

Pregnancy Rate in Synchronized Iraqi Awassi Ewes Inseminated Artificially and Naturally

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Abstract

This study was carried out to evaluate the efficacy of imported Australian frozen semen straws in achieving successful artificial insemination program in estrus synchronized ewes. This study conducted on twenty-one Awassi ewes, aged 2 - 4 years, and four fertile rams (two rams for natural mating and two for detecting of estrous by using apron) in Baghdad province (Rumintia Research station, department of animal resource research, state Board for Agriculture Research, Ministry of Agriculture/ Abu Ghraib district), for the period from November 2020 to March 2021. Pregnancy diagnosis was done by ultrasound to detect reproductive status of the ewes, then all non-pregnant ewes were synchronized by using vaginal sponges (60 mg of Medroxy acetate Progesterone / MAP) for 10days plus 500IU of Pregnant Mare Serum Gonadotropin (PMSG) in day 10, all animals were divided randomly into three equal groups each of seven ewes according to the type of insemination, G1 (1straw) and G2 (2 straws/ 8 hrs. interval) and G3 serviced naturally by fertile rams then the females were isolated from the males. The response of animals to hormonal treatment was 21, with a response rate of 100% in all groups with no significant difference with mean durations of response recorded 63.6 ± 11.7 , 66.7 ± 12.2 , and 62.8 ± 10.7 for the three groups, respectively. The pregnancy rate with single, double AI and natural mating was 41.86 and 71.41 and 71.42 percent, respectively with a highly significant difference ($P < 0.01$) between G1 and G2. In conclusion, under field conditions, double AI with 20×10^6 sperm proved to be suitable for generating high pregnancy rates in Iraqi Awassi ewes.

Keywords: Ewe, Artificial insemination, Natural mating, Frozen semen.

Introduction

Ewes are considered one of the economically important farm animals in Iraq, as their meat consumption comes first, and their numbers were estimated for the year 2006 to be approximately 8,893,712. Therefore, improving their reproductive performance is an important input to increase their production efficiency, one of the encouraging things to do this improvement is that local ewes are characterized by their reproductive capacity throughout the year^[1]. Reproductive technologies such as controlling estrus, superovulation, and the appropriate timing of

artificial insemination that were used in the field of animal improvement were developed^[2] Therefore, the correct use of these technologies in the field of reproductive management, work to increase the reproductive efficiency of animals^[3] Among these important technologies that have been referred to is the artificial insemination technology. Ewes can be inseminating at any time of the year^[3] , There are several methods of performing artificial insemination in small ruminants, vaginal AI, cervical AI, trans-cervical AI, and laparoscopic intrauterine AI. . The percentage of artificial insemination pregnancy varies

depending on the artificial insemination method and the type of semen used (fresh or frozen)^[4].

Materials and Methods

This study was carried out to evaluate the efficacy of imported Australian frozen semen straws in achieving successful artificial insemination program in estrus synchronized ewes. This study conducted on twenty one Awassi ewes, Aged 2 - 4 years, and four fertile rams (two rams for natural mating and two for detecting of estrous by using apron) in Baghdad province (Rumintia Researches station ,department of animal resource researches, state Board for Agriculture Researches ,Ministry of Agriculture/ Abu Ghraib district) , for the period from November 2020 to March 2021. Pregnancy diagnosis was done by ultrasound to detect reproductive status of the ewes, then all non-pregnant ewes were synchronized by using vaginal sponges (60 mg of Medroxy acetate Progesterone / MAP) for 10days plus 500IU of Pregnant Mare Serum Gonadotropin (PMSG) in day 10, all animals were divided randomly into three equal groups each of seven ewes according to the type of insemination, G1 (1straw) and G2 (2 straws/ 8 hrs. interval) and G3 serviced naturally by fertile rams then the females were isolated from the males. All ewes were subjected to ultra-sonographical trans rectal and trans abdominal examination by using probe (8 MHz trans-rectal probe and 4 MHz trans-abdominal probe) starting from day40 post mating and AI.

Results and Discussion

The estrus response of ewes (table 1) to hormonal treatment protocol for synchronization which included 60 mg MAP sponges for 10 days and 500 I.U (I.M) PMSG at the time of sponge's withdrawal, was 100% (7/7) in all groups with no significant differences ($P < 0.05$). These results showed that the treatment

was very effective to induce synchronized estrus in ewes, it was also agreed with^[5] who obtained estrus response of 96% after using the same synchronization protocol. These findings also consistent with those of ^[5] , who got a 55.5 % estrus response. The differences in response rate between various experiments may be attributed to the period of conducting experiment and differences in genetics between breeds of ewes. The pregnancy rate was 42.85% in G1 who were artificially inseminated with a single straw of Australian frozen semen, 71.42 % in G2 that were artificially inseminated with a double straw of Australian frozen semen, and 71.42 % in G3 which were mated naturally with fertile rams, as referred in the table (1). These findings were concurring with^[6] , who discovered that a double artificial insemination with 200×10^6 sperm resulted in high pregnancy rates in Bangladeshi ewes and nearly like that of ^[7] When recording a pregnancy rate near to 70% in an experiment included several groups. However, the percentage we obtained for double artificial insemination was higher than that obtained by^[6] , which were 20.8 % and 26.1 %, respectively. The low percentage of pregnancy rate that recorded by some researchers may be due to the origin of frozen semen which might be of low activity and may also be due to differences in the period of conducting the experiments^[8]. discovered that fresh semen had higher fertility than frozen-thawed semen in cervical insemination. Natural mating and double artificial insemination had no significant differences, which could indicate that the double insemination is very close to natural mating in terms of the high quantity of spermatozoa put into the female genital tract. And it was higher than the findings of^[6] , which were 16.7%, while it was like the findings of^[9] , who found a percentage of 46.7 % in Turkish Awassi ewes, and less than the findings of^[10] , which were 60 % and 61 % respectively.

Table (1) Type of insemination, animals response, and pregnancy rate

Groups	No. of animal	Type of treatment	Type of insemination	Animals' response		pregnancy rate	
				No.	%	No.	%
G1	7	MAP60mg /10d with 500 IU of PMSG	A.I (single dose)	7	100	3	42.85 b
G2	7	MAP60mg /10d with 500 IU of PMSG	A.I(double dose)	7	100	5	71.42 a
G3	7	MAP60mg /10d with 500 IU of PMSG	Natural mating	7	100	5	71.42 a
Total	21			21	100%	13/21	

Different small letter means sig. diff. between groups (P < 0.01)

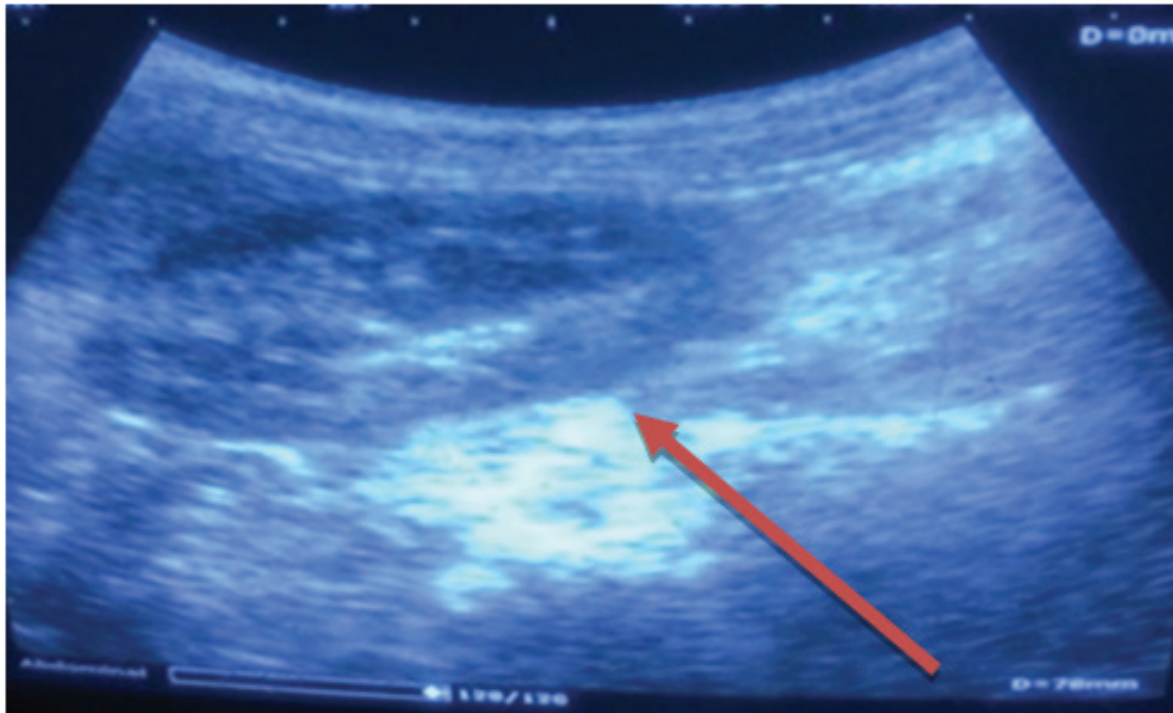


Fig (1) fetus at 74 days of gestation in Iraqi Awassi ewe / Trans-abdominal probe (4 MHz)



Fig (2) fetus at 74 days of gestation in Iraqi Awassi ewe / Trans-abdominal probe (4MHz)

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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