

EFFECT OF SEASONS AND BREED ON THE PERCENTAGE OF INFERTILITY AMONG COWS IN MEASAN

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ABSTRACT

Through a complete year a 1000 cows were subjected to asexual health examination two hundred and ten cases of affection with infertility problems were discovered in local Iraqi cows (Al-Jenubi) and their crosses with Fresian. It was found that 88 cows (41.9%) as anestrus, they were 28 cows (13.33%) local cows and 60 cows (28.57%) crosses cows and the percentage of anestrus did not affected by certain seasonal trend, and 49 cows (23.33%) were affected by repeat breeder, 17 cows (8.09%) of them were local cows and 32 cows (15.23%) were crosses cows and the higher percentage of repeat breeders was in summer season. Uterine infection were 73 cows (34.76%) cases divided as 45 cows (21.42%) local cows and 28 cows (13.33%) crosses cows and they were not affected by acertian season with the exception of their highest incidence in winter. The results shows that the percentage of cross cows higher than the percentage of local cows significantly ($p < 0.01$).

There is not significant correlation between seasons and affection cows with infertility. But the results shows that the local breed is more resistant to infertility problems than cross breed.

INTRODUCTION

Heat stress reduces the expression of estrous behavior (1) alters follicular development (2 and 3) and the growth and function of the dominant follicle (4), compromises oocyte competence (5) and inhibits embryonic development (6). The quantification of the effect of heat stress is further complicated because it has both a concurrent and delayed effect on the reproductive system (7 and 8). Consequently, heat stress reduces fertility of female (9) and male (10), resulting in reduced reproductive performance (11). Seasonal and thermal stress are detrimental to reproductive efficiency of dairy cows (12) and alter endocrine function and follicular dynamics (3, 4 and 8).

Environments of high temperatures and humidity are detrimental to the productivity of commercial animal agriculture (13 and 14). Farm animals have known zones of thermal comfort that are primarily dependent on the species, the physiological status of the animals, the relative humidity, and velocity of ambient air, and the degree of solar radiation. Thus heat stress is chronic in nature, there is often little relief from the heat during the evening hours, and intense bursts of combined heat and humidity further depress performance. Heat production and accumulation, coupled with compromised cooling capability because of environmental conditions, causes heat load in the cow to increase to the point that body temperature rises, intake declines and ultimately the cow's productivity declines. Heat stress is responsible for important economic losses in the dairy industry. At thermoneutrality, the cow can maintain homeostasis without excessive use of energy for thermoregulation; hence, energy is available for maintaining optimum conditions of health and performance. When heat load increases, the animal has direct energy to eliminate excessive heat in order to maintain internal thermal balance. This is not always sufficient.

Consequently, body temperature increases, which in turn affects various body functions.

There have been many studies on the effect of heat stress on both reproduction and production (5).

One of the greatest challenges to production facing dairy farmers in the south of Iraq is heat stress. Climatic conditions in the South are such that the warm (or hot) season is relatively long, there is intense radiant energy for an extended period of time, and there is generally the presence of high relative humidity. The objectives of this study were to determine affect the season and breed on the percentage of infertility among cows in measan.

MATERIAL AND METHODS

Animals for this study were examined over a period of two years from January 2002 to December 2004 at 30 cow farms in Measan city in the south of Iraq. All together 1000 Al-jenubi cows and its crossbreed with Fresian were subjected to clinical examination for various causes of infertility and / or sterility. The animals belonged small farms were managed under the same nutritional, managerial, and environmental conditions. The type of infertility causes were determined during summer (July and August), winter (December and January), and spring (April and May) and Autumn (February and March) of two consecutive years in Iraq. These 2-months periods were selected because the maximum, minimum, and intermediate ambient temperatures typically occur during these periods. Daily high, low, and mean ambient temperatures were determined from temperatures recorded. Data on general farm management variables and reproductive histories were collected from study farms by questioning the owners. The clinical examination of each Al-jenubi and crossbreed cows including rectal palpation of genitalia and vaginal inspection by vaginoscopy was conducted to determine the percentage of the infertility causes.

All these cows were failed to conceive after three or more natural inseminations. The percentage of each type of infertility causes were estimated and the extent of its relation and correlation with seasons and breed of the animal were also estimated. The results reported were classified as anestrus, repeat breeder and uterine infection. Breeding history was recorded that included last date services, previous number of services provided and number of previous parturitions. Comparison between affected animals of different cases of both breed types were done by using chi-test according to (15).

RESULTS AND DISCUSSION

It is clear from table-1- The percentages of anestrus were 41.9% ; It is 31.81% and 68.18% for each of the local and cross cows respectively. It is clear that it is significantly higher for cross than for local taking the same trends. These percentages are almost the same as percentage found by (16) when they found a percentage of 41%. The high percentage of anestrus may be due to nutritional deficiency and bad or weak nutritional regimes or practices followed in cattle rearing and failure of husbandary methods in addition to poor housing. The same causes are mentioned by (17). Table (2) and (3) shows that percentage of anestrus did not affected by certain seasonal trend: it resembles what is found by (16,18). In this respect unlike their findings of the highest incidence during spring; The present study found highest incidence during summer.

In dairy herds with seasonal breeding systems, cows not detected in estrus by a specific calendar date, which is nominated as the start of the breeding period, are defined as anestrus. These animals may have delayed ovulation (a nonovulatory anestrus) or have

ovulated without being detected in estrus, or have calved late and not had sufficient time to resume estrous cycles postpartum. Herds with extended calving patterns may have a large proportion of anestrous cows at the start of the breeding period, simply due to a high proportion of late calving cows. In practical terms, all cows not having displayed estrus at the start of the breeding period need to be examined and treated, irrespective of calving date, in order to maintain the seasonal calving pattern.

A nonovulatory anestrous cows have a lesser percentage of animals detected in estrus in the first 3 wk of the breeding period and longer intervals to conception than cows that have displayed estrus by the start of the breeding period (19). Between (10 -30%) of cows that have not been detected in estrus by the start of the breeding period have a detectable corpus luteum at veterinary examination. These cows have reduced pregnancy rates in the first 28 day of the breeding period and have greater no pregnancy rates at the end of the breeding period (compared with cows that have been detected in estrus (20).

A repeat breeder is generally defined as any cow that has not conceived after three or more services associated with true estrous. It is clear from table (1) that overall percentage of repeat breeder is 23.33%; The percentage of cross cows exceeds the percentage of local cows significantly ($p < 0.01$) they are 15.23% and 8.09% respectively. These percentages are regarded high if they compared with percentage found by (21) when they found a percentage of 10%. The causes of higher affection of cross breed cows may be that the local breed is more adapted and acclimatized to the local environmental conditions of the hot climate, high humidity and dirty food materials.

Table (2) and (3) shows that higher percentage of repeat breeders was in summer season and it resembles what is found by (17) which is found that the higher percentage of repeat breeder in January and February (winter). Specific and non-specific infectious agents during pre and postpartum periods frequently invaded the uterus and produces metritis and endometritis leading to repeat breeding. The isolation of the micro-organism with histopathological studies of uterine endometrium by biopsy are known to be importance in the diagnosis, prognosis and treatment of repeat breeding cows (4). Many times the repeat breeder is negative on culture, there have been many studies on the effect of heat stress on both reproduction and production (5).

Significantly lower conception rates have been observed in cows with above-normal body temperatures at the time of insemination because of low fertilization and a high incidence of embryonic deaths (13).

The viability of both the ova and the spermatozooids is significantly lowered when body temperatures are higher than normal, which results in lowered fertility. High temperatures affect the development of young embryos, which are most vulnerable in the first few days of life (6). There is also a negative effect on the incidence of standing estrous and on the intensity and duration of estrous. In addition, it has been observed that heat stress might prevent or delay ovulation (4 and 22).

Specific and non-specific uterine infections are considered of the most important causes of infertility and sterility in cattle not only in Iraq but in the most countries of the world as mentioned by (23). In this research the percentage of uterine infections is 34.37% while (17) found percentage of 63%.

The above mentioned worker has given reasons to increase of uterine infections that grazing range to the cows in Basrah is very limited due to the lack of very wide places of grazing, this cause force the owners to keep their cows for along period especially in winter inside their sheds of little suitable sanitary measures leading to pollution of their genital tracts by micro-organisms while in mean the cows spend most of the time in

grazing which made them far from possibility of pollution and affection by micro-organisms which predominant in buildings crowded with animals and are hot and humid.table (1) shows that the incidence of uterine infection are significantly higher in crosses than in local breed of cows($p < 0.01$) due to the more adapton of local breed to the environmental and have higher ability to resist the infectious organisms that invade the genital system.table (2) and (3) shows that uterine infection do not tend to have a seasonal trend ;it means that they are not affected by acertian season except of their highest incidence in winter , this may be due to an increased cases during the most suitable optimal temperture in winter these results agreed with that found by(17).

Table-1-effect the breed on the percentage of infertility type among cows in maisan.

Infertility type	local	%	cross	%	NO.	%
ANESTRUSE	28	13.33	60	28.57	88	41.9
REPEAT BREEDER	17	8.09	32	15.23	49	23.33
UTERINE INFECTION	45	21.42	28	13.33	73	34.76
TOTAL	90		120		210	

Table-2-effect the seasons on the percentage of infertility type Among local cows in maisan.

Infertility type	winter	spring	summer	autumn
anestruse	5	5	11	7
Repeat breeder	2	3	9	3
Uterine infection	20	10	8	7
total	26	17	32	15

Table-3- effect the seasons on the percentage of infertility type Among cross cows in maisan.

Infertility type	winter	spring	summer	autumn
anestruse	13	15	18	14
Repeat breeder	3	7	16	6
Uterine infection	13	7	4	4
total	29	29	38	24

تأثير الفصل والسلالة على نسبة العقم للإبقار في ميسان

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الخلاصة

خلال سنة كاملة تم اجراء الفحص الصحي التناسلي على 1000 بقرة وتم اكتشاف 210 حالة متأثرة بمشاكل العقم الوقتي في الإبقار العراقية المحلية والإبقار المضرية منها مع الفريزيان، وكانت 88 بقرة (41.9%) لعدم الشيق، والتي كانت 28 بقرة (13.33%) إبقار محليه، و 60 بقرة (28.57%) إبقار مضرية ولم تتأثر نسبة انعدام الشيق بنزعة فصل معين، وكانت 49 بقرة (23.33%) مصابه بتكرار الشيق، من ضمنها 17 بقرة (8.09%) إبقار محليه و 32 بقرة (15.23%) إبقار مضرية وكانت اعلى نسبة لتكرار الشيق في فصل الصيف، كانت اصابات الرحم 73 بقرة (34.76%) توزعت 49 بقرة (21.42%) كإبقار محليه و 28 بقرة (13.33%) إبقار مضرية ولم تتأثر النسبة بفصل معين عدا نسبتها المرتفعه في الشتاء. اظهرت النتائج تفوق نسبة الإبقار المضرية على نسبة الإبقار المحليه معنويا وعلى مستوى 0.01 وعدم وجود ارتباط معنوي بين الفصول والإبقار المصابه بالعقم كما واطهرت النتائج زيادة مقاومة الإبقار المحليه لمشاكل العقم على مقاومة الإبقار المضرية.

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