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THE IMPACT OF HERD MANAGEMENT ON MILK HYGIENE OF HOLSTEIN FRIESIAN COWS RAISED UNDER EGYPTIAN CONDITIONS

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ABSTRACT: **The aim of this study was to investigate the effect of herd management practices on milk quality according to somatic cell count (SCC), standard plate count (SPC) and electrical conductivity (EC). The experimental work was carried out at El-Bayoumi dairy farms in Gamasa, Dakahlia Governorate at 2016. Managing cows parity, cows cleanliness score, stocking rate, feeding regime, stage of lactation, daily milk level and milking shift had a higher significant effect on milk hygiene (SCC, SPC and EC) whereas old cows, dirty body cows, overstocked cows, winter and summer feeding regime, higher yielders cows, early and last lactation cows and mid night milking shift had a very poor quality milk (high in somatic cell count, high in Standard plate count and high in Electrical conductivity.**

Key words: **Somatic Cell Count (SCC), Standard plate count (SPC), Electrical Conductivity (EC) and Herd management practices.**

INTRODUCTION

High quality raw milk is important to produce higher quality pasteurized milk and dairy products. The production of milk with low bacterial counts starts at the farm and is influenced by many procedures related to on farm management practices. At the farm level, microbial contamination of bulk tank milk (BTM) occurs via 3 main sources: bacterial contamination from the external surface of the udder and teats, from the surface of milking equipments, and from mastitis organisms within the udder (Murphy and Boor, 2000). Measurements such as bacteria levels, somatic cell count (SCC), butterfat, protein and other components are dependent upon management strategies implemented in milking parlor (Galton *et al.,* 1986).

Milk SCC is a key component of national and international regulation for milk quality and an indicator of udder health and of the prevalence of clinical and subclinical mastitis in dairy herds. Somatic cell count from healthy, non-infected glands should be lower than 200,000 cells/ml and SCC between 200,000 and 300,000 cells/ml is indicative of a degree of infection or initial stages of infection and that general udder health is decreasing (Dohoo and Leslie, 1991) or the cow is infected with a form of mastitis (Smith, 1996). Also, standard plate count (SPC) is an indicator of udder health. Milk is mainly contaminated with bacteria during milking. It is possible to milk animals in such a clean way that the raw milk contains only 500 to 1,000 bacteria per ml. usually the total bacteria count after milking is up to 50,000 per ml. However, counts may reach several millions bacteria per ml. That indicates a very poor hygienic standard during milking and the handling of the milk or milk of a diseased animal with i.e. mastitis (Pandey *et al.,* 2011).

Mastitis is an inflammatory reaction of udder tissue, usually caused by a bacterial infection in the mammary gland (Harmon, 1994, Oliver and Murinda, 2012, Sordillo *et al*., 1997). This disease alters

udder secretory processes, lowers milk yield, changes milk composition (Beck *et al*., 1992, Harmon, 1994), and can be fatal. Mastitis is an important topic in the dairy industry, partly because milk cannot be sold from cows treated with antibiotics, which often occurs with mastitis infections. Milk from treated cows is usually discarded or fed to calves (Blosser, 1979).

There are many reasons why it is important to reduce somatic cell count (SCC) in the dairy cattle population. SCC can result in serious economic losses, impaired animal welfare and consumer and ethical concerns. Consumers now expect their food to come from healthy animals and to be of high quality. Antibiotics are extensively used worldwide for treating clinical mastitis (CM) and SCC, implying an increased risk of residues in milk and of the development of antibiotic resistance, which is considered to be a major public health threat (Hogan, 2005).

The objective of this study was to evaluate associations between milk quality and herd management practices using data collected from El-Bayoumi dairy farms in Gamasa, Dakahila Governorate.

MATERIALS AND METHODS

This study was conducted on 779 Holstein Friesian cows including 2 lactations belonging to El-Bayoumi dairy farms in Gamasa, Dakahlia Governorate at 2016.

All Cows were fed on a mixture of TMR (Total Mixed Ration) throughout the year with an emphasis on the quality of the feed materials involved in the mix and feed consisting of corn silage, hay and concentrate. Clean water was available ad lib in built basin water. The rations were distributed from 6:00 am to 10 pm, and cows don't feed during the milk process. All dairy cows were tested for Tuberculosis (T.B) and Brucella every 6 months and the positive cows were culled from the herd. These cows were tested for clinical and sub clinical mastitis by using California Mastitis Test (CMT) weekly in winter and monthly in summer and the positive cows were segregated and treated by the antibiotics. Reproduction program of these cows was based on estrus synchronization by hormones, Control intra-vaginal Drug Control Release (CIDER). Cows were inseminated artificially within 12-15 hours after the detection of heat using frozen imported semen (Friesian Bulls). Heat detection was the duty of herd's man. Pregnancy diagnosis were determined by rectal palpation and sonar. All cows were housed in 10 loose half shaded barns with clayey bedding and cooling systems (water spray and ventilators). Barn area reach 2340m^2(78m length x 30m width) with 30m^2 available space per cow. Barn cleaning out fulfilled monthly in summer and weekly in winter using loader, tractor and trailer.

The cow cleanliness score was evaluated during milking and was based on visual hygienic scores adapted from Nigel B.cook (2010), by independently evaluating 3 areas of each animal's body: the udder, lower leg (rear only), the upper leg and the flank. Score (1) show that the cow is clean (C) and score (2) show that the cow is dirty (D). Dairy cows were housed in two systems with two different stocking rate. The first housing system include cows with high stocking rate (10-30 m^2 /cow/ barn) and second group include cows with low stocking rate (31-50 m^2 /cow/ barn). milk hygiene were determined for each stocking density.

Cows were classified into seven groups depending on days in milk (DIM) adapted from Harmon (1994) to determine the impact of stage of lactation on the milk hygiene SCC, SPC and EC (Table 1).

Cows were classified into three groups depending on daily milk production. First group include high yielder cows (>30 kg milk / cow), second group include mid yielder cows (20 – 30 kg milk/cow) and third group include low yielder cows (< 20 kg milk/cow) . SCC, SPC and EC were estimated for each milk level to determine the impact of milk level on milk hygiene.

Dairy cows were machine milked three times daily at 08.00 a.m., 4.00 p.m., and 12.00 mid night by milking parlor. 18 cow milkers divided into three shifts were used in milking parlor. Each shift managed by 6 milkers (2 milkers for udder cleaning, 2 milkers for pre-stripping and teat disinfection and 2 milkers for clusters positioning). Data of milk hygiene collected from CRYSTAL PROGRAM for each shift to determine the impact of milking shift on milk hygiene.

Milk samples were collected during morning milking (8 a.m), noon milking (4 p.m.) and 12.00 mid night milking. A total of 779 milk samples were collected from all lactating cows during summer and winter. Samples were collected according to the National Mastitis Council (2001). Sample from each cow were transported to the laboratory of the Animal Reproduction Research Institute (ARRI) in ice-cooled box and analyzed immediately (max 6 h after collection) for SCC, SPC by using Milko Scan ™ (FT2. 2013). In this study electrical conductivity was determined in milk during the milking by the CRYSTAL MILKING PROGRAM SYSTEM for all cows each shift milking and the data collected from the computer in summer and in winter.

Statistical analysis and model

Data were statistically analyzed using SPSS 20.0. Pearson correlations among defined characteristics were also estimated using SPSS 20.0.

Significant differences among means were assigned according to Duncun (1955).

Statistical Models

The following models were used:

$$Y_{ijklmnxo} = \mu + T_i + I_j + F_k + B_l + P_m + S_n + M_X + L_{oX} + e_{ijklmnxo}$$

Where:

$Y_{ijklmnxo}$ = Somatic cell count (SCC) - Standard plate count (SPC) – Electrical conductivity (EC)

μ = Population mean.

T_i = The fixed effect of the *ith* Parity, (i = 1, 2, 3, 4, 5).

I_j = The fixed effect of the *jth* Cow cleanliness score, (j = 1, 2).

F_k = The fixed effect of the *kth* Stocking rate, (k = 1, 2).

B_l = The fixed effect of the *lth* Feeding regime, (l = 1, 2).

P_m = The fixed effect of the *mth* milk level, (m = 1, 2, 3).

S_n = The fixed effect of the *nth* stage of lactation, (n = 1, 2,3,4,5,6,7).

M_X = The fixed effect of the *xth* milking shift, (X= 1, 2, 3).

L_{oX} = available interactions

$e_{ijklmnxo}$ = Random error assumed to be independent normally distributed with mean and variance.

RESULTS AND DISCUSSION

Managing cows parity

Cows parity revealed a highly significant effect (P<0.001) on Somatic cell count (SCC), Standard plate count (SPC) and Electrical conductivity (EC) in milk (Table 1and Figures 1,2) whereas SCC for cows in the 1st, 2nd, 3rd, 4th and ≥5th parities were 288.5 ± 4.1, 294.1 ± 5.9, 318.4 ± 9.3, 323.75 ± 17 and 318.3 ± 11x10^3cell/ml milk, respectively. However, milk SPC were 101.2 ± 3.3, 94.4 ± 3.6, 116.8 ± 9.2, 139.45 ± 18 and 110.3 ± 10 x10^3cell/ml milk, respectively and milk EC were 4.14 ± 0.04, 4.17 ± 0.06, 4.51 ± 0.09, 4.66 ± 0.07 and 4.61 ± 0.09 ms/cm milk, respectively.

Table 1. Least squares mean (LSM) ± Standard errors (SE) for milk SCC, SPC and EC according to different herd management criteria.

Herd management criteria	Milk Hygiene			
	Animals number	SCC x 1000 cell /ml milk ($\bar{X}$ ± SE)	SPC x 1000 cell /ml milk ($\bar{X}$ ± SE)	EC (ms/cm) ($\bar{X}$ ± SE)
μ	1437	300.3±12	105.7±4.5	4.25±0.05
Managing cow parity				
1^{st}	573	288.5 ± 4.1^{a}	101.2 ± 3.3^{a}	4.14 ± 0.04^{a}
2^{nd}	391	294.1 ± 5.9^{ab}	94.4 ± 3.6^{a}	4.17 ± 0.06^{a}
3^{rd}	210	318.4 ± 9.3^{bc}	116.8 ± 9.2^{a}	4.51 ± 0.09^{c}
4^{th}	120	323.75 ± 17^{c}	139.45 ± 18^{b}	4.66 ± 0.07^{c}
≥ 5^{th}	143	318.3 ± 11^{bc}	110.3 ± 10^{a}	4.61 ± 0.09^{c}
Significance		***	***	***
Cow cleanliness score				
Clean	489	246.1 ± 3.2	60.5 ± 0.9	3.51 ±0.01
Dirty	948	328.3 ± 5.1	129.1 ± 1.5	4.62 ± 0.05
Significance		***	***	***
Stocking rate				
High density	686	306±0.9	106±1	4.54±0.01
Low density	751	288.8±5.1	85.72±5	3.84±0.05
Significance		***	***	***
Managing feeding regimes				
Summer ration	658	317.5 ± 3.6	120 ± 3.1	4.7 ± 0.04
Winter ration	779	324.6 ± 5	127.1 ± 4.3	4.69 ± 0.04
Significance		NS	NS	NS
Stage of lactation				
0-49 DIM	65	323.2 ± 12.8^{a}	135.5 ± 13.7^{c}	4.98 ± 0.1^{c}
50-99 DIM	187	324.7 ± 12.4^{a}	136 ± 10.6^{c}	4.99 ± 0.09^{b}
100-149DIM	133	328.45 ± 16.9^{a}	142 ± 15.5^{c}	5.01 ± 0.1^{c}
150-199 DIM	204	284.6 ± 8.8^{b}	90.5 ± 7.1^{ab}	3.95 ± 0.8^{a}
200-249DIM	266	271.5 ± 6.2^{b}	82.3 ± 5.4^{a}	3.81 ± 0.07^{a}
250-300 DIM	161	274.9 ± 6.9^{b}	84.2 ± 6.7^{a}	3.75 ± 0.09^{a}
>300 DIM	421	312.4 ± 4.2^{a}	113.5 ± 3.2^{bc}	4.53 ± 0.04^{b}
Significance		***	***	***
Daily milk Level				
High level (>30 kg	649	301.4±4^{a}	108.4±3.8^{a}	4.26±0.04^{a}
(Medium level (20-	696	261.2±1.7^{b}	72.4±1.4^{b}	3.9±0.03^{b}
Low level (<20 kg	92	522±3.4^{c}	286.2±19^{c}	6.17±0.1^{c}
Significance		***	***	***
Managing milking shift				
Group A	480	294.2±1.1^{a}	87.4±2.2^{a}	3.84±0.05^{a}
Group B	478	325.2±1.9^{b}	111.1±2.6^{b}	4.78±0.06^{b}
Group C	479	362.2±1.7^{c}	156.5±2.9^{c}	6.81±0.001^{c}
Significance		***	***	***

NS= Not significant *** = highly significant (P<0.001)
(a, b, c means within each column with different superscript differ significantly)

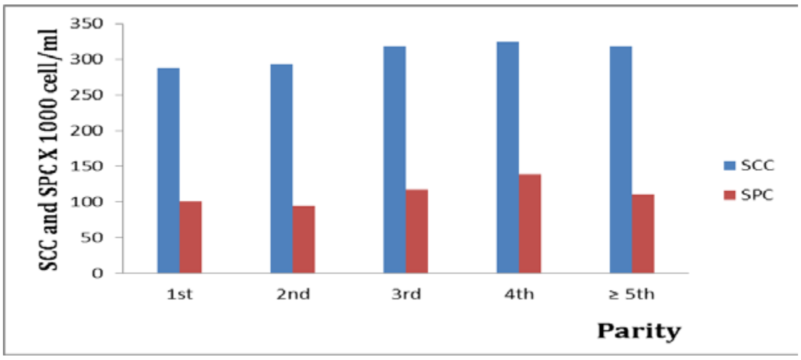

Fig (1): SCC and SPC for different parities.

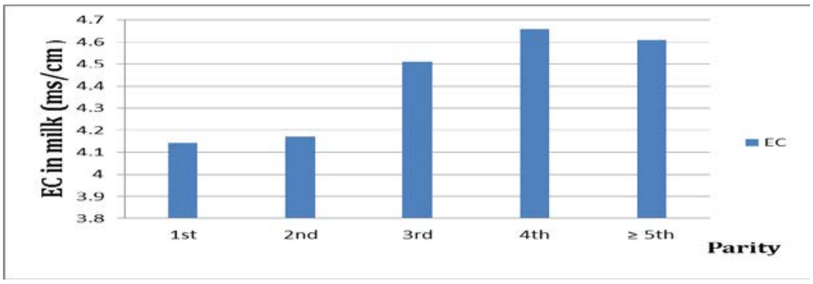

Fig (2): Electrical conductivity for different parities.

Results in Table 1 and Figure 1,2 indicate SCC, SPC and EC are increased with advanced parities whereas SCC SPC and EC begins low in the first lactation and then begins to rise to reach maximum level in the fourth lactation the reason could be attributed to that mammary gland immunity of older cows were lower than primiparous subsequently multiparous are vulnerable for mastitis infection more than young cows. These results were in agreement with Gonçalves *et al*., 2018 and Dang *et al*., 2014 whose reported that, young primiparous karan Fries crossbreed cows produce less milk and have a lower milk SCC as compared to multiparous cows and the mammary gland immunity of primiparous cows is always higher as compared to the multiparous cows throughout the lactation period.

Managing housing systems

Cows cleanliness score

Cow cleanliness scores revealed a highly significant effect (P<0.001) on milk SCC, SPC and EC (Table 1). SCC for clean and dirty score cows were 246.1 ± 3.2 and 328.3 ± 5.1 x 10^3cell/ml milk, respectively. Also, milk SPC were 60.5 ± 0.9 and 129.1 ± 1.51 x 10^3cell/ml milk for clean and dirty score cows, respectively. However, milk EC were count for 3.51 ± 0.01 and 4.62 ± 0.05 ms/cm milk for clean and dirty score cows, respectively.

Results in Table 1 (Figures 3,4) indicated that, whenever the cows cleanliness score decrease the contamination of cows increase subsequently the percent of mastitis infection increase according to increasing in SCC and SPC. Increasing SCC and SPC leads to produce very poor quality milk (low fat, casein and lactose). These results were in agreement with that reported by Barkema *et al*., (1998) who revealed that, the environment and the Holstein cows themselves were cleaner for herd that produced milk with lower SCC values compared with herds with higher bulk tank SCC values.

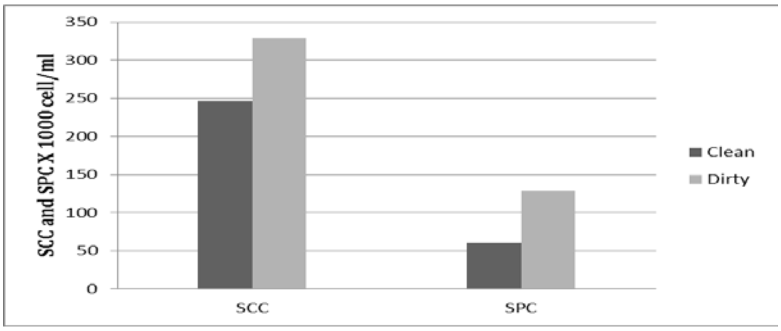

Fig (3): SCC and SPC for different cow cleanliness scores.

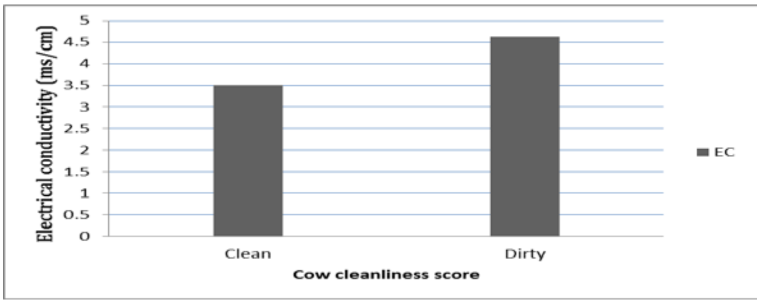

Fig (4): EC for different cow cleanliness scores.

Stocking rate

Stocking rate has a highly significant effect (P<0.001) on SCC, SPC and EC in milk (Table 1 and Figure 5,6). SCC in milk for cows with stocking rate 10-30m^2/cow and 31-50m^2/cow were 306 ± 0.9 and 288.8 ± 5.1 x10^3 cell /ml milk ,respectively. However, milk SPC were 106 ± 1 and 85.72 ± 5 for high density and low density stocking rate, respectively. On the other hand milk EC were 4.54 ± 0.01 and 3.84 ± 0.05 for high density and low density stocking rate, respectively. Overstocking cows increased the amount of manure in the barn and the contamination of lying surface, which increased in tern bacteria count on teat ends and increased the risk of udder infection. These results were in agreement with Hill *et al* (2007) who showed that milk quality was affected by overstocking in Holstein cows, however Krawczel and Grant (2009) reported that somatic cell count (SCC) in Holstein cow's milk increase to 113%. This increasing occurs as a result of increase in the number of mastitis cases in cows that have stocking rate of 142% compared to cows that have 100%.

Managing milk production

Stage of lactation

Stage of lactation has a highly significant effect (P<0.001) on SCC, SPC and EC in milk (Table1 and Figure 7, 8). SCC for cows with different stage of lactation (0-49, 50-99, 100-149, 150-199, 200-249, 250-299 and >300 day in milk) were 323.2 ± 12.8, 324.7 ± 12.4, 328.45 ± 16.9, 284.6 ± 8.8, 271.5 ± 6.2, 274.9 ± 6.9 and 312.4 ± 4.2 x10^3 cell /ml milk, respectively. On the other hand milk SPC for the same trends were 135.5 ± 13.7, 136 ± 10.6, 142 ± 15.5, 90.5 ± 7.1, 82.3 ± 5.4, 84.2 ± 6.7 and 113.5 ± 3.2x10^3 cell /ml milk, respectively. However, milk EC were 4.98 ± 0.1, 4.99 ± 0.09, 5.01 ± 0.1, 3.95 ± 0.8, 3.81 ± 0.07, 3.75 ± 0.09 and 4.53 ± 0.04 ms/cm milk for the same trend, respectively. SCC, SPC and EC

increased during early and late stage of lactation. The reason may due to that early lactation was linked with high milk production in this period where the cows are strained and low immunity subsequently cows are venerable for mastitis infections. Also, in late stage of lactation the restoration of alveoli cells increases subsequently increase the contamination on milk. These results were in agreement with Dohoo and Meek, 1982 who showed that SCC of Black Holstein cows increases with progressing lactation (late lactation) regardless of whether the cow is infected or not.

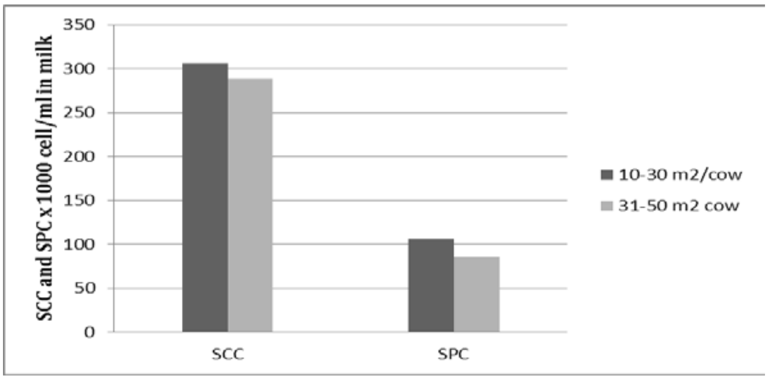

Fig (5): SCC and SPC for different stocking rates.

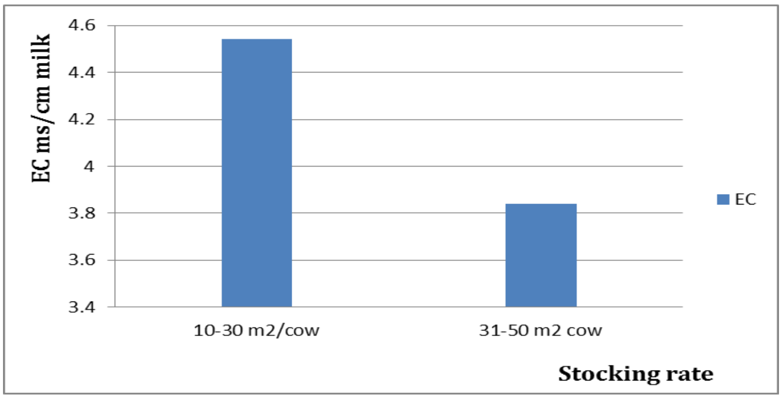

Fig (6): EC for different stocking rates.

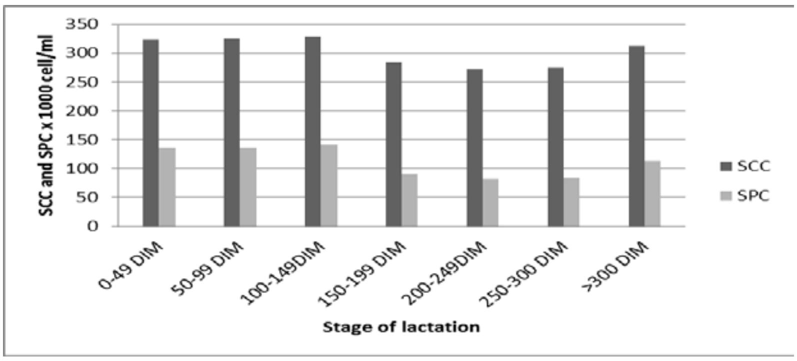

Fig (7): SCC and SPC for different stages of lactation.

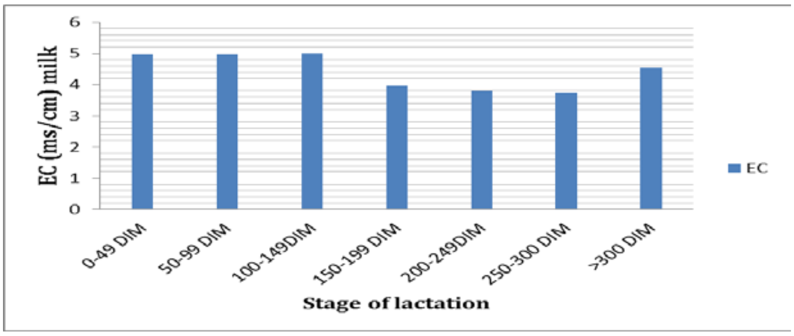

Fig (8): EC for different stages of lactation.

Daily Milk level

Daily milk level of cows revealed highly significant effect (P<0.001) on SCC, SPC and EC in milk (Table 1, Figures 9,10) whereas SCC for cows with high, medium and low level daily milk level were 301.4 ± 4, 261.2 ± 1.7 and 522 ± 3.4 x10^{3} cell /ml milk, respectively. On the other hand, SPC for the same trend of cow's milk level were 108.4 ± 3.8, 72.4 ± 1.4 and 286.2 ± 1.9 x103 cells /ml milk, respectively. However the trends for milk EC were 4.26 ± 0.04, 3.9 ± 0.03 and 6.17 ± 0.1 ms/cm milk, respectively.

Cows with low and high milk level show increasing the incidence of mastitis and are at a greater risk of developing clinical and subclinical mastitis. High milk production cows are strained and low immunity subsequently cows are venerable for mastitis infections. These results were in agreement with Mukherjee and Dang (2011) who reported that high milk-producing Holstein cows are under stress of milk production, and their immunity becomes low leading to more SCC in their milk. During late lactation the renewable of mammary gland increase subsequently SCC increase on milk because of increasing neutrophils increase and lymphocytes decrease. These results were in agreement with McDonald and Anderson (1981) who reported that during late lactation the percentage of neutrophils tends to increase while the percentage of lymphocytes decreases.

Managing feeding regime

Feeding regime (Table 1) revealed no significant impact on SCC, SPC and EC, whereas SCC for cows with summer and winter feeding regime were 317.5 ± 3.6 and 324.6 ± 5 x10^{3} cell/ml milk, respectively. However, SPC in summer and winter feeding regime were 120 ± 3.1 and 127.1 ± 4.3 x10^{3} cell/ml milk, respectively. Furthermore, milk EC were 4.7 ± 0.04 and 4.69 ± 0.04 ms/cm milk for summer and winter feeding, respectively. Generally, there was high bacteria contamination in milk in both summer and winter which may be due to temperature and humidity which subsequently increase the infection of mastitis. These results were in agreement with that reported by Morse *et al*. (1988) who found that SCC of Holstein cows is highest in spring and summer because of extreme temperatures and high humidity which lead to poor fodder quality and may also cause more growth of the bacteria infectious accompanied with low immunity. Unfortunately, there was high milk contamination in winter according to high calving season and high milk yield which subsequently leads to increase mastitis infection in winter. Furthermore, Clements *et al.* (2005) reported that the highest SCC around the period of calving was observed in winter, and the lowest SCC in these herds occurred shortly after calving period.

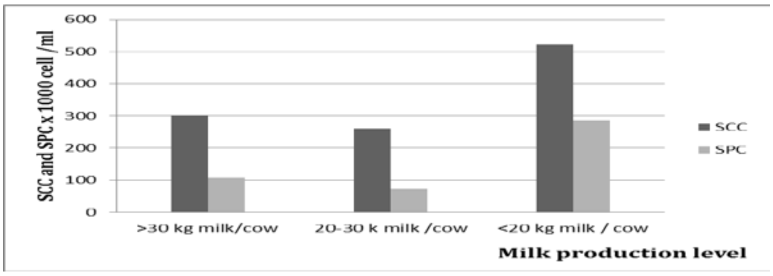

Fig (9): SCC and SPC for different milk levels.

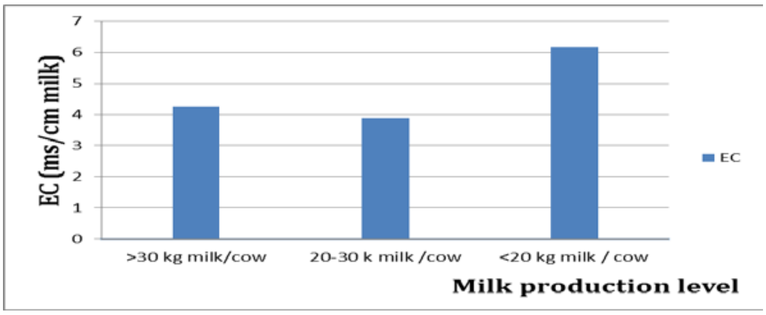

Fig (10): EC for different milk levels.

Managing milking shift

Milker's shifts has a highly significant effect (P<0.001) on milk SCC, SPC and EC (Table 1), whereas SCC for cows that milked by milker's shifts (A, B and C) were 294.2 ± 1.1, 325.2 ± 1.9 and 362.2 ± 1.7 x 10^3cell/ml milk, respectively. On the other hand, SPC for cows that milked by milker's shifts (A, B and C) were 87.4 ± 2.2, 111.1 ± 2.6 and 156.5 ± 2.9 x 10^3cell/ml milk, respectively. Also, EC for cows that milked by milker's shifts (A, B and C) were 3.84 ± 0.05, 4.78 ± 0.06 and 6.81 ± 0.001 ms/cm milk, respectively. Table 1 indicated that milkers of group A was the cleanest in milking and the least contaminated milk compared to Group B and Group C. This difference may due to that milker moves from one animal to the next subsequently can transfer pathogenic micro-organisms to all the animals in the herd. Also this variation may associated with contagious disease on French Friesian cows, wear clean clothes and have trimmed and clean nails and wash hands with soap and water before milking and dry them with a clean towel (Pandey *et al*., 2011). These results were in agreement with Barkema *et al*., 1998 who showed that, the people that work in the milking parlor of Holstein cows have the primary responsibility for mastitis control while other workers are responsible for stall maintenance and feeding.

Interactions within criteria studied on milk hygiene.

All interactions within criteria studied (Table 2) on milk hygiene were highly significant (P<0.001). It is obviously clear that the influence of all criteria studied interacting together on milk hygiene. Managing such criteria are very difficult and complicated. Manager should be carefully handle with those criteria as an integrated task and not as individual one.

Cow cleanliness has a highly significant effect on milk hygiene. This may be due to increased contamination in the barn, due to the high density, the contamination of cows increases especially in the udder. This leads to an increase of infection of mastitis as a result of bacteria interning the teat ends.

Table 2. Interactions within criteria studied on milk hygiene

Interaction	Significant
Feeding regime x cow cleanliness score	***
Feeding regime x parity	***
Feeding regime x stocking rate	***
Feeding regime x milk level	***
Feeding regime x milking shift	***
Parity x stocking rate	***
Cow cleanliness score x parity	***
parity x stocking rate x feeding regime	***

*** = high significant (P<0.001)

On the other hand, feeding regime and parity interact highly significant (P<0.001) on milk hygiene (Table 2). This may be due to the advancement of parities and aging of cows, the increasing of mastitis infection which associated with reduced immunity by advanced age.

Furthermore, the interaction between feeding regime and stocking rate (P<0.001) on milk hygiene (SCC, SPC and EC) may be due to the highly significant effect of stocking rate on milk hygiene. With increasing barns density, the chance of cow's contamination increases, and consequently, the rate of mastitis infection increases. Also, the interaction between feeding regime and milk level (P<0.001) on milk hygiene may be due to the highly significant effect of milk level on milk hygiene. Highly productive cows are strained as results of high milk production, so their immunity is weak and therefore vulnerable to mastitis.

On the other hand, the interaction between feeding regime and milking shift (P<0.001) on milk hygiene may be due to the highly significant effect of milking shift on milk hygiene. The lack of milkers cleanliness and failure to follow the correct steps for milking process lead to increase milk contamination. Interaction between stocking rate and parity (P<0.001) on milk hygiene (SCC, SPC and EC) may be due to that overstocking was higher in winter than in summer and periodic cleanout of barns in winter and also, increase the milking times of fresh cows may decrease contamination in milk. In despite of advanced parities increase the contamination of milk, there were cows with advanced parities that had higher quality milk, this may be attributed to good care for these cows during the milking process, attention for the correct milking steps. The periodic examination for these advanced parities cows by using CMT decrease the milk contamination and mastitis infection.

The interaction between cow cleanliness and parity (P<0.001) on milk hygiene mean despite of dirty cow cleanliness score of these cows but contamination in milk was decreased. This may be related to washing the dirty cows before milking processes and attention for correct milking which steps decrease the contamination in milk for these cows. Also, despite of clean cow cleanliness score of these cows but contamination in milk was increase this may be due to late stage of lactation for these cows whereas the cows in late lactation have poor quality milk.

CONCLUSION AND FUTURE PRESPECTIVE

From this study it could be concluded that good herd management practices

had positive effect on increasing milk yield, decreasing mastitis infection and increasing milk composition such as fat, casein and lactose yield which could be reflected on better performance and economic return and helping breeders for organizing dairy herd to get the best income.

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تأثير ادارة القطيع علي نظافة لبن أبقار الهولستين فريزيان المرباة تحت الظروف المصرية

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الملخص العربي

أجريت هذة الدراسةعلي عدد 779 بقرة من سلالة الهولشتين فريزيان في مزرعة البيومي بمدينة جمصة التابعة لمحافظة الدقهلية، حيث تم تجميع البيانات خلال عام 2016. وكان الهدف من هذا البحث هو دراسة تأثير ادارة القطيع (الموسم – مقياس نظافة الأبقار – معدل التسكين داخل الحظيرة – نظام التغذية الموسمي – مستوي انتاج اللبن اليومي – مرحلة الحليب – تأثير ميعاد الحلبة) علي نظافة اللبن من حيث محتواه من الخلايا الجسمية والعدد البكتيري ومعامل التوصيل الكهربي وقد أوضحت النتائج ان الأبقار المتقدمة في العمر والابقار المتسخه وذات معدل التسكين العالي والابقار ذات المستوي العالي من انتاج اللبن والابقار في بداية ونهاية مرحلة الحليب تنتج لبنا أقل في النظافة ذات مستوي مرتفع من الخلايا الجسمية والعدد البكتيري ومعامل التوصيل الكهربي.

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