4,88**	**+5,61**	**-8,5**	**-7,77**	**+0,73**
	G1	n	16	1	3	3						
		%	**48,48**	**5,3**	**11,5**	**14,3**	**+43,18*****	**+36,98*****	**+34,18*****	**-6,2**	**-9,0**	**-2,8**
	G2	n	3	6	4	6						
		%	**9,1**	**31,6**	**15,38**	**28,6**	**-22,5****	**-6,28**	**-19,5***	**+16,22***	**+3,0**	**-13,22***
	G1+G2	n	19	7	7	9						
		%	**57,57**	**36,84**	**26,92**	**42,85**	**+20,73****	**+30,65*****	**+14,72***	**+9,92**	**-6,01**	**-15,93***
gestation index		$\overline{X}$	**1.857**	**2.538**	**2.850**	**2.750**	-0,681	-0,993	-0,893	-0,312	-0,212	+0,100
		s^2	1,238	0,877	1,226	1,527						
		$s_{\overline{X}}$	0,234	0,243	0,274	0,382						
		V%	66,699	34,55	43,011	55,546						
		min/ max	1/5	1/4	1/6	1/6						

* p<0,05 significant differences; ** p< 0,01 - distinct significant differences; *** p <0,001, very significant differences.

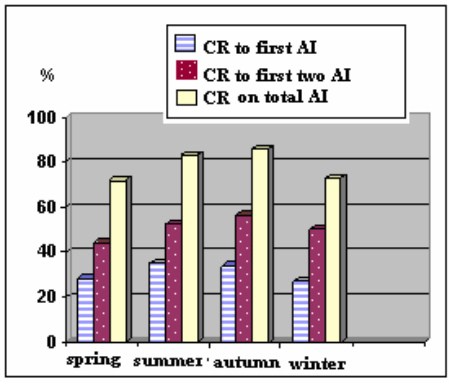

Figure 3 - Conception rate(CR) after treatment of cows from E1 group in relation to season

Conception rates in *cows with anoestrus due to ovarian cysts (E2 group)* recorded seasonal variations to the first insemination (AI) between 5,3% (summer) and 48,48% (spring), after the first two inseminations values ranged between 26,92% (autumn) and 57,57% (spring) and the total inseminations ranged between 68,42% (summer) and 81,8% (spring) with distinct significant differences ($p<0.01$) (*Fig. 4, Table 6*).

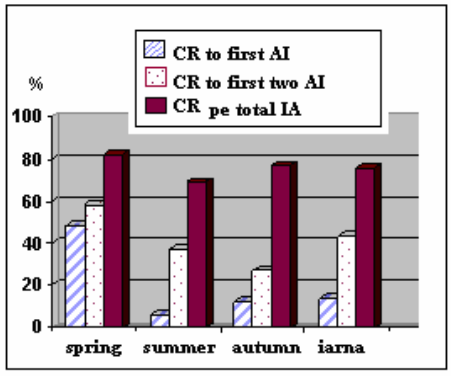

Figure 4 - Conception rates(CR) after treatment of E2 group in relation to season

Comparing our results with those of other authors we found similar situations or on the contrary some differences.

Using the treatment with gonadotrophin-releasing hormone (GnRH), some authors have achieved oestrus induction in cows with ovarian cysts within a 4 weeks after treatment (Kesler D.J. and Garverick H.A., 1982). Other authors achieved a recovery of animals after treatment between 61-77% (Drost and Thatcher, 1992). In studies of Kesler and Garverick (1982) indicate that the cows exhibit estrus about 21 days following GnRH treatment, the conception rate at the first estrus after GnRH treatment has been reported to be 40 to 50%. The interval from GnRH treatment to estrus has been reduced by administering prostaglandin (PG) F2 α to 9 days after Gn-RH.

PGF2 α appears to regress the luteinized ovarian cysts and cows exhibit estrus 2 to 3 days after treatment (11 to 12 days after Gn-RH). Other preparations, like prostaglandin F2α (PGF and progesterone (intravaginal device or ear-implant) have also been used with variable results (Kesler and Garverick, 1982; Leslie and Bosu, 1983; Douthwaite and Dobson, 2000).

We believe that some factors of general management of dairy farms, such as the stalls prolonged maintenance, lack of active movement, unfavorable microclimate conditions of shelter, heat stress and some deficiencies in the feeding

system of cows, especially those with higher milk production have a negative influence on reproductive function and on efficiency of different treatments for ovarian disorders also.

To increase the efficiency of reproduction activity of dairy cows, especially of those with higher production levels, it requires urgent measures to minimize heat stress by the modernization of animal shelters, improvements which were started and are now in progress in the farm.

CONCLUSIONS

In relationship to the year and season in which treatments were applied we found some variations in reproduction indices.

Cows with anoestrus due to a persistent corpus luteum (E1 group) following indices were recorded:

- median time from treatment to the first insemination of 14,14 days, with annual variations ranging from 9,8 days (2011) to 17 days (2009);

- median time from treatment to conception of 63,72 days, with annual variations ranging from 53,4 days (2009) to 71,8 days (2011);

- conception rates (CR) had annual variations with statistical significance: RC to first insemination after treatment of 30,9%, with variations between 15,0% (2008) and 41,1% (2009) ($p<0,05$); RC total insemination of 64,42%, with variations between 44,7 % (2011) and 76,9% (2007) ($p<0,001$);

Cows with anoestrus due to ovarian cysts (E2 group) following indices were recorded:

- median time from treatment to the first insemination of 25,26 days, with annual variations ranging from 19,1 days (2011) to 31,2 days (2009);

- median time from treatment to conception of 70,86 days, with annual variations ranging from 60,71 days (2007) to 93,74 days (2009);

- conception rates (CR) had annual variations with statistical significance: RC to first insemination after treatment of 25,96%, with annual variations ranging from 16,66% (2011) to 40,0% (2010) ($p<0,01$); RC total insemination of 77,88%, with annual variations ranging from 52,17 % (2008) to 85,0 % (2010) ($p<0,001$).

In relation to the season there were different variations in two groups:

The cows of E1 group showed an average interval from treatment to the first insemination with seasonal variations ranging from 12,07 ± 1,541 days (spring) to 15,59 ± 1,954 days (summer); an average interval from treatment to conception ranged from 50, 41 ± 8,927 days (summer) to 71,38 ± 11,190 days (autumn); conception rates at first insemination between 26,66% (winter) and 34,48% (spring); the first two inseminations from 43,75% (spring) to 57,20% (autumn) ($p<0,05$) and on the total insemination from 71,87% (spring) and 85,71% (autumn) ($p <0.05$).

The cows in E2 group showed an average interval from treatment to the

first insemination with seasonal variations ranging from 21,90 ± 1,986 days (winter) to 29,42 ± 3,482 days (spring); the interval from treatment to conception ranged from 54,33 ± 8,75 days (spring) to 97,80 ± 12,91 days (autumn); conception rates (CR) to first insemination were between 5,30% (summer) and 48,48% (spring) ($p<0,001$); CR to the first second inseminations between 26,92% (autumn) and 57,57% (spring) ($p<0.001$) and on total inseminations between 68,42% (summer) and 81,80% (spring), with statistically significant differences ($p<0,05$).

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