An-Najah National University

Faculty of Agriculture and Veterinary Medicine

Department of Animal Production and Health

Determination of Total Protein and Albumin in Assaf Sheep in Palestine

Graduation project

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Introduction:-

Agriculture in Palestine is of great importance to the Palestinian identity as it relates to land, cultural heritage, and social life. But it does not live up to its absorptive capacity in terms of trade and employment, and its impact on the modern Palestinian economy as a whole is limited.

The Palestinians are one of the peoples in the world most dependent on food abroad, and the agricultural sector is declining, as it contributed about 5% of the gross national product in 2009 compared to 13% in 1993. This decline has many causes, including Israeli policies of land expropriation, limited control over water resources, and the difficulty of exporting to foreign markets.

Livestock constitutes the main part of the agricultural sector, and they amount to approximately 35% of agricultural production. The livestock sector supports hundreds of thousands of people in Palestine. The poultry sector contributes 40-50% of livestock production and 12-15% of agricultural production.

There is one main breed in Palestine, which is the local Awassi that adapted to the environmental conditions of the region, in addition to a hybrid strain of Assaf which was produced from crossbreeding of local Awassi with German East Frisian sheep.

Sheep are raised In Palestine in two ways, the first is that it depends entirely on natural pastures, and this is the first method in which sheep raising And this method are still practiced by most of the Bedouin tribal farmers and farmers outside the population centers, who move their sheep between different areas depending on the fertility and the availability of pasture and water.

Either the second way to raise sheep is the constant breeding inside the pens and the adoption of the intensive and closed breeding method to increase the production of meat and milk.

In the year (2006-2007) the number of sheep reached 744764 heads from all municipal and cross-breeds, of which 687,146 heads are in the West Bank and 57,618 heads are in the Gaza Strip.

The Hebron Governorate is considered the most sheep breeding area, as the percentage of sheep, It contains 30.3% of the total number of sheep In the West Bank and Gaza Strip, it is followed by the governorates of Jenin, Nablus, and Bethlehem.

Breed Name: Assaf

(3/8 East Friesian with 5/8 Awassi),

Breed Purpose: Dual-purpose, mainly for milk, but are also prized for quality meat production.

Climate Tolerance: Almost all climates.

The Assaf breed was developed by crossbreeding the Awassi, sheep bread and German East Friesian sheep.

The sheep are medium-sized animals, mainly white with a white face. Both rams and ewes are generally polled.

The Assaf combines the positive qualities of the Awassi and East Friesian and produces an average of 450 liters of milk annually. Although slightly lower than that of the Awassi, their prolificacy is significantly higher with an average prolificacy of approximately 3 lambings's in 2 years with an average of 1.6 lambs per lambing.

The Assaf are well adapted to their local climates and are raised and managed under an intensive production system in West Bank (involving weaning lambs at birth, rearing them artificially and milking the ewes after parturition).

Region	Sheep			Goat		
	Local	Another	Sum	Local	Another	Sum
Palestine	453554	235345	688899	274888	47194	322082
West Bank	435169	203990	639159	269998	40804	310802
Jenin	44191	82125	126316	40555	13523	54078
Tubas	39142	2040	41182	8736	-	8736
Tulkarm	4324	20126	24450	4946	1780	6726
Nablus	46581	24820	71401	19595	3114	22709
Qalqelia	-	24659	24659	-	7062	7062
Salfit	6175	1113	7288	6705	554	7259
Ramallah	36737	2895	39632	27273	1380	28653
Jericho	23797	2320	26117	24648	-	24648
Jerusalem	30651	6609	37260	15272	2335	17607
Hebron	166558	23758	190316	95211	249	95460
Gaza Strip	18385	31355	49740	4890	6390	11280
Bethlehem	37013	13525	50538	27057	10807	37864
Rafah	3320	5610	8930	1400	2075	3475

Aim of this research:

This is the first attempt to establish a reference blood biochemical profile of Assaf sheep in Palestine for development and progress. The accurate knowledge of the effect of feed on the Assaf sheep enhance the achieve the highest prevention of diseases and efficiency in food conversion and thus achieve a high-profit margin.

Objective:

1. To determine reference of Albumin in blood different categories of Assaf sheep in Palestine.
2. To determine reference of Total protein in blood different categories of Assaf sheep in Palestine.

Materials and Methods:

In this study, blood samples were collected from 198 male and female of Al-Assaf sheep with different ages ranging from 2 months to 7 years , different rearing methods, different feeds and different regions. The serum was taken and the albumin and protein blocks were placed, then they were examined with a spectrophotometer and the readings were taken.

Statistical analysis:

All data were recorded and stored by excel 2013.
Then, data were Analyzed by one-way ANOVA with Statistical Analysis System(SAS).

ALB * Age_yr

ALB

Age_yr	Mean	N	Std. Error of Mean
< 1 year	6.24827	43	.208071
1 year	6.26996	17	.318393
2 years	6.81801	52	.245850
3 years	6.73139	44	.208103
4 years	6.65314	31	.277664
5 years or more	5.73550	11	.225846
Total	6.54202	198	.106612

ALB * Sex

ALB

Sex	Mean	N	Std. Error of Mean
Male	6.30639	39	.277619
Female	6.59982	159	.113990
Total	6.54202	198	.106612

ALB * Feed

ALB

Feed	Mean	N	Std. Error of Mean
1	6.25221	20	.246420
2	6.15999	42	.313603
4	7.04704	13	.505710
13	6.30432	70	.135073
25	6.31189	7	.266880
125	6.67770	1	.000
139	6.58830	10	.439215
157	7.45191	7	.653182
167	6.09272	3	.799923
578	8.31264	8	.275381
1679	7.32009	10	.352728
3789	7.39357	7	.415273
Total	6.54202	198	.106612

1	**conc**
2	**pop**
4	**grazing**
1+3	**Conc+hay**
5+2	**Pop+straw**
1+2+5	**Conc+pop+straw**
1+3+9	**Conc+hay+corn**
1+5+7	**Conc+straw+barley**
1+6+7	**Conc+soya+barley**
5+7+8	**Straw+barley+bran**
1+6+7+9	**Conc+soya+barley +corn**
3+7+8+9	**Hay+barley+bran+corn**

conc:1
pop:2
hay:3
grazing:4
straw:5
soya:6
barley:7
bran:8
corn:9
wheat:10

ALB * Location

ALB

Location	Mean	N	Std. Error of Mean
tulkarm	5.63190	36	.253569
nablus	7.01559	49	.217797
jenin	5.92463	57	.152120
qalqilia	7.58685	19	.270607
tubas	8.31264	8	.275381
hebron	6.91216	29	.208439
Total	6.54202	198	.106612

TP * Age_yr

TP

Age_yr	Mean	N	Std. Error of Mean
< 1 year	4.68395	43	.258185
1 year	4.92473	17	.358873
2 years	5.32332	52	.223110
3 years	5.05601	44	.216943
4 years	5.23391	31	.289130
5 years or more	5.68074	11	.495070
Total	5.09670	198	.112775

TP * Sex

TP

Sex	Mean	N	Std. Error of Mean
Male	4.98116	39	.241425
Female	5.12504	159	.127604
Total	5.09670	198	.112775

ALB * Feed

ALB

Feed	Mean	N	Std. Error of Mean
1	6.25221	20	.246420
2	6.15999	42	.313603
4	7.04704	13	.505710
13	6.30432	70	.135073
25	6.31189	7	.266880
125	6.67770	1	.000
139	6.58830	10	.439215
157	7.45191	7	.653182
167	6.09272	3	.799923
578	8.31264	8	.275381
1679	7.32009	10	.352728
3789	7.39357	7	.415273
Total	6.54202	198	.106612

1	**conc**
2	**pop**
4	**grazing**
1+3	**Conc+hay**
5+2	**Pop+straw**
1+2+5	**Conc+pop+straw**
1+3+9	**Conc+hay+corn**
1+5+7	**Conc+straw+barley**
1+6+7	**Conc+soya+barley**
5+7+8	**Straw+barley+bran**
1+6+7+9	**Conc+soya+barley +corn**
3+7+8+9	**Hay+barley+bran+corn**

conc:1
pop:2
hay:3
grazing:4
straw:5
soya:6
barley:7
bran:8
corn:9
wheat:10

TP * Location

TP

Location	Mean	N	Std. Error of Mean
1	5.31201	36	.224347
2	5.34844	49	.286366
3	4.71086	57	.185892
4	5.52444	19	.247818
5	5.65462	8	.571915
6	4.72831	29	.287266
Total	5.09670	198	.112775

Tests of Between-Subjects Effects

Dependent Variable: ALB

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	141.173[a]	21	6.723	3.915	.000
Intercept	1668.127	1	1668.127	971.591	.000
Age_yr	5.044	5	1.009	.588	.709
Sex	.235	1	.235	.137	.712
Location	73.615	4	18.404	10.719	.000
Feed	20.914	10	2.091	1.218	.282
Error	302.175	176	1.717		
Total	8917.358	198			
Corrected Total	443.347	197			

Tests of Between-Subjects Effects

Dependent Variable: TP

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	117.560[a]	21	5.598	2.603	.000
Intercept	910.999	1	910.999	423.578	.000
Age_yr	6.699	5	1.340	.623	.682
Sex	1.192	1	1.192	.554	.458
Location	29.761	4	7.440	3.459	.009
Feed	80.824	10	8.082	3.758	.000
Error	378.527	176	2.151		
Total	5639.408	198			
Corrected Total	496.087	197			

Results :

1. Sex of animal has no effect on blood levels of total protein and albumen.
2. Age of animal has no effect on blood levels of total protein and albumen.
3. Type of feed has no effect on blood levels of albumen but it has an effect on total protein.
4. Location has an effect on blood levels of total protein and albumen.

Conclusion:

The levels of Albumin were not affected by sex , age and feed type ,but it affected by location.

The levels of Total Protein were not affected by sex and age ,but it affected by location and feed type.

Recommendations:

More investigation should be carried to assist this results.

And to provide a data base of the blood metabolites of local raised sheep.

Blood metabolites of other livestock should be considered for future research.