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SEMEN EVALUATION FOR SOME LOCAL CHICKEN STRAINS

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Abstract

This study was performed on three local strains of cocks [Gimmizah (G), Golden Montazah (Z) and Silver Montazah (S)], to investigate the semen characteristics under seasonal variations.

In G-strain the overall means of the ejaculated volume, sperm concentration, sperm motility, live sperms, dead and abnormal sperms were 0.338 ml, $2.083X10^9$ sperm/ml, 82.20%, 85.85%, 7.093% and 7.003% respectively. In Z-strain, the overall means of the previous traits were 0.256 ml,$1.86X10^9$ sperm/ml, 82.04%, 82.52%, 10.73% and 6.76%, respectively, while, in S-strain, the overall means were 0.20^9ml, $2.06X10^9$ sperm/ml, 78.47%, 83.45%, 10.16% and 6.22%. For the overall means of fructose concentration in semen, the G-strain came outstandingly first at 2.833 mg/100 ml followed by the Z-strain at 2.744 mg/100 ml and finally the S-strain at 2.687 mg/100 ml. In general the Gimmizah strain was superior for semen characteristics.

With respect to the chemical characteristics of seminal plasma; in G-strain the overall means of the total protein, albumin, cholesterol, lactic dehydrogenase (LDH), sodium, potassium and chloride concentration were 1.092 g/100 ml, 0.561g/100 ml, 29.101 mg/100 ml, 387.45 U/100 ml, 292.61 mg/100 ml, 33.347 mg/100 ml and 242.30 mg/100 ml, respectively. In Z-strain, the overall means of the previous traits were 1.092 g/100 ml, 0.4785 g/100 ml, 29.116 mg/100 ml, 351.75 U/100 ml, 289.11 mg/100 ml, 29.460 mg/100 ml and 243.04 mg/100 ml, respectively, while, in S -strain, the overall means were 1.226 g/100 ml, 0.577 g/100 ml, 27.669 mg/100 ml, 359.57 U/100 ml, 289.11 mg/100 ml, 31.258 mg/100 ml and 235.37 mg/100 ml, respectively.

Fertility tests were performed during the hatching season from January to May. It was found that fertility percent age of G-strain was 91.08% followed by Z-strain 89.15% and S-strain 87.16%.

Optimal temperature in relation to fertility percentage was from February to April (20.7-24.6C°) for G-strain, while, April was best for Z- and S-strains (24.6C°).

INTRODUCTION

Fertilization potential of the poultry cocks is dependent upon several semen characteristics under various factors (Mellor, 2001). Besides, the genetic factors (Saeid and Al-Soudi, 1975), non-genetic ones are also important such as climatic condition expressed as months and seasons of the year, frequency of ejaculation (Kalamah *et al.*, 2000) and nutrition (Hockiag and Bernard, 1997). Climatic conditions were reported to affect the sperm and seminal plasma characteristics (kundu and Panda, 1991).

The main objective of this study is to investigate the effect of strain and seasonal climatic variations on physical and chemical semen characteristics. In addition, the fertility of the birds was also studied during the hatching season.

MATERIALS AND METHODS

The study was conducted at the El-Sabheya Poultry Research Station at Alexandria (Latitude 32°N) during the period from December 1998 to November 1999. The semen donors were Gimmizah (G), Golden Montazah (Z) and Silver Montazah (S) cocks. Cocks were six months old at the beginning of the experiment. Twenty five males were used from each strain. The mean weights of cocks for each of the three strains were G 2.47±0.06 Kg, Z 2.37±0.05 Kg and S 2.33±0.08 Kg, respectively.

Cocks were kept, managed and raised individually in wire cages (0.43 m X 0.51 m X 0.52 m) under good ventilation. They were exposed to the natural photoperiod and artificial light to complete sixteen hours per day during the experimental period. Feed and water were offered ad libitum. All birds were fed on a basal diet.

The temperature and relative humidity were recorded three times daily as shown in Table 1. The monthly means of temperature and relative humidity were calculated.

Semen collection

Semen was individually collected at 9.00 am by the abdominal massage technique once weekly.

Semen characteristics

Ejaculation volume: The ejaculation volume was measured to the nearest 0.1 ml, using graduated collecting tube.

Sperm concentration: the total number of sperms/ml of semen was estimated by using a hemocytometer.

Sperm motility percentage: A small droplet from each tube was placed on a warm slide, covered with a cover slide and examined for sperm motility microscopically at 40 X magnification using a stage warmer set at 37°C. Samples were graded by the scale of 0 to 100.

Live, dead and abnormal sperms percentage: Duplicate smears from each semen tube were stained by isosine-nigrosine mixture. The stained smears were examined microscopically at 100 X magnification for counting.

Fructose concentration: Ten separate samples from each strain every month were collected. Fructose concentration was estimated colorimetrically according to the method described by Mann, (1948).

Chemical characteristics of seminal plasma

The semen collected from each strain was pooled for each month where three samples were taken for analysis. The seminal plasma was separated by centrifuging at 3000 rpm for 20 minutes and storing the resultant at -20°C until chemical analysis. Total protein, albumin, cholesterol, lactic dehydrogenase enzyme activity (LDH), sodium, potassium and chloride where estimated using commercial kits.

Artificial insemination and fertility percentage

Five trails were performed during hatching seasons. One hundred and fifty hens (50 hens/strain) at 32 weeks of age were inseminated artificially. Eggs of each strain were collected the day of postinsemination for a week and incubated in forced draft type incubator to evaluate the fertility percentage.

Statistical analysis of data

The statistical analysis was performed using least squares means system (SAS version 5, 1985).

Analysis of data for semen volume, sperm concentration, number of sperm per ejaculate, sperm motility, live, dead and abnormal percentage were carried out as follows:

$$Y_{ijk} = \mu + St_i + Seas_j + (St*seas)_{ij} + e_{ijk}$$

Where: μ: is the overall mean,

St: is the effect of strain, i= 1-3

Seas: is the effect of season, j=1-4

$(St.Seas)_{ij}$ = is the interaction.

eijk = is the remainder error

The effect of cock age has been annihilated by regressing the obtained results for all the above characteristics with the age of the cock. This implies that the slope of the liner equation can be applied to the following equation.
Compensated variable = Original Value + (11-age). Slope Value of these results do not correlate with the age (nearly zero correlation coefficient). This implies that the effect of age has been eliminated from the data. Regression was performed on the data in order to fit the data points to a polynomial of high order. A forth order model was chosen in order to account for most of variations in the data points without hampering the smoothness of the curve. The model takes the form:

$$Y= a_0+a_1x+a_2x^2+a_3x^3+a_4x^4$$

RESULTS AND DISCUSSION

Physical semen characteristics

Semen volume: Results of the overall means showed that differences between strains in semen volume were highly significant ($P<0.01$). G-strain came outstandingly the first at 0.338 ml followed by Z-strain at 0.256 ml and finally S-strain at 0.209 ml (Table 2). From the data, it could be easily observed that the volume was slightly increased during spring and summer seasons and decreased during the rest of the year. It was noticeable that G-strain showed no significant seasonal variations. This is an advantage since it implies that the amount of semen production for G-strain is considered to be high throughout all seasons of the year. It is also noticed that when the ambient temperature increased, with the hot summer weather, semen volume increased because of the high sexual activity motivated by that higher temperature. Similar results were found by Saeid and Al-Soudi (1975).

Sperm concentration: Considering the overall means of the sperm concentrations for the three strains (Table 2), it was deduced that the G-and S-strains gave $2.083X10^9$ and $2.065X10^9$ sperms/ ml, respectively. There was no significancant difference between them. On the other hand, Z-strain was significantly the lowest in concentration, $1.86X10^9$ sperms/ml ($P< 0.01$).

Our results agreed with Saeid (1998) who suggested that the decrease in sperm concentration during the summer months may be due to hot ambient temperature.

Sperm motility : Table 3 shows the overall means of sperm motility for the three local strains. It can be shown that G-and Z-strains were the best, being 82.2 and 82.04%, respectively. There were no significant difference between them. The S-strain being 78.47% at a lower significant level.

Motility was normally seen to increase during the moderate weather of spring and autumn for the three strains. A similar result was reported by Kalamah *et al.*, 2000 who suggested that the decrease of sperm motility in summer months was due to the high temperature.

Live sperm percentage: Table 3 shows the overall means of live sperm percentage. G-strain was the highest being 85.85% followed by S-strain, 83.45% and finally Z-strain, 82.52%. ($P<0.01$).

Spring was ideal with the highest significancant level, while, winter and summer showed lowest significant levels. This proves that the effect of the harsh weather conditions was reflected upon the lower percentage of live sperm. Our results exactly match with Saeid, (1998), Kalamah *et al.* (2000) and Kamar and Rizik (1972).

Live sperm and motility percentages, followed the same trend of variation. The two sets of values showed an increase during the moderate weather (spring and autumn) and a decrease during the hot and cold weathers (summer and winter).

Dead sperm percentage: In Table 3, the overall means showed a highly significant differences existed between the three strains. It was obvious that G-strain was the best with the least amount of dead sperms (7.093%), followed by S-strain (10.167%) and finally Z-strain (10.73%).

For G-strain during spring, the percentage of dead sperm was significantly low as compared to summer and autumn, but not to winter season. For Z and S-strains the trend was almost the same with considerable increase during winter and summer (cold

and hot weathers) compared to spring and autumn (moderate weather). Spring showed the lowest level for both strains ($P< 0.01$). Our results could be related to the statement of Eweda (2001), who found that elevated environmental temperature may impair testicular functions.

Abnormal sperm percentage: Considering the overall means of the three strains, it was shown that the percent of sperm abnormalities in the S-strain and Z-strain were 6.22% and 6.76%, respectively. These two strains had a lower percentage of abnormal sperm than that of G-strain (7.003%). S-strain had the lowest level of significance among the others (Table 3).

G-strain in the three seasons (winter, spring and autumn) had significantly the lowest level compared to summer season, while, for Z-strain spring was the only season having the lowest significance level over the whole year. For S-strain, winter had the highest abnormal sperm as compared to spring and autumn ($P<0.01$).

The amount of abnormalities for the G-strain was higher in number than the other two strains, but, it was important to notice that this number had to be added to the amount of dead sperm in order to get the overall amount of detected sperm for each strain. Similar results were reported by Kamar and Rizik (1972), and Saeid and Al-Soudi, (1975) who found that large numbers of abnormalities, during summer, were presumably a reflection of the large number of sperm produced and the high sexual activity, which did not allow the spermatids to be retained for sufficient time to mature.

Fructose concentration

Table 4 shows the overall means of fructose concentration of the three strains of cocks. G-strain had the highest overall mean (2.83 mg/100 ml) followed by Z-strain (2.74 mg/100 ml) and finally S-strain, being (2.68 mg/100 ml). G-strain came the best for the fructose concentration, with significant higher level than S-strain.

A peak of fructose concentration exists during spring for the three strains. These results coincided with these obtained by Kamar and Rizik (1972). They found that semen quality was found to be directly related to the levels of seminal fructose.

Seminal plasma characteristics

Total protein and albumin

Comparing the overall means of total protein for the three strains, it could be deduced that Z-strain had the lowest mean value over the whole year (1.092 g/100 ml)

followed by G-strain (1.159 g/100 ml) and finally S-strain (1.226 g/100 ml) (Table 5). For albumin, the same relation holds for the three strains. This was confirmed by the lowest significancant level being assigned to Z-strain as compared to the others for both characteristic (Table 5).

It is observed that total protein and albumin of seminal plasma during winter and spring had the lowest significant level ($P<0.01$). Our results are matched with Kundu and Panda (1991), who showed that protein level in seminal plasma of White Leghorn cockerels from April to July, were found to differ significantly among months.

Cholesterol

It is noticed that no significant differences in level of cholesterol existed between the overall means of the three strains (Table 5).

It was noticeable that both G and S-strains had the same trend, where winter was significant lowest for each of the two of them. For Z-strain, the picture was slightly different since spring was the lowest ($P<0.01$).

Lactic Dehydrogenase enzyme activity (LDH)

Comparing the three overall means of LDH, the G-strain was outstandingly the best with 387.45 U/100 ml, followed by S- and Z-strains at 359.57 U/100 ml and 351.75 U/100 ml, respectively. Significant differences existed between them (Table 5).

For G and Z-strains, winter and spring had the highest ($P<0.01$). In the case of the S-strain, winter had the highest ($P<0.01$) being 412.29 U/100 ml. Starting from summer, the concentration decreased gradually until the end of autumn.

Sodium and potassium

The overall means of the three strains for the sodium were as follows: 309.92 mg/100 ml for Z-strain, followed by G-strain at 292.61 mg/100 ml and finally S-strain at 289.11 mg/100 ml. Z-strain possesses the highest ($P<0.01$) than the other two strains (Table 6). With respect to potassium level, Z-strain was at the lowest concentration (29.46 mg/100 ml), followed by S-strain (31.26 mg/100 ml) and finally G-strain (33.347 mg/100 ml). G-strain had a higher significant than the other two strains ($P<0.01$).

These results disagree with the results obtained by Cumming and Huston, (1976), who transferred cocks from a temperature of 19°C to either 8°C or 30°C for 3 weeks. They found that sodium and potassium concentrations had significantly increased in semen of both groups.

Chloride

Table 6 shows the overall means of chloride concentration, S-strain was the best, ($P<0.05$) followed by the G-strain and finally the Z-strain.

For G and S strains, winter was the best ($P<0.01$). For Z-strain winter and spring were lower with no significant difference in between.

Fertility percent

From Table 7, it was seen from the overall means values that G-strain came first at 91.08%, followed by Z-strain at a mean of 89.15%, while, S-strain came last at 87.16%.

April had the peak point of maximum fertility for both Z- and S-strains, while February and March constitute together a period of high percentage fertility for G-strain.

As a general conclusion, it was seen that G-strain performed most successfully for most the physical semen characteristics and had the widest temperature range for optimal performance among the other two strains. The results of tested physical and chemical parameters showed that the interaction between the three strains and seasons were highly significant ($P<0.01$) except for sodium and potassium.

Table 1. Atmospheric temperature and relative humidity during the year .

	Winter			Spring			Summer			Autumn		
	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.
Mean Temperature (°C)	22.8	19.9	20.7	22.5	24.6	28.7	30.6	32.9	33.4	30.9	30.8	25.4
Relative Humidity (%)	72.8	72.7	68.9	64.6	67.2	65.4	70.1	68.9	69.2	69.8	66.1	70.6

Table 2. Seasonal variation of semen quantity for the three local chicken strains.

	Semen volume (ml)				Sperm concentration ($X10^9$ sperm/ml)			
Season	G	Z	S	Overall mean	G	Z	S	Overall mean
Winter	0.337	0.218	0.170	0.249^{b}	1.925	1.558	1.558	1.930^{b}
Spring	0.370	0.274	0.230	0.295^{a}	2.244	1.942	1.942	2.101^{a}
Summer	0.358	0.275	0.219	0.291^{a}	2.165	1.921	1.921	1.988^{ab}
Autumn	0.277	0.247	0.207	0.248^{b}	1.954	1.987	1.987	1.959^{b}
Overall	0.338^{A}	0.256^{B}	0.209^{C}	0.269	2.083^{A}	1.860^{B}	2.065^{A}	1.987
mean	± 0.0062	± 0.0067	±0.0063	±0.004	± 0.0416	±0.0323	±0.0484	±0.0237

a,b,c Means in the same column bearing different letters differ significantly

A,B,C Means in the same row bearing different letters differ significantly

G- Gimmizah strain. Z- Golden Montazah strain. S- Silver Montazah strain.

Table 3. Seasonal variation of semen quality for the three local chicken strains.

	Sperm motility percentage (%)				Live sperm percentage (%)				Dead sperm percentage (%)				abnormal sperm percentage (%)			
Season	G	Z	S	Overall mean	G	Z	S	Overall mean	G	Z	S	Overall mean	G	Z	S	Overall mean
Winter	83.87	81.05	75.92	80.63^{b}	86.06	79.35	80.52	82.20^{b}	7.212	13.238	12.430	10.746^{a}	6.652	7.338	6.893	6.953^{b}
Spring	83.69	83.49	81.26	82.92^{a}	86.80	87.78	87.28	87.29^{a}	6.240	6.931	6.883	6.676^{c}	6.871	5.354	5.828	6.021^{c}
Summer	78.18	79.15	77.82	78.42^{c}	84.29	78.74	81.13	81.47^{c}	7.494	13.613	12.116	10.918^{a}	8.136	7.658	6.409	7.493^{a}
Autumn	83.43	84.91	78.10	82.33^{a}	86.33	83.08	84.01	84.65^{a}	7.520	9.866	9.980	8.963^{b}	6.204	7.104	5.839	6.375^{c}
Overall	82.20^{A}	82.04^{A}	78.47^{B}	81.00	85.85^{A}	82.52^{C}	83.45^{B}	83.81	7.093^{C}	10.730^{A}	10.167^{B}	9.392±	7.003^{A}	6.767^{A}	6.220^{B}	6.737±
mean	±0.468	±0.482	±0.597	± 0.298	±0.269	±0.299	±0.299	±0.172	±0.194	±0.236	±0.261	0.141	±0.128	±0.127	±0.135	0.076

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A,B,C Means in the same row bearing different letters differ significantly.

G - Gimmizah strain.

Z - Golden Montazah strain.

S - Sliver Montazah strain.

Table 4. Seasonal variation of fructose concentration for the three local chicken strains.

Fructose concentration (mg/100 ml)				
Season	G	Z	S	Overall mean
Winter	2.814	2.736	2.497	2.682 ^{b}
Spring	3.717	3.651	3.490	3.668 ^{a}
Summer	2.651	2.852	2.393	2.632 ^{b}
Autumn	2.149	1.737	2.368	2.085 ^{c}
Overall mean	2.833±0.070^{A}	2.744±0.081^{AB}	2.687±0.058^{B}	2.755±0.041

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Table 5. Seasonal variation of seminal plasma protein, albumin, cholesterol and lactic dehydrogenase (LDH), for the three local chicken strains.

Season	Total protein (g/100 ml)				Albumin g/100 ml				Cholesterol (mg/100 ml)				LDH (U/100 ml)			
	G	Z	S	Overall mean	G	Z	S	Overall mean	G	Z	S	Overall mean	G	Z	S	Overall mean
Winter	1.091	0.873	0.774	0.913^{C}	0.474	0.384	0.278	0.379^{b}	26.124	29.617	24.866	26.869^{b}	397.43	366.90	412.29	392.21^{a}
Spring	0.818	0.786	1.086	0.896^{c}	0.357	0.394	0.512	0.421^{b}	32.259	24.998	25.041	27.433^{b}	428.32	366.97	353.92	308.07^{a}
Summer	1.189	1.323	1.515	1.343^{b}	0.568	0.600	0.784	0.651^{a}	31.060	30.877	34.163	32.033^{a}	356.76	334.02	329.31	340.03^{b}
Autumn	1.540	1.387	1.527	1.484^{a}	0.843	0.532	0.732	0.703^{a}	26.960	30.973	26.604	28.179^{b}	367.28	339.11	342.77	349.72^{b}
Overall	1.159^{B}	1.092^{C}	1.226^{A}	1.159	0.561^{A}	0.478^{B}	0.577^{A}	0.538	29.101	29.116	27.669	28.629	387.45^{A}	351.75^{C}	359.57^{B}	366.26
mean	±0.050	±0.052	±0.060	±0.032	±0.030	±0.018	±0.037	±0.019	±0.832	±0.849	±0.818	±0.481	±6.21	±4.25	±6.34	±3.57

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G - Gimmizah strain.

Z - Golden Montazah strain.

S - Sliver Montazah strain.

Table 6. Seasonal variation of seminal plasma sodium, potassium and cholroide concentration for the three local chicken strains.

Season	Total protein (g/100 ml)				Albumin g/100 ml				Cholesterol (mg/100 ml)			
	G	Z	S	Overall mean	G	Z	S	Overall mean	G	Z	S	Overall mean
Winter	301.35	310.16	298.24	303.25^{a}	33.794	25.620	28.068	29.161^{b}	221.14	235.06	207.78	221.33^{c}
Spring	298.33	320.62	296.28	305.08^{a}	31.704	29.931	29.451	30.362^{b}	234.49	227.46	234.72	232.22^{a}
Summer	282.98	299.81	280.78	287.86^{b}	35.672	33.794	35.746	35.071^{a}	255.34	249.24	250.56	251.71^{b}
Autumn	287.80	309.09	281.15	292.68^{b}	32.217	28.496	31.767	30.826^{a}	258.22	260.40	248.41	255.68^{b}
Overall	292.61^{B} ±	309.00^{A} ±	289.11^{B} ±	297.22±	33.347^{A} ±	29.460^{B} ±	31.258^{B} ±	31.355±	242.30^{A} ±	243.04^{A} ±	235.37^{B} ±	240.23±
mean	2.765	2.901	2.426	1.780	0.806	0.810	0.918	0.507	3.352	2.916	3.601	1.918

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S - Sliver Montazah strain.

Table 7. Monthly variations of fertility percentage for the three local chicken strains.

Fertility percentage (%)				
Months (Hatch seasons)	G	Z	S	Overall mean
January	88.00	83.00	83.50	84.83
February	94.70	95.40	87.90	92.67
March	92.11	92.85	92.40	92.45
April	94.11	96.70	95.00	95.27
May	86.50	77.80	77.00	80.43
Overall mean	91.08	89.15	87.16	89.13

G - Gimmizah strain.
Z - Golden Montazah strain.
S - Sliver Montazah strain.

REFERENCES

1. Cumming, V.T., and T.M. Huston. 1976. The influence of short-term exposure to two different environmental temperatures on electrolyte concentrations of fowl semen. Poult Sci., 55: 857-861.

2. Eweda, T.A.R. 2001. Monthly and seasonal variations in semen characteristics and seminal plasma constituents of Egyptian buffalo bulls. Fac. MSC. Thesis, Agr., Alex. Univ.

3. Hockiag, P.M and R. Bernard. (1997). Effect of dietary crude protein content and food intake on the production of semen in two lines of broiler breeding males. British Poultry Science, 38, 199-202.

4. Kalamah, M.A., M.M. El-Nadi, L.M. Goher, and M.M. Soliman. 2000. Some factors effecting fertility and hatchability using artificial insemination in Norfa chickens. All Africa/ESAP conference of Animal Production. Alexandria, Egypt, Nov. 6-9.

5. Kamar, G.A.R., and M.A.A. Rizik. 1972. Semen characteristics of two breeds of turkeys. J. Reprod. Fert., 29: 317-325.

6. Kundu, A., and J.M. Panda. 1991. Variation in biochemical characteristics of White Leghorn cocks adapted to tropical environment. Indi J. Poult. Sci., 1: 26, 26-29.

7. Mann, T. 1948. Fructose content and fructolysis in semen. J. Agric. Sci. Comb., 38: 323.

8. Mellor, S. 2001. Selecting males by sperm quality. World Poultry, 17: 32.
Saeid, J.M., (1998). The effect of heat stress on semen production and some blood parameters in local male chickens. Iraqi J. of Vet. Sci., 11: 2, 100-109.

9. Saeid, J.M., and K.A. Al-Soudi, 1975. Seasonal variation in semen characteristics of White Leghorn, New Hampshire and indigenous chicken in Iraq. British Poultry Sci. 16: 2, 97-102.

10. SAS. 1985. Statistical Analysis System. 5th Edition. Institute Inc. Gray, NC. USA.

تقييم السائل المنوى فى بعض سلالات الدواجن المحلية

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٢ كلية الزراعة - جامعة الإسكندرية.

أجريت هذه الدراسة على ثلاث سلالات محلية (جميزة - منتزة ذهبى - منتزة فضى) لتقييم السائل المنوى خلال فصول السنة و ذلك لمده عام كامل.

بالنسبة لسلالة الجميزة كان متوسط صفات كل من حجم القذفة، تركيز الحيوانات المنوية، النسبة المئوية للحركة التقدمية، نسبة الحى و الميت و التشوهات هى على التوالى: ٠,٣٣٨ مل، ٢,٠٨٣ × ١٠[٩] حيوان منوى/مل، ٨٢,٢٪، ٨٥,٨٥٪، ٧,٠٩٣٪، ٧,٠٠٣٪ على التوالى و بالنسبة لسلالة المنتزة الذهبى كانت المتوسطات للصفات السابقة كالاتى ٠,٢٥٦ مل، ١,٨٦ × ١٠[٩] حيوان منوى/مل، ٨٢,٠٤٪، ٨٢,٥٢٪، ١٠,٧٣٦٪، ٦,٧٦٪ على التوالى. بينما كانت المتوسطات لسلالة المنتزه الفضى كالاتى ٠,٢٠٩مل، ٢,٠٦ × ١٠[٩] حيوان منوى/مل، ٧٨,٤٥٪، ٨٣,٤٥٪، ١٠,١٦٪، ٦,٢٢٪ على التوالى.

كذلك لوحظ ان تركيز الفراكتوز فى السائل المنوى كان عالياً فى سلالة الجميزة ٢,٨٣٣ ملليجرام/١٠٠ مل يليها المنتزه الذهبى ٢,٤٤ ملليجرام/١٠٠ مل ثم المنتزه الفضى ٢,٦٨٧ ملليجرام/١٠٠ مل وهكذا فاننا نجد ان سلالة الجميزة هى الاحسن فى صفات السائل المنوى.

اما بالنسبة لمتوسط الصفات الكيماوية للسائل المنوى فنجد ان صفات كل من البروتين الكلى، الالبيومين، الكوليسترول، Lactic dehydrogenase، الصوديوم، البوتاسيم، الكلور كانت فى سلالة الجميزة كالاتى ١٠,٠٩٢ جرام/١٠٠ مل، ٥٦١ جرام/١٠٠ مل، ٢٩,١٠١ ملليجرام/١٠٠ مل، ٣٨٧,٤٥ وحده/١٠٠ مل، ٢٩٢,٦١ ملليجرام/١٠٠ مل، ٣٣,٣٤٧ ملليجرام/١٠٠ مل، ٢٤٢,٣٠ ملليجرام/١٠٠ مل على التوالى. و كانت فى سلالة المنتزة الذهبى كالاتى ١٠,٠٩٢جرام/١٠٠ مل، ٠,٤٧٨ جرام/١٠٠ مل، ٢٩,١١٦ ملليجرام/١٠٠ مل، ٣٥١,٧٥ وحده/١٠٠ مل، ٢٦٩,١١ ملليجرام/١٠٠ مل، ٢٩,٤٦٠ ملليجرام/١٠٠ ملليجرام/١٠٠مل، ٢٤٣,٠٤ ملليجرام/١٠٠مل على التوالى. اما سلالة المنتزه الفضى فكانت كالاتى ١,٢٢٦ جرام/١٠٠مل، ٠,٥٧٧ ملليجرام/١٠٠ مل، ٢٧,٦٦٩ ملليجرام/١٠٠مل، ٣٥٩,٥٧ وحده/١٠٠مل، ٢٨٩,١١ ملليجرام/١٠٠مل، ٣١,٢٥٨ ملليجرام/١٠٠مل، ٢٣٥,٣٧ ملليجرام/١٠٠مل على التوالى.

و قد تمت دراسة نسبة الخصوبة فى خلال موسم التفريخ ووجد أن اعلى نسبة كانت لسلالة الجميزة ٩١,٠٨٪ ثم تلتها المنتزه الذهبى ٨٩,١٥٪ فالمنتزه الفضى ٨٧,١٦٪.

كذلك لوحظ ان افضل الشهور الانتاجية كانت للجميزه من فبراير الى ابريل (٢٠.٧ الى ٢٤.٦ × م) اما السلالتين الأخريين فكانت خلال شهر ابريل (٢٤.٦°م).