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Research Article

Impact of farm management practices on quality of milk

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ABSTRACT

Dairy farming is an ancient traditional value of our society because it is an essential component of daily life. The farm animal's area performs a fundamental position in national and rural economy of our country. Milk is a main product get from farm animals and the 3rd major milk producing country is Pakistan within the global. Dairy farming practices within the country are very primitive and traditional. About 70% of the entire milk quantity in the country produced by Punjab Province. Okara is one among the foremost irrigated and milk production area of Pakistan. Milk is viewed as a significant wellspring of complete diet.The current research work was designed to examine the behaviors of progressive and conventional dairy farms and the effect of these practices on milk output in the Okara District. The proximate composition of milk collected from conventional farms was relatively poor as compared to milk collected from progressive farms according to the standards. The proximate analysis revealed that the percentages for good quality milk samples for different parameters were 86.67%, 82.22%, 77.78%, 91.11%, 91.11% and 97.78% with respect to fat, acidity, moisture, ash, protein and pH, respectively irrespective of farm practices. Similarly with respect to pesticide residues, there were variable results. The ratio of good quality milk sample for bifenthrine residues was found to be less (95.56 % samples) in case of conventional farms as compared to progressive farms whereas for carbofuran residues the ratio of good quality samples was relative (86.67% samples) higher in case of conventional farms rather than that for progressive farms. Similarly adulteration of milk is most common problem in conventional farms.

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1. INTRODUCTION

Pakistan is blessed with ample natural sources, especially widespread agricultural resources as a result of its fertile irrigated land, 4 seasons and superb history of vintage traditions of farming. The farm animal areas are performed a fundamental position in national and rural economy of our country (Ziad *et al*., 2019). Milk is a main product get from farm animals and the 3rd major milk producing country is Pakistan within the global by way of producing greater than 49.5 million tons per year (Farooq, 2014).

Creation of milk is fundamental yield of dairy cultivating. Milk is viewed as a significant wellspring of complete diet. Milk has been known as nature's most complete diet for centuries, assuming at present a significant role in the eating routine of more than 6 billion individuals in the world (Haug *et al.,* 2007). Milk and dairy items are supplement concentrated foods, providing vital and excellent protein with a scope of basic micronutrients (particularly calcium, magnesium, potassium, zinc, and phosphorus) in an effortlessly assimilated structure. Milk minerals are vital for human wellbeing (Das *et al*., 2016).

They play an important role in healthy human nutrition and lifelong development, mainly in childhood. Milk foodstuffs are more intense in nutrients crucial for bone health, including protein, calcium, vitamin

D, potassium, and phosphorus (Gemechu, 2015). Studies have shown that regular ingesting of milk and milk foods should be suggested to inhibit periodontal disease (Brindha *et al*., 2017). Calcium has also been shown to be helpful in decreasing cholesterol absorption and adjusting weight and body fluid pressure (Cook *et al*., 2004).

Milk is the main ingredient of many food items such as tea, yoghurt, and butter. Milk is also used in the manufacture of khoya and various varieties of sweets (Gorska-Warsewicz *et al.,* 2019). The dairy business in Pakistan is commanded by little dairy livestock farmer who hold three to five milking animals, in rustic regions. About 95% of Pakistan dairy makers have two to four animals (Zia *et al*., 2011).

Dairy farming practices within the country are very primitive and traditional. Dairy farming is carried out in Pakistan in different areas, in both urban and rural setting. Major producers of milk in Pakistan are Punjab province wherein small-scale farmers and landless farmers produce a huge amount of general milk manufacturing (FAO, 2010). Milk quality is a main parameter of its goodness. Raw milk characteristics remain a key feature in evaluating the efficiency of the milk chain. The production of good quality milk depends on the milking area surroundings hygiene, milker hygiene, udder cleanliness, nipples, and the bucket used to collection the milk (Awan *et al*., 2014). To boost milk consistency, it is best to thoroughly clean teats with a paper towel or to channel a stream of fluid sanitizing to the teats and to wash the teats by hand.

As a consequence of rising demand, in addition to growing rivalry in the dairy industry and the increasing difficulty of the supply chain, certain unscrupulous farmers are committing fraud in the milk sector. Different medicines used in Pakistan such as oxytocin for increase the milk production. Using clean clothes to wipe dry udder after wash, discarded first flow of milk and streamed floor after milking, improved purity of the milk, and adoption of some pre-milking procedures, including flooring, water and feeding trough; cow cleaning.

Milk contamination after exiting the farm gates is mainly due to improper milk handling and adultration (Suguna *et al*, 2012). It was noted that milk-adulteration is greatest serious issue today, causes not only financial losses to the business but also chief public health concerns (Awais, 2013). Because of the distribution of smallholders and the consequent instability of the supply chain, the conventional system of milk handling practices is highly unhygienic and regulations are not monitored which result in products of poor characteristics (Ajmal *et al*., 2015). In order to keep the milk fresh for a moment, the intermediaries usually use ice in milk, which affects the milk solid. Some cheaters also use vegetable oils, starch, flour, sugar cane, whey powder, skim milk powder, and other additives to improve the milk solids. Any adulterants, like detergent, are in reality used for enhancing the milk quality (Anita and Neetu, 2013). Bearing in mind the current scenario, new work has been designed to examine the behaviors of progressive and conventional dairy farms and the effect of these practices on milk output in the Okara district to assess farm management practices that effect on milk quality and evaluate proximate composition variation of different farms milk.

This study is designed with the following objects.

i. To assess farm management practices that effect on milk quality.
ii. To evaluate proximate composition variation of different farms milk.
iii. To analyze microbial count difference in different farms milk

2. MATERIALS AND METHODS

The current work was done at Department of Food Science and Technology, MNS-University of Agriculture Multan to examine the practices in progressive and conventional dairy farms and the impact of these practices on quality of milk.

1.1. Collection of Milk Samples

A simple random sampling was adopted. As a total 30 Farms for milk samples were selected from progressive (15 Farms) and conventional dairy farms (15 Farms) of Okara District of province Punjab for the evaluation of hygienic and physico-chemical quality of milk. Prior to sampling, reports were made regarding environmental health, hygiene of staff members, milk collecting and storage facilities, storage conditions and water used for sanitation and milking. The milk testing was carried out by means of conventional procedures for the smell, colour, dirtyness and cleanliness of the containers. The smells of milk were measured as soon as the farmer opens a milk jar lid. Samples were collected in sterilized glass bottles with a metallic lid, and placed in ice boxes for transportation to laboratory. For further study, all milk samples were then stored at 4 ° C in the refrigerator. Samples were analyzed for quality parameter at Laboratory of Department of Food Science and Technology Muhammad Nawaz Shareef Agriculture University, Multan.

1.2. Proximate composition of conventional and progressive dairy farms milk

1.2.1. Moisture

Milk moisture levels have been measured in accordance with the AOAC system (2000). The sample of milk (5g) was taken in flat bottom dish in weighed in advance. The dish was put 3 hours in a hot air oven (101±1C) and moved to silica gel desiccators. It was weighed after 1 hour. The desiccation and drying procedures were repeated until the constant weight and measurement according to the following formula is achieved.

$$\text{Moisture \%} = \frac{W2 - W3}{W2 - W1} \times 100$$

1.2.2. pH

The pH of milk samples were measured by digital pH meter. Calibrated by using buffer standards of pH 4 and 7 before use. After calibration, 20 ml of milk sample was taken in beakers separately. The probe of pH meter was dipped in the milk until constant reading obtained (Sivashankari *et al.*, 2015).

1.2.3. Titratable Acidity

Titratable acidity of food is determined by acid base titration method for evaluation of acid concentration. 10ml sample was taken in 100ml titration flask and few drops of phenolphthalein indicator was added and mixed well. Then 0.1N NaOH was taken in burette and samples were titrated against it. Pink color was appeared which retained for 30 seconds. The volume used for NaOH was noted and in this way acidity was calculated by following formula (Awan *et al.*, 2014).

$$\text{Acidity \%} = \frac{\text{volume of 0.1 N NaOH used (ml)} \times 0.009}{\text{Wt. of Sample(ml)}} \times 100$$

1.2.4. Ash

The milk sample ash content was determined by the AOAC process (2000). 2g samples were taken in weighted crucibles separately for charring. After charring crucibles were placed in muffle furnace at temperature range of 550^{o}C-600^{o}C until white color ash was obtained. After this, crucibles were kept in desiccator for the purpose of cooling and again weighed to measure the ash contents calculated by formula,

$$\text{Ash \%} = \frac{\text{Wt. of Ash in grams}}{\text{Wt. of Sample in grams}} \times 100$$

1.2.5. Protein

Protein of milk samples were measured by Kjeldhal method. AOAC (2000). In the presence of catalysts, protein and other organic compounds present in samples were digested using $H_2SO_4$and converted in to ammonium sulphate. Alkali was used for neutralization of digested contents and then boric acid solution was used for distillation purpose. After titration with standardized acid, borate anions were formed which were then converted in to the nitrogen in sample. This result represented the contents of crude protein of the food, while nitrogen originates from non-protein compounds.

$$N\ \% = \frac{\text{Volume used of NaOH} \times \text{Normality} \times 0.014}{\text{Weight of sample}} \times 100$$

1.2.6. Fat

10ml of H_2SO_4 and 11ml of milk samples were transferred in to butyrometer. Then 1ml iso amyl alcohol was added in to butyrometer and tightened the stopper of butyrometer and mixed by shaking the butyrometer. Then butyrometer was kept in the centrifuge at 65°C and 1100 rpm for five minutes. All but yro meter containing milk samples were positioned in front of each other and turn on the Gerber apparatus. Fat % age was observed from butyrometer AOAC, (2000).

1.2.7. Total solids

Total solids content of milk samples were determined by oven drying method. In this method, under specified conditions samples were heated and losses in weight were used to calculate the contents of total solids of milk samples (Pearson, 1976).

$$\text{Total solids (\%)} = \frac{\text{W.t of dried sample}}{\text{Initial wt. of sample}} \times 100$$

1.3. Adulteration Tests of progressive and conventional dairy farms milk

1.3.1. Urea

In a test tube, take 5 mL of milk, add 0.2 mL of ureases (20 mg/mL) and then add 0.1 ml Bromothymol Blue (BTB) (0.5 percent) solution. Blue colour presence after 10-15 minutes shows urea in milk. Standard milk is slightly blue because of the normal milk urea (Arvind Singh *et al*., 2012).

1.3.2. Starch

Take 3ml sample of milk in the test tube. Cool to room temperature after extensive boiling. Add 1 drop of 1 percent iodine solution and blue color presence means the starch is present (Singh *et al.,* 2012).

1.3.3. Pulverized Soap detection

In the test tube, take 10 ml milk. Add equivalent quantity of hot water, adding 1-2 drops of phenolphthalein. Pink-colored presentation suggests soap presence (Arvind Singh *et al.*, 2012).

1.3.4. Formalin detection

In a test tube, take the 10 mL milk sample. Add 5 mL of conc. sulfuric acid and a few volumes of ferrous chloride without shaking. Violet or blue color is shown to be present (Arvind Singh *et al.*, 2012).

1.3.5. H2O2 detection

In the test tube, take 5 ml of milk sample and apply the same amount of 2% paraphenylene diamine solution. The blue color indicates the presence of adulterant hydrogen peroxide (Kamthania *et al.*, 2014).

1.3.6. Cane-sugar detection

Take 5 mL sample of milk in a testing tube. Add 1 ml HCl and 0.1 g of resorcinol solutio n.Place the test tube in the water bath for 5 min.A red color appearance shows that there is added sugar (Kamthania *et al.*, 2014).

1.4. Microbiological Analysis

1.4.1. MBRT

The samples were transported after collection to the laboratory and analyzed in three hours for MBRT and coli-form check. The 1 ml of methylene blue (1:25,000) is added to 10ml of milk in the Methylene Blue Reduction test (MBRT). The tube is lined with a rubber stopper and slowly reversed by mixing three times. It is placed in a water bath at 35 ° C and checked up to 6 hours in intervals. The time taken to make methylene blue colorless is the time to remove methylene blue (Benson, 2002).

3. RESULT AND DISCUSSION

3.1. Physicochemical analysis of progressive and conventional dairy farms milk

3.1.1. Milk Fat

The Statistical results (ANOVA) showed that the effect of farm management practices on fat contents of the milk was found to be highly significant. The mean fat of the milk samples collected from conventional and progressive farms was 3.53 % and 5.33%, respectively as shown in table 1. The high value of fat contents in the milk collected from progressive farms might be due to better feed. The results are justified by the findings of Playne *et al*. (2003) who elaborated that the fat contents/milk composition is influenced due to feed intake.

3.1.2. Milk Acidity

The Statistical results (ANOVA) showed that the effect of farm management practices on acidity of milk was observed to be non-significant. The mean acidity of the milk samples that collected from conventional and progressive farms was 0.18%and 0.17% respectively as given in table 1. The non-significant value of acidity in the milk collected from conventional and progressive farms might be due to feed and management. The results are supported to the findings of Sarwar *et al*. (2003) who suggested that the acidity of milk is influenced due to feed intake.

Table 1: Means values of physicochemical analysis of milk fat and acidity

Milk Fat				Acidity			
Farm-code	**Conventional**	**Progressive**	**Mean**	**Farm-code**	**Conventional**	**Progressive**	**Mean**
1	4.82	5.42	5.12	1	0.17	0.20	0.18
2	4.58	4.95	4.77	2	0.22	0.16	0.19
3	4.90	4.87	4.89	3	0.16	0.17	0.16
4	5.10	5.62	5.36	4	0.19	0.19	0.19
5	4.36	5.37	4.87	5	0.22	0.15	0.19
6	4.64	5.35	5.00	6	0.17	0.20	0.19
7	4.30	5.06	4.68	7	0.19	0.15	0.17
8	4.42	5.13	4.77	8	0.16	0.19	0.17
9	6.68	5.41	6.05	9	0.16	0.15	0.15
10	4.12	5.14	4.63	10	0.12	0.19	0.16
11	5.31	5.43	5.37	11	0.24	0.12	0.18
12	4.45	5.36	4.91	12	0.14	0.18	0.16
13	5.17	5.43	5.30	13	0.25	0.19	0.22
14	4.90	5.62	5.26	14	0.13	0.17	0.15
15	4.72	5.77	5.25	15	0.20	0.19	0.20
Mean	4.83	5.33		**Mean**	0.18	0.17	

3.1.3. Milk Moisture

The Statistical results (ANOVA) showed that the effect of farm management practices on moisture of milk was observed to be highly significant. The mean moisture of the milk samples collected from conventional and progressive farms was 85.00% and 80.60% respectively as described in table 2. The maximum moisture contents in the milk collected from conventional farms might be due to poor farm management practices. The results equal to the findings of Alford *et al*. (2009) who found that the moisture contents of milk were changed due to poor management.

3.1.4. Milk Protein

The Statistical results (ANOVA) revealed that the effect of farm management practices on protein of milk was observed to be highly significant. The mean protein of the milk samples collected from conventional and progressive farms was 3.81% and 3.95% respectively as shown in table 2.. The highly significant protein contents in the milk collected from progressive farms might be due to better feed of animals. The results of present research work are resemble with the findings of Tyasi *et al*. (2015) who suggested that the milk protein contents were varied due to diet and animal health status.

Table: 02 Physiochemical analysis of moisture and protein of milk

Milk Moisture				**Milk Protein**			
Farm-code	**Conventional**	**Progressive**	**Mean**	**Farm-code**	**Conventional**	**Progressive**	**Mean**
1	85.75	80.23	82.99	1	3.64	3.85	3.74
2	86.02	80.17	83.09	2	3.61	3.79	3.70
3	86.65	80.15	83.40	3	3.63	3.90	3.77
4	84.95	80.19	82.57	4	3.62	3.82	3.72
5	84.81	80.18	82.50	5	3.60	4.53	4.07
6	83.10	80.21	81.65	6	3.66	4.43	4.04
7	82.69	80.18	81.43	7	3.62	3.95	3.79
8	86.51	80.15	83.33	8	3.60	3.86	3.73
9	83.44	86.16	84.80	9	6.68	4.02	5.35
10	84.55	80.17	82.36	10	3.65	3.95	3.80
11	84.25	80.19	82.22	11	3.60	3.68	3.64
12	85.58	80.25	82.92	12	3.63	3.81	3.72
13	86.02	80.24	83.13	13	3.52	3.82	3.67
14	85.58	80.21	82.90	14	3.57	3.97	3.77
15	85.06	80.27	82.66	15	3.58	3.80	3.69
Mean	85.00	80.60		**Mean**	3.81	3.95	

3.1.5. Ash contents of milk

The Statistical results (ANOVA) showed that the effect of farm management practices on ash of milk was observed to be highly non- significant. The mean ash contents of milk of conventional and progressive farms was 0.76% and 0.79% respectively as given in table 3. The results are same by the work of Alford *et al*. (2009) who found that the ash contents of milk was changed due to diet and poor management.

3.1.6. Milk soliods

The Statistical results (ANOVA) revealed that the effect of farm management practices on milk total solids of milk was observed to be significant. The mean of the milk solids of the milk samples collected from conventional and progressive farms was 12.49 %and 13.36 %respectively given in table 3. The maximum value of milk solid contents collected from progressive farms might be due to feed and lactation period.

Table: 03 Physiochemical analysis of ash and total solids of milk

Ash				**Total solids**			
Farm-code	**Conventional**	**Progressive**	**Mean**	**Farm-code**	**Conventional**	**Progressive**	**Mean**
1	0.83	0.81	0.82	1	12.51	13.34	12.93
2	0.84	0.86	0.85	2	12.49	13.34	12.92
3	0.82	0.81	0.81	3	12.50	13.18	12.84
4	0.84	0.81	0.82	4	12.45	13.05	12.75
5	0.83	0.86	0.85	5	12.48	13.27	12.88
6	0.83	0.83	0.83	6	12.46	13.39	12.93
7	0.83	0.86	0.84	7	12.45	12.69	12.57
8	0.83	0.82	0.83	8	12.46	13.20	12.83
9	6.68	0.84	3.76	9	6.68	13.23	9.96
10	0.82	0.87	0.85	10	12.51	13.63	13.07
11	0.82	0.81	0.82	11	12.50	13.43	12.97
12	0.82	0.82	0.82	12	12.50	14.20	13.35
13	0.82	0.84	0.83	13	12.50	13.69	13.10
14	0.82	0.83	0.82	14	12.52	13.88	13.20
15	0.83	0.86	0.85	15	12.53	12.80	12.67
Mean	0.76	0.80		**Mean**	12.49	13.36	

3.2. Analysis of pesticide residues in both farms of milk

3.2.1. Bifenthrine effect on milk

The Statistical results (ANOVA) revealed that the effect of farm management practices on bifenthrine of milk was observed to be highly significant. The mean of the bifenthrene of the milk samples collected from conventional and progressive farms was 0.86%and 0.45%respectively as shown in table 4. The recent research work results are similar with findings of Tan *et al*. (2009) who found that the bifenthrine contents of milk was changed due to poor management practices.

3.2.2. Chlorpyrifos effect on milk

The Statistical results (ANOVA) revealed that the effect of farm management practices on chlorpyrifos of milk was observed to be highly significant. The mean of the chlorpyrifos in the milk samples that area collected from conventional and progressive farms was 0.26 %and 0.21%respectively in table 4.

Table: 04 Analysis of bifenthrine and chlorpyrifos in milk

Bifenthrine				**Chlorpyrifos**			
Farm-code	**Conventional**	**Progressive**	**Mean**	**Farm-code**	**Conventional**	**Progressive**	**Mean**
1	0.41	0.44	0.43	1	0.13	0.17	0.15
2	0.41	0.42	0.41	2	0.31	0.22	0.26
3	0.41	0.40	0.41	3	0.14	0.15	0.14
4	0.41	0.37	0.39	4	0.20	0.17	0.19
5	0.44	0.41	0.42	5	0.21	0.15	0.18
6	0.46	0.45	0.46	6	0.26	0.21	0.24
7	0.44	0.43	0.44	7	0.38	0.22	0.30
8	0.46	0.46	0.46	8	0.20	0.23	0.22
9	6.68	0.45	3.57	9	0.00	0.20	0.10
10	0.47	0.48	0.47	10	0.43	0.22	0.32
11	0.46	0.47	0.46	11	0.33	0.21	0.27
12	0.45	0.49	0.47	12	0.22	0.20	0.21
13	0.44	0.49	0.47	13	0.30	0.25	0.27
14	0.45	0.50	0.48	14	0.41	0.20	0.30
15	0.46	0.49	0.47	15	0.35	0.33	0.34
Mean	0.86	0.45		**Mean**	0.26	0.21	

3.2.3. Analysis of carbofuran in milk

The Statistical results (ANOVA) revealed that the effect of farm management practices on carbofuran of milk was observed to be highly significant. The mean of the carbofuranof the milk samples collected from conventional and progressive farms was 0.46%and 0.31%respectively given in table 5. The high values of residual carbofuran in milk samples collected from conventional farms might be due to poor management techniques and application pattern of chemical sprays on crops. The recent research work results are similar with the findings of Jones and Voogt (1999) who found that the carbofuran contents of milk was changed due to poor management practices.

3.2.4. Analysis of aflatoxin in milk

The Statistical results (ANOVA) revealed that the effect of farm management practices on aflatoxin M1 in milk was observed to be non-significant. The mean of the aflatoxin M1 of the milk samples collected from conventional and progressive farms was 0.49% and 0.55% respectively given in table 5. The high values of aflatoxin M1 in milk samples collected from conventional farms might be due to poor management techniques and feed types. The recent research work results are similar with the findings of Wagacha & Muthomi, (2008) who found that the aflatoxin M1 residues in milk were changed due to poor feeding and management practices.

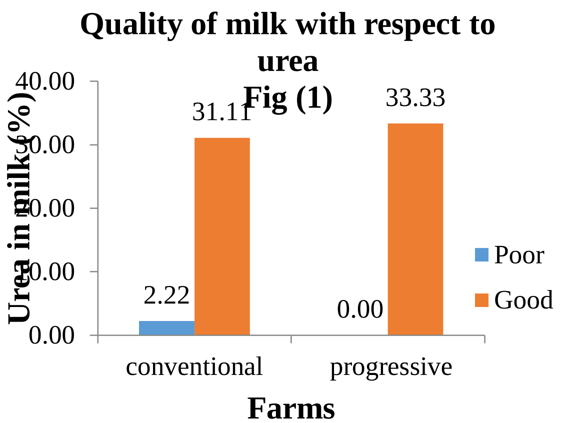
Table: 05 Mean values of Carbofuran and aflatoxin in milk

Carbofuran				Aflatoxin			
Farm-code	**Conventional**	**Progressive**	**Mean**	**Farm-code**	**Conventional**	**Progressive**	**Mean**
1	0.53	0.43	0.48	1	0.47	0.58	0.53
2	0.52	0.31	0.41	2	0.44	0.55	0.50
3	0.45	0.24	0.34	3	0.35	0.54	0.45
4	0.48	0.38	0.43	4	0.49	0.56	0.52
5	0.42	0.22	0.32	5	0.41	0.56	0.49
6	0.38	0.24	0.31	6	0.57	0.53	0.55
7	0.56	0.35	0.45	7	0.31	0.54	0.43
8	0.41	0.33	0.37	8	0.48	0.57	0.53
9	0.49	0.26	0.38	9	0.54	0.57	0.55
10	0.56	0.36	0.46	10	0.39	0.57	0.48
11	0.51	0.29	0.40	11	0.51	0.57	0.54
12	0.45	0.35	0.40	12	0.54	0.51	0.52
13	0.41	0.28	0.34	13	0.47	0.54	0.50
14	0.38	0.29	0.34	14	0.68	0.49	0.58
15	0.45	0.35	0.40	15	0.68	0.57	0.63
Mean	0.46	0.31		**Mean**	0.49	0.55	

3.3. Adulteration test of milk

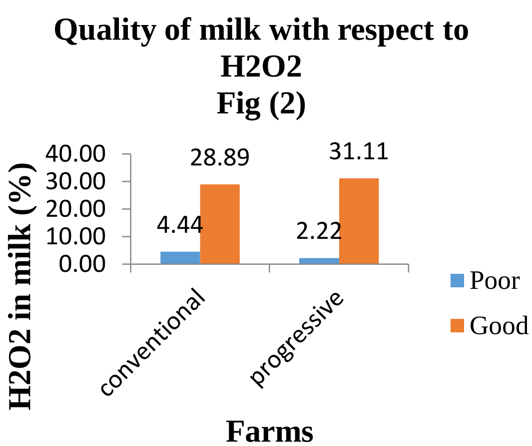
3.3.1. Urea

Among the collected samples 2.22 % samples from conventional and zero% . from progressive farms were found to be poor in quality shown in fig 1. The recent research work results are similar with the findings of Meisel. (1995) who found that the urea residues in milk were due to poor feeding and management practices.



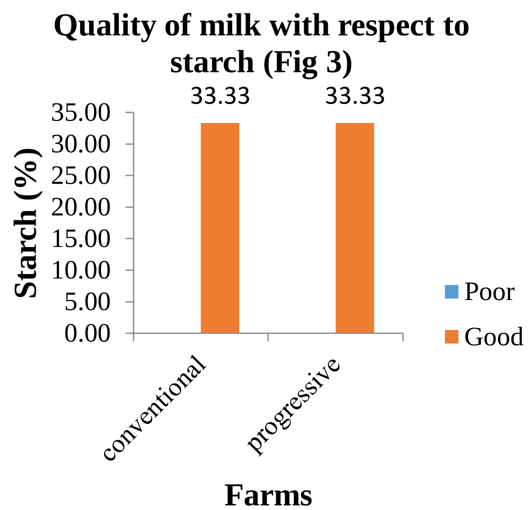
3.3.2. H2O2

Among the collected samples 4.4% samples from conventional and 2.2% . from progressive farms were found to be poor in quality given in fig 2. The recent research is in line to the work of Shaikh *et al*., (2013) who found that the H_2O_2 residues in milk were due to poor feeding and management practices.



3.3.3. Starch

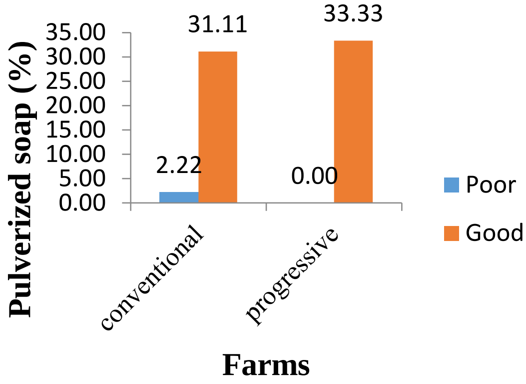
Among the collected samples zero% samples from conventional and zero% from progressive farms were found to be poor in quality given in fig 3. The absence of starch in milk of progressive and conventional farms is due to better management techniques. The recent research work is similar with the result of Brindha *et al*. (2017) who found that the starch residues in milk were due to poor management practices.



3.3.4. Pulverized soap

Among the collected samples 2.22% samples from conventional and zero% from progressive farms were found to be poor in quality in fig 4. The recent research results are same to the result of Ramya *et al*. (2015) who found that the soap residues in milk were due to poor feeding and management practices.

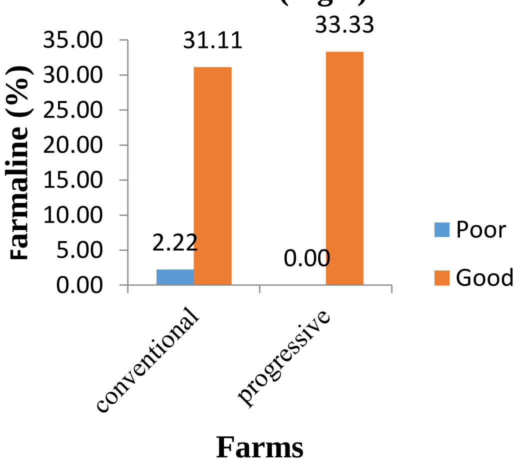
Quality of milk with respect to soap Fig (4)



3.3.5. Formaline

Among the collected samples 2.22% samples from conventional and zero% from progressive farms were found to be poor in quality shown in fig 5. The recent research work is similar with the result of Brindha *et al*. (2017) who found that the formaline residues in milk were due to poor management practices.

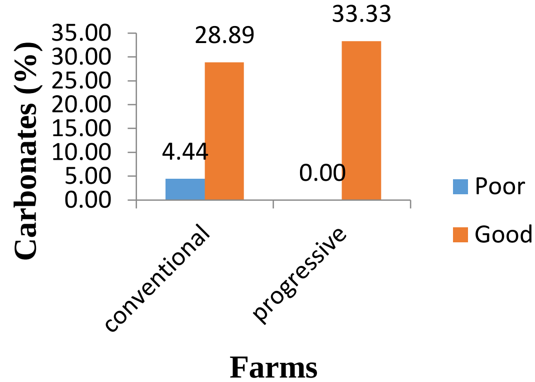
Quality of milk with respect to farmaline (Fig 5)



3.3.6. Carbonates

Among the collected samples 4.44% samples from conventional and zero% from progressive farms were found to be poor in quality described in fig 6. The recent research work results are same with the findings of Bansal, (2013) who found that the carbonates residues in milk were due to poor feeding and management practices.

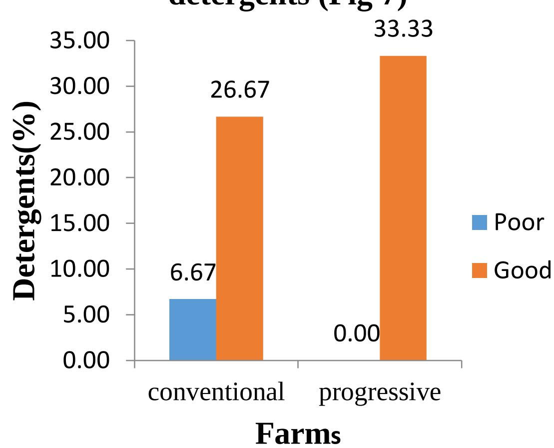
Quality of milk with respect to carbonates Fig (6)



3.3.7. Detergent

Among the collected samples 6.67% samples from conventional and zero% from progressive farms were found to be poor in quality shown in fig 7. The recent research work results are resemble with the findings of Nirwal *et al*. (2013) who found that the detergent residues in milk were due to poor feeding and management practices.

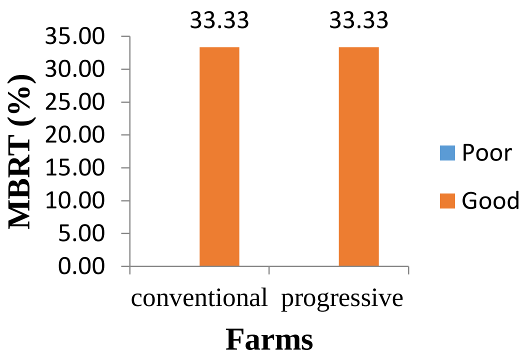
Quality of milk with respect to detergents (Fig 7)



3.3.8. MBRT

Among the collected samples 0% samples from conventional and 0% from progressive farms were found to be poor in quality given in fig 8. The recent research work results are same with the findings of Sinha. (2013) who found that the MBRT in milk were due to good feeding and management practices.

Quality of milk with respect to MBRT (Fig 8)



4. Author Contribution

Toheed-ur-Rehman saadi conducted the research and gathered the data. Dr. Umar farooq supervised the research.

5. Conflict of Interest

There is no conflict of interest in my research.

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