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Investigating the Production Differences of Generations of Foreign Cows with Kandhari in Environmental Conditions of Afghanistan

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Abstract: ***Crossbreeding is one of the most effective ways to improve production and increase resistance to the environmental conditions of cattle breeding. This study was conducted in 2020 as a questionnaire to determine the differences in production of Holstein cows, withBrowns wise and Jersey overweight calves, milk production, and lactation in the Afghan environmental condition. this study on 12 cows,from two crossbred breeds of cows, which 4 was a Holstein breed with Kandhari, 4breeds of cows was Kandhari with Brown Swise, and 4 anther breeds of cows were Kandhari withjersey, and the present study conducted in all three generations of F1 hybrids. Also, for this study 12 hybrids calf's generation studied from individuals of four crossbred cows, calves from each generation under study were studied from the point of view of live birth weight at birth. The statistical population of the study consisted of livestock department, animal clinic, cattle breeding record, veterinarian and animal husbandry, including 100 persons selected randomly. Data has been analyzed through from Excel program. The results of the study indicate that calf birth weight improves significantly in the hybrid breeds, as a result of the calf's live birth weight Kandhari was 25 kg at the time of calving, before of crossbreeding. After cross With Holstein 35 kg, with BrownsSwise33 kg and with Jersey 26 kg, as the milk production of Kandhari cows was 1500 kg before crossbreeding, and after crossed with Holstein, browns swise and Jersey respectively were 3000, 2600 and 1850 kg. And the lactation of Kandhari generation was 183 days and cross-generations Modified Holstein, Browns swise, and Jersey were increased to respectively 270, 230 and 192 days, The results of this study show that the highest calf birth weight, milk production and lactation were respectively between hybrids of Holstein-Kandhari, Brownswiss-Kandhari and Jersey-Kandhari. While the Kandhari cows had lowest calf weight during the births, milk yields and lactation compared to the crossbred of anther generations under this study.***

Keywords: Environmental adaptation, crossbreeding, live weight and breeding

1. Introduction

Aimal (1363) and Karimi (1390) state that local cattle in the country, exception of Kunari, Kandhari and Sistani of cattle breeding are very low yielding stock. Ahmadi (2011) writes that among the generations in Afghanistan, the Kandhari generation has a larger body than other local generations and produces relatively more milk. Zafar (2004) and Karimi (2012) state in a survey called Animal Genetic Resources of Afghanistan that there are four local generations known in Afghanistan, namely Kandhari, Kunari, Sistani, and another local generation, and Kandhari and Kunari generations spread than another generation. These generations are considered among the best local dairy generations. Qorbani (1378) writes that the milk production of Kandhari breeds is up to 12 kg of milk per day and the lactation is reaches 183 days. Keshtyar (1969) according to a survey in 13 provinces of Afghanistan on milking cows conductedfor four local generations which called Kandhari, Kunari, local generation and Sistani. And interviewed by farmer in 13 province duration milk production and the milk of those cows' weight, the average milk yield of these generations was respectively reported at a lactation of 1825.6, 1085.9 and 1032.04 kg. As Keshtyar from quotation Volan (1969) the breeder reports of the length of lactation in a herd of Kandhari cattle to the Ministry of Agriculture was 6-9 months. According to an author's report, in an experiment conducted on 10 breeding cattle at the Ministry of Agriculture's on dairy farm, they showed lactation was about 43 weeks and average milk production of 686.9 kg. Zafar (2004) states that the average body weight of female cattle of Kandhari breed was 276 kg that conducted on waist circumference by centimeter, the colors varied from black to white, and most were dark with one spot or same. To this observed 20 physicals particularly of cows studied and found that all of them had hump and 5 of them had clearly a low rump. Their milk production during lactation was about 1825.5 kg and their daily milk production was 6.9 kg with 3.35% fat. The above surveys in the Master Plan in (2005) conducted of the Ministry of Agriculture about local cows, the Kandhari breed keeping in Herat, Badghis, Qalat, and North and near of Kandahar areas. The among Afghani Generation Kandhari has a larger body Than another Afghani descendant that known as the area from which they spread. Kunari and Kandhari has been identified the best milking breeds, and the average daily milk yield was respectively 900, 1100, 1000 and 2000 kg. In total, the average milk yield of local generations' is 750 kg. The Department of line bred the Ministry of Agriculture, Irrigation and Livestock, according to the Afghanistan Census and Planning Statistics Yearbook (1378), writes about four famous local cattle generations that Kandhari originate from Kandahar and they are the oldest cattle breed in the country, and It has a larger body than two other generations (Kunari and other local). The Most ranchers are interested in the south and west of the country for maintaining this generation. This generation is resistant to the common animal diseases of the country. Its milk

production during in a lactation ranges are from 1200 to 2,000 kg, which reaches to 6-9 kg to daily. It is usually held in three destinations (milk, meat and labor). The lactation is 183-230 days, and the live weight of the female cow is 250 to 350 kg, and that the male cow is 310-400 kg. According to this source, this breed is considered the best breed of dairy cow and a suitable breed for breeding Holstein and Browns swise and Jersey breeds. Aimal (1385) reports the first milk yield of pure Kandhari was 1147.6 kg, the yield of all pure Kandhari milk was 1329.1 kg, its maturity age was to 24-30 months, calving age 30-36 was months. The Central Afghan Statistical Yearbook and Planning of Kabul Afghanistan (1386) considers the local cattle of country exception, Kunari, Kandhari and Sistani identified non-breeding cattle breeds, and describes very little of in milk yield, but adds that they are agreement with the bad Environmental conditions and Resistance against Diseases and Disasters Resist the environment. Tumid Ali and Quraishi (1393) write, that Kandhari cows have a large body among all of local generations and have hump. Zia (1393) introduces the famous best breeds of cattle, such as Ayrshire, Jersey, Guernsey, Holstein, Brown Swiss and Short Horn. Since the subject of the research is to investigate the differences of production of cattle breeding with Holstein, Browns swiss and Jersey overweight calves, milk production and lactation in the Afghan environment, it is therefore necessary to know about these generations. qorbani et *al*. (1382)write that the Holistic generation is known as the best milkingcows in the whole world and it is currently one of the many breeds in the United States. In America, by breeding, they have been able to obtain cows of this generation that produce up to 21,800 kg of milk in lactation. Hosseini (1390), writes that a Holstein cows average 9,000 kg of milk yield during a lactation. Male live weight is 1000 kg and female weight is 680 kg, puberty age is 13-19 months, first birth is 27 months. But the cross-product of Holstein-Kandhari generation is 17 months of age, and the first birth is 33 months. Among of all generations, Holstein is determined lowest fat content and highest milk production. The color of this generation around the world is black and white or red and white. This breed has been kept in the Haland from 2000 years, and the Dutch people prefer to this animal to be very quiet. This breed is not that good of a graze. Shuhadiy at *all* (1387), in a study to determine the characteristics of Holstein breed production in Iran, shows that the average milk yield is 7164 kg. But Farhang and naimi poor (1385) reports that the average of Iranian Holstein cows is 6440 kg. and Zia (1390), reports the average milk yield 6564 kg. Shuhadiy (1392) report production of the same breed in Japan at an average milk yield 7249 kg. In Afghanistan, too, this generation is brought up and nurtured. Zia (1384) writes that based on the information available from the cattle farm of Bini-hisar of Kabul, the Holstein breed has been used in Afghanistan since 1337 to reform local generations. The production capacity of Holstein hybrids is not as high as that of other Holstein milk producers. On average, this breed produces 17-15 kg of milk per day. If we calculate the average daily milk in a lactation (305) days, the average milk yield of this breed has been 4557-5185 kg. And the female live weight are average 500- 700 kg and the live weight of male are 750-1200kg, the average of calf weight is 44,5 kg. Rashidi et *al.* (1392) state that Holstein grows later from Jersey andAyrshire, and the length of conception is 280days. Rang and et *al* (1389), write that the live weight of their heiferduring the mate is 530 kg, the calves of this breed have the highest weight among other dairy breeds at during the birth, and this particular, together with the white body fat, they Makes it ideal for producing white beef. This breed is quickly recognized for its distinctive color and is known for high milk production. On cross-breeding of cows. About crossbreeding some authors such as Dadar (1375), Aimal (1363) and Abdul Hamid et *al*(1382), write that replacing the entire compound genetic of one breed with the susceptibility of dairy breeds in other cost-effective areas not to the advantage, on the contrary, it would be inverse to replace a specific proportion of the genetic compound with a foreign generation to improve the milk production. Also,in Afghanistan use from famous breeds of world for breeding and hybrids of various combinations. Although in most countries there is a record of the yields and characteristics of cows, especially hybrids, to improve the process of animal husbandry, due to the climatic and cultural similarities of the major functions that have been done to obtain hybrids in Iran. (Rashidi et *al*., 1392), who conducted a study on the effects of hybridization on the Kurdish cows' breeds milk production and on the much of milk production, fat percentage, lactation length and calving interval of Brown Swiss-Kurdish, Holstein-Kurdish hybrids and pure of Kurdish cow breed, found that the mean milk yield of Kurdish, browns swiss-Kurdish and Holstein-Kurdish breeds respectively was 1446.15, 1792.09 and 1988.64 kg. respectively, the mean lactation length was 238.22, 279.31 and 278.73 days, and calf interval, respectivelywere 352.88, 362.84 and 361.89 days, From the above figures, it is known that the largest milk among the three breedsare the Holstein-Kurdish hybrid, and the longest lactation is the Brown-Swiss hybrid. Keshtyar (1969), reports from Masoodi, that in Helmand, conducted comparative formto the different breeds has revealed that the browns swiss breed produced 2795 kg of milk in lactation and its hybrids with the Kandhari breed Were 2062.3kg of milk, it is prominent in all local breed from this point. the maturity of Brown Swiss is 18 months and its first calving are 27 months and of Brown Swiss-Kandahar is respectively 20 months and 34 months.

Table 1 shows the milk yields of Brown Swiss cattle, Kandhari with crossbred of them. (Wright, 1969).

Number	Breed	Cows	Lactations	Average Milk	Average of milk in days	Milk product in kg
1	Brown swiss	16	51	3.2	282	2471.4
2	F1	22	92	4.2	170	2136.4
3	F2	12	22	1.8	280	2215.5
4	F3	2	2	1.0	236	1840.5
5	Kandhari	12	63	5.4	204	1059

In the research conducted by Keshtyar, it has been found that the hybrid breed is more resistant to the bad conditions and addition has highest yield than the others breed. The study found that the hybrids yield were more than pure breeds of Kandhari. The above table show the lactation of F2 breed of Brown Swiss compared with it F1 and F3 breed and the that was high. Eimal (1363) also found that hybrids were more resistant to environmental conditions than another local breed and had high yield. The research has shown that hybrids produce more than pure breed. It should be noted that the Holstein hybrids are significantly superior

to than Brown swiss hybrids, the superiority of the Holstein hybrids over the Brown Swiss hybrids in producing a better agreement of this breed in the Afghani environmental, resulting from the first lactation of milk 50% Holstein 2681.1 kg. And the result of all 50% Holstein lactate 2923.1 kg, has been found. The results of the FAO Institute's Artificial insemination Program, implemented in Afghanistan from 2002-2005, show a good result for inseminate of the Kandhari breed with the Holstein breed. In part of its report, the organization compares some of the characteristics of pure and hybrid Holstein breed. According to this report, the Holstein produces 30 to 35 kg of milk daily, with a lactation of 10 months, the Holstein hybrid with Kandhari 15 kg daily milk yield generates a breeding period of 8 10 - months. Thelactation length is 8-10 months. Farohamand (1380), write the live weight of female cattle of the brown Swiss breed was 634 kg and the bull weight was 902 kg. This breed has a brown color, excellent grazing power and later maturity. The live weight of heifer during the inseminate is 387 kg, and its calf weighed was 39.67 kg. Its meat value is excellent, its milk fat is 4.1%, its milk production is 1980 kg and conceptions are 290 days. Farohamand (1384), also states that Jersey hybrids are less favored than the Holstein and Brown Swiss hybrids for producing red meat and white beef, but milk hybrids are less popular than other hybrids. It has the highest percentage of fat as well as fat-free solids. Jersey hybrids are also highly sensitive to environmental stimuli and respond rapidly to the Jersey breed reputation for having a highly developed nervous system. Cows of this breed mature earlier than the Holstein and Brown swiss hybrids and reach the peak of milk production faster, with a maturity of 11 months and a breeding age of 20 months. Similarly, the maturity age of Jersey-Kandhari hybrids was 12 months and their first calving were 23 months, the desired female weight was 500 kg, male 720 kg, calf weight 27 kg, heifer weight at inoculation 240 kg, low meat value, percentage Milk fat is 4.85 and its milk production during a lactation is 2589-2900 kg.Aimal (1363) writes that in most developing countries crossed their cows with breed of Bas torus (Holstein, Jersey, and Brown swiss) to increase the level of their production. He announces the start of cross-breeding of local breed of Kandhari, Kunari and Sistani in Afghanistan in 1955. But a systematic analysis of the success and agreement of this hybridization has not been sufficiently undertaken. However, what matters most is that before generating a proper understanding of the, they breed must be able to adapt to the environment. The research shows that the cross-productions of Holstein, Brown, and Jersey breeds are not same. He reports that cross-breeding of local cows in nearby eastern countries such as India and some African countries closely resembling the Afghan climate with breed of Holstein, brown swiss, and Jersey causes changes in birth weight, adulthood, And lactation. Tannin (1382), states that birth weight is one of the economic burdens in animals, whose economic importance is more related to meat and milk production. It states that the average birth weight of male and female calves in the local breeds is 19.30 kg and 27.85 kg and their hybrids calves are 24.26 kg and 32 kg. The first calving ages of Holstein- Kandhari are 32 months, with Brown Swiss 34 months and Jersey 24 months. Average weight of male and female calves in F1 respectively Kandhari with Holstein 24.69-34.47 kg and 28.26-29.90 kg, Brown Swiss 21.07-30 kg and 24.69- 31.47 kg and with jersey 19-27.85 kg and 18-21 kg.Also, he states that male calves have more weight than female calves, and the weight of calves increase by crossbreeding, and the highest weight are respectively with Holstein, Brown swiss, and Jersey calves. Many factors have effect such as childbirth, animal breeding; proper nutrition and other characteristics also play a major role in overweight birth. The median length of lactation in Kandahar breeders is 351-97 days, the hybrid Kandhari with Holstein hybrids are 349-202 days, brown swiss hybrids are 358-270 days and the Jersey hybrids are 320- 205 days. Faqiri (1393), writes that in India, the total lactation of hybrids is about 50-75%, which is genetically longer than other breed and adds that the length of the lactation is more affected than the area of birth. He writes that the dry season has a profound effect on the milk production of calves and their sex. Above mentioned, dry period (4-6) weeks. The mean dry season in native samples is from 213 to 97 days, in Holstein hybrids 146 days, in Brown swiss 176-62 days and in Jersey 203-95 days. Zia (1398) states that one of the special gestures produced in calves are calving length. A custom calving interval is about 365 days, with most native breed categorized by calving interval. He considers economic calving in different countries to be less than 450 days calving, while the general mean calving interval is 313-586 days for indigenous generations, 467-330 days for Holstein hybrids, and 375-459 days for Brown swiss hybrids. And respectively 480- 309 days for Jersey hybrids. Aimal writes from quotation coli (1998) that milk yield is one of the traits that underlie the economic value of animals. It is a clear fact that beef cows are poor in milk production, he adds, so the only way to increase milk production is to hybridize them with generations of pasteurizers. He adds that the average lactation yields in native generations are from 283- 2500 kg, in Holstein hybrids 978-3816 kg, in brown swiss hybrid778-3167 kg, in Jersey hybrids 2300-289 kg. Tannin (1392), writes that indigenous generations agree with the extraordinary conditions and that local generations cannot be forgotten. It should be said that if a breed indigenous kept in Afghanistan, they may not have the ability to survive, because agreement with the climate of an area is one of the very good characteristics of an existing one. The reasons for the low level of productivity of local generations are many. Zafar (2004) does not consider the size of low milk production to be due to a shortage of cows, but rather to the low milk production capacity of cows. In his view, the bottom line is mainly related to the existence of diseases, low genetic capacity, lack of proper management, inadequate nutrition, lack of understanding and knowledge of farmers, lack of breeding organizations, lack of facilities and lack of marketability for dairy products. Aimal (1363) points out the reasons for the low level of local generation products in the country due to insufficient feed and lack of a regular breeding program. In this case Tannin (1392), you wrote that the interactions between hereditary vigor and environmental factors play a decisive role for many animals from the point of view of a suitable biological type in a given environment, and this principle is emphasized. It is possible that hereditary animal morphs can show their original capacity when they are in a favorable environment. Such factors as nutrition, discipline, storage conditions, and how the local climate and the existence of the disease play

an essential role in the development of hereditary characteristics.

2. Materials and Methods

This study was conducted in 1398 as a questionnaire to determine the differences in production of Kandhari, Holstein, Brown swiss and Jersey cows breed overweight of calves, milk production, and lactation in the Afghan environmental. This study conducted on12 individual from two crossbred breeds of cows, which 4 breeds were Kandhari with Holstein, 4 breeds Kandhari with Brown Swiss and 4 breeds with brown swiss. It conducted in all three breeds of F1. Also, to this study conducted on 12 individual calves of hybrid from those breeds and the calves studied during the calving. The statistical population of the study consisted of livestock department, animal clinic, cattle breeding record, veterinarian and animal husbandry, including 100 individuals selected randomly. Data were collected through from excel program been analyzed.

3. Results and discussion

Table 1: mid-lactation, milk yield and birth weight of calf's hybrids Holstein-Kandhari, Brown swiss-Kandhari, Jersey-Kandhari and Kandharibreed.(Source: Ministry of Agriculture and Livestock Master Plan)

Weight of calf and calving	Milk yield/ kg	Lactation to days	Total cow	Breed of cow
35	3000	270	4	Kandhari-Holstein
33	2600	230	4	Brown swiss-Kandhari
26	1850	192	4	Jersey- Kandhari
25	1500	183	4	Kandhari

According figure (1): it is deduced that the longest lactation was superior to the Holstein, Brown swiss and Jersey hybrids, whereas the lactation of Kandhari had the lowest lactation length compared to the hybrids.

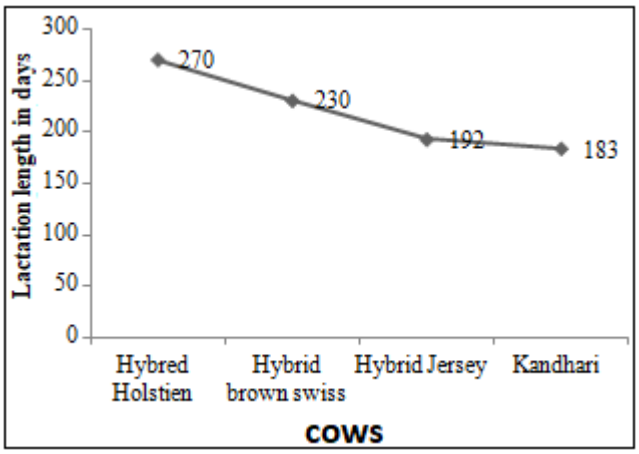

Figure 1: Duration of crossbred lactation, Holstein-Kandhari, Brown swiss-Kandhari, Jersey-Kandhari and Kandhari at the days

According to figure (2): it is deduced that the Holstein hybrid cattle had more milk yield than the Brown swiss and Brown swiss breed produced more milk than the Jersey breed, whereas Kandhari cattle had the lowest milk yield Compared to all breeds of hybrids under study.

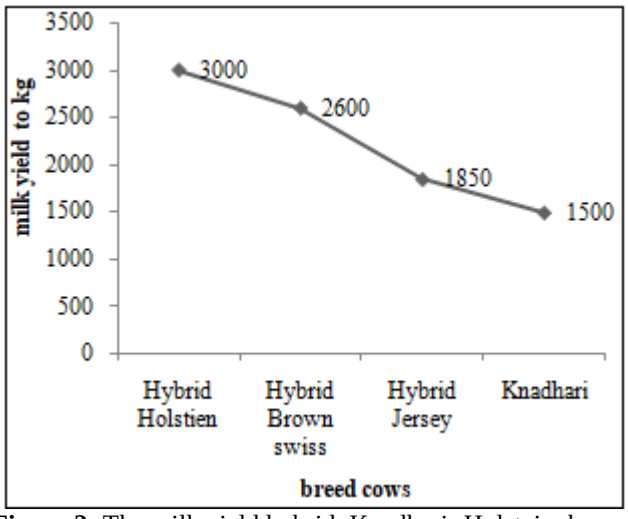

Figure 2: The milk yield hybrid, Kandhari- Holstein, brown swiss- Kandhari, Kandhari- Jersey and Kandhari to kg.

From the results it is concluded that the Holstein-Kandahar hybrid breed has the highest birth weight of the calf, respectively Holstein hybrids after having the highest Brown swiss and Jersey hybrids, whereas the calf weight of Kandhari breed near to the calving of Jersey hybrid (Figure 3).

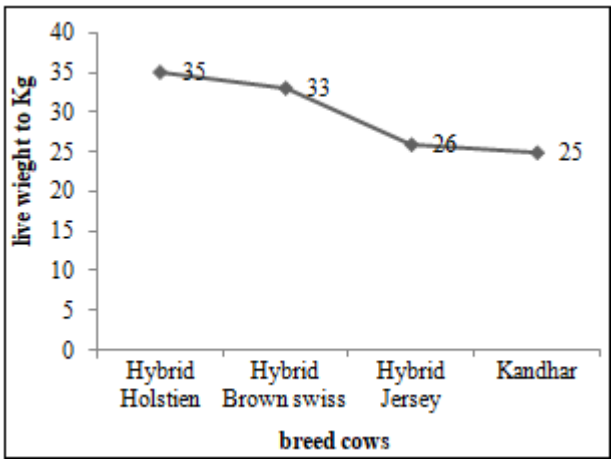

Figure 3: Calving Weight of Holstein-Kandhari Calves, Brown swiss- Kandhari, Kandhari, Jersey-Kandhari and Kandhari to Kg

4. Conclusion

The results of this study indicate that the length of lactation, milk yield during a lactation, and live weight of calves at birth at crossbred breeds can be significantly improved by the cross-breeding effect, whereby the calf's live weight at time the birth of Kandhari cattle before cross-breeding was 25 kg due to cross-breeding with Holstein 35 kg, with brown swiss 33kg and with Jersey 26 kg. The milk yield of Kandhari cow breed before cross-breeding was1500 kg. The effect of cross-bracing with Holstein, Brownswiss and Jersey respectively 1850, 2600, and 3000 kg, also the lactation length of the Kandharibreed was 183 days and increased with cross-breeding with Holstein, Brown swiss, and Jersey breeds respectively 192, 230, and 270 days. The results show that the longest lactation has the highest milk yield and the highest weight of calves compared to the crossbred breed respectively Holstein, Brown swiss and

Jersey, while the lowest lactation is Kandhari breed, can be changed the milk yield and calf weight according to the area. it was found that the Dairy cows and calves fed with better nutrition and proper management have higher live weight and relatively higher yields than that cows and calves that did not reach full nutrition. Because hybrids are more resistant to environmental conditions and have higher levels of production, they are useful in producing and promoting them. The findings of the study showed that hybrid breedis favorable in appearance and can be promoted as a suitable dairy breed in the neighborhoods because of the susceptibility of dairy breed to adverse environmental and environmental conditions, Diseases. do not replace all the genetic compound of native generations in other environments, as modified breeds are less resistant to environmental conditions, but can be replaced by pure breed,used hybrids breeds such as Holstein-Kandhari, BrownSwiss-Kandhari and Jersey-Kandhari. These hybrids have both higher yields than native breed and their resistance and adaptability are higher than that of pure modified breeds. The results of this study identify the Holstein-Kandhari hybrid as the best breed.

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