

Determining Feeding Habits in Fattening Farms in Muş Province

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ABSTRACT: This study was conducted to determine feed types and feeding habits in fattening farms in Muş province. For this purpose, a survey was conducted with 368 farmers using random sampling method. While all of the farms dealt with forage production, only 48.5% had sufficient information about forage production. The roughage used in animal in feeding according to total frequency values were, hay (58.2%), prairie grass (56.5%), alfalfa (48.4%), sainfoin (7.2%) and vetch (5.2%), respectively. Ration formulations were either, as mostly used, '50% concentrate-50% roughage', or 'mostly concentrate'. Half of the famers considered that the rangeland area was not adequate, for 29.2% it was adequate and for 20.8% it was fairly enough. It was determined that only 7.8% of farms made silage, 82.8% used licking stone, and 60.9% used vitamins and minerals as feed additives. As a result, it was determined that feeding in the farms was based on intensively utilized concentrate and hay and prairie grass as roughage. Some works need to be done for the dissemination of information regarding to silage usage which is a source of cheap roughage and used in very few farms in the region, and to solve problems that prevent use of it.

Keywords: Fattening farms, feed types, feeding habits, Muş province.

Muş İli Besi İşletmelerinde Besleme Alışkanlıklarının Belirlenmesi

ÖZ: Bu çalışma Muş ili besi işletmelerinde kullanılan yem çeşitlerinin ve besleme alışkanlıklarının belirlenmesi amacıyla yürütülmüştür. Bu amaçla, rastgele örnekleme yöntemi kullanılarak 368 adet işletmede anket çalışması yapılmıştır. İşletmelerin tamamı yem bitkisi ekimi yaparken, sadece %48,5'nin yem bitkisi ekimi ilgili yeterli bilgiye sahiptir. Beslemede kullanılan kaba yem çeşitleri toplam frekans değerlerine göre, saman (%58,2), çayır otu, (%56,5) yonca (%48,4), korunga (%7,2) ve fiğ (%5,2) şeklinde sıralanmaktadır. Rasyon formülasyonu daha çok "50 kaba-50 kesif yem" şeklinde kullanılırken, bunu "çoğunlukla kesif yem" takip etmektedir. İşletmecilerin yarısı mera alanını yeterli bulmazken, %29,2'si yeterli ve %20,8'i de idare eder şeklinde fikir beyan etmişlerdir. İşletmelerin sadece %7,8'inin silaj yaptıkları, %82,8'nin yalama taşı kullandığı ve %60,9'unun yem katkı maddesi olarak vitamin ve mineral kullandığı belirlenmiştir. Sonuç olarak, işletmelerde kesif yemin yoğun kullanıldığı ve kaba yem olarak saman ve çayır otuna dayalı besleme yapıldığı belirlenmiştir. Ucuz kaba yem kaynağı olan ve çok az işletmede kullanılan silajın bölgede yaygınlaştırılması için bilgilendirme ve kullanımını engelleyen problemlerin çözülmesi için çalışma yapılmalıdır.

Anahtar sözcükler: Besi işletmeleri, yem çeşitleri, besleme alışkanlıkları, Muş ili.

INTRODUCTION

Achieving the highest live weight gain with the least feed consumption is one of the important aspects for lucrative animal fattening. Like other animal farming activities, fattening is a commercial activity and the main target is gaining weight. However, this is not so easy. Yield is a feature that is under the influence of genotype and environment and is affected by many factors. The main purpose of scientific studies is to determine these factors, then calculate the impact shares and consequently try to eliminate the negative factors. For this reason, many scientific surveys have been conducted to determine the factors that affect profitability in fattening farms (Şahin, 2001; Köknaroğlu *et al.*, 2006; Aydın and Sakarya, 2012; Denli and Demirel, 2016; Köknaroğlu *et al.*, 2017). Feeding conditions mediated in the fattening farms were investigated in some of these studies. Impact of feeding conditions on profitability were investigated in other studies. The amount of roughage, concentrates and mixed rations, daily number of feedings, amount of land belonging to the farm, amount of land planted, forage planted, and the way of obtaining roughage and concentrates were discussed in these studies. For example, Ekinci (2019) stated farmers performing fattening in Kırıkkale province do not use appropriate raw protein and this increases both the feeding cost and may cause metabolic disorders. The researcher reported that operators should receive support in ration preparation and animal feeding. The important thing to note here is that the factors affecting the yield can vary continuously. Diler *et al.* (2016) reported that the farmers in Hınıs district of Erzurum province have incorrect practices about animal nutrition and cattle ranchers have to be participated in the technical education. Ödevci and Karşlı (2019) reported that feed costs were the most difficult factor in farmers' jobs. Since the year and operating factors are the main factors affecting many features in many studies, repeating the studies in different regions at different times is important for the topicality and accuracy of the information.

For the reasons stated above, this study was carried out to determine the feed types and animal feeding habits used by the cattle farmers in the districts of Muş.

MATERIAL and METHODS

The research material consist of the data of the survey conducted in 2017 that using face-to-face interview with businesses in six districts of Muş province: Central district, Malazgirt, Bulanık, Hasköy, Korkut and Varto. The districts representing the districts in terms of the presence of bovine animals were determined by taking the opinion of the Agriculture and Forestry Directorate staff working in the region. The survey was carried out using simple random sampling method, and questionnaire forms prepared were prepared and used in accordance with the purpose of the research. In determining the number of farms, the principle that taking at least 3% of the sample volume of (Yamane, 2006) or 10% of (Cochran, 1977) would be sufficient was taken into consideration. It is also reported that the sample volume will increase the ability to better represent the main mass as the number of units increases (Sümbüloğlu and Sümbüloğlu, 2007). In this context, taking into account the total number of farms (2,000) taken from the Muş Provincial Directorate of Agriculture and Forestry, 368 (18.4%) farms were determined. The number of samples in each district corresponds to approximately 18.4% of the number of registered farm. Survey numbers from districts were determined according to this ratio. The analysis of the questionnaires were created using cross-tabs (Yazıcıoğlu and Erdoğan, 2004) using the SPSS 21.0 package program (Anonymous, 2012) and chi-square significance test (Düzgüneş *et al.*, 1983) was performed to determine the effects of the factors and mean frequency values of some features were given.

The effects of the districts on forage crops cultivation, appropriate knowledge, forage crops cultivation area, types of roughage, types of roughage offering, use of concentrate, concentrate/roughage rate, the number of Daily feeding, placing on rangeland, months of placing on rangeland, duration of grazing, adequacy of rangeland area, grass capacity of rangeland, supplementing in rangeland, feed types used, making silage, using licking stone and using feed additives properties have been investigated.

RESULTS and DISCUSSION

Since most of the studies on cattle breeding are on dairy farms, the number of studies on fattening farms have been limited. In the evaluation of this study, only studies related to fattening farms will be taken into consideration. Therefore, it is anticipated that the current study will contribute to the literature related to fattening farms that have limited literature.

Findings related to forage crops cultivation

Although all of the farms planted forage crops, only 48.5% were determined to have sufficient knowledge about forage planting (Table 1). A significant ($p<0.01$) relationship was found between the district of farm and the area of forage crop cultivation and having sufficient knowledge about forage crop cultivation. Accordingly, while all the farms in Hasköy district planted forage crops, it was determined that 68.8% (highest rate) of the operators had knowledge about forage planting. The lowest rate of having knowledge about forage crop cultivation was determined in Varto and the farms in the center. The average forage crop planting area of the farms was found to be 57.4, and 37.7% of the farms were found to have a cultivation area of 25 da and less and 39.7% of the farms had 76-100 da. The highest (82.6%) forage crop planting area among the residents was in Malazgirt district as 76-100 da. The farms that planted the least forage crops among the residents were located in Korkut district. Han (2008) reported that the amount of land in fattening farms in Ergani District of Diyarbakir province ranged between 10-90 da, with an average of 73.1 da of land per farm. Yıldırım (2000) reported the average of 84.5 da land per farm with domestic races in the fattening farms in Van province and 166.5 da land per farm with culture and hybrid races. Uzal and Uğurlu (2006) reported that land amount per fattening farm ranged between 0-5 da with average 6.7 da. Eren (2006), on the other hand, reported the average amount of land per fattening farm in Kahramanmaraş, Göksun district as 85.2 da. The result obtained in the current study was found to be similar to (Han, 2008), but lower than that of found in other researches. Uzal and Uğurlu (2006) reported that 19.44% of the fattening enterprises in Konya did not plant forage

because of lack of land and alfalfa and corn were planted at 33.33% and 13.89%, respectively. In the current study, the rate of fattening farms that did not plant forage crops was found as lower than that of (Uzal and Uğurlu, 2006). In study in Siirt province (Kibar and Bakır, 2019), it was determined that forage was not planted in 70.7% of the fattening farms and 32.4% of those who planted had sufficient knowledge. The average amount of land per farm in Siirt province was 34.22 da for irrigated farming and 84.27 da for dry farming.

Findings related to roughage using

The frequencies of roughage used in fattening farms in the city district ranged as straw (58.2%), meadow grass (56.5%), alfalfa (48.4%), sainfoin (7.2%) and vetch (5.2%). While some farms used only one of the feedstuf mentioned above as roughage, some used them alternately to be a combination of two and three (Table 2). The roughage combinations used in the farms were mostly found in the form of "grassgrass + straw + clover" (22.6%) and "meadow grass + straw" (15.9%). The relationship between district of farm and forage types used in feeding was found to be significant ($p<0.01$). Accordingly, 65.5% "grassgrass + straw + clover" combination in the farms in the Center, 43.3% "grassgrass + straw" combination in the Varto district, and 20.0% meadow grass and 26.2% straw in the Hasköy district are among the most used feed types. Straw is one of the poor forage in terms of nutrient content and stands out as a filling material for animals. Hay is the mostly used roughage either alone or in combination with other feedstuf in farms throughout the district. Prairie grass is a roughage that is superior to straw in terms of both its nutritional properties and its particulate effect. It is believed that the farms used straw more in feed combination in order to benefit from meadow grass, which is widely used but not found in sufficient quantity in this region, for a longer period of time during fattening. It has been determined that the farms gave the roughage to the animals in the form of straw (Table 2). The relationship between district of farm and roughage was significant ($p<0.01$). Accordingly, it was determined that roughage was given as straw in the center, Bulanik, Varto and Malazgirt districts, and

in the Korkut district, roughages were mostly served in the form of bales to animals. Denli and Demirel (2016) reported that wheat straw (90%), corn silage (6%) and dry grass (4%) were used as a source of roughage in the fattening farms in Diyarbakır city center. These feed materials were similar to those determined to be used by farmers in the current study, except silage use. In Siirt province (Kibar and Bakır, 2019), it was determined that 37.2% of the business owners cultivated only barley-wheat, 9.3% only clover and 2.3% only corn. In the same research, it was determined that the most common feed used in cattle fattening in Siirt province was ‘straw + bran + concentrate’ combination. It has been reported that roughage (95.6%) is given in the form of straw in the districts of Siirt (Kibar and Bakır, 2019).

Findings related to roughage and concentrate buying

The forages for animals are provided from either farmers’ their own land (53.3%) from of rental land (53.3%) or external purchases (41.3%). It was determined that the forage requirement of farms in Bulanık and Varto districts was maintained by their own farms, while the farms in the Korkut district mostly bought the forage. 50% of the farms got concentrate from the dealers (Table 3). The differences between feed supply and district of farm were found to be significant ($p < 0.01$). All of the farms in Varto district and most of the farms in Bulanık and Hasköy districts bought concentrate from the dealers. On the other hand, 50.9% of the farms in Malazgirt district and 38.3% of the farms in Korkut district obtained concentrate from the feedmills. Most of the operators could not produce their own feed due to their limited economies. In addition, the fact that farmers bought feed from dealers despite the price was higher than that of feedmill price was considered that this was necessary because feedmills did not offer merging buying. Ödevci and Karşlı (2019) selected 5 farms from each province in Ankara, Çankırı, Çorum, Kırşehir and Kırıkkale and determined the roughage and concentrate supply provinces for 65 fattening farms across the region. Accordingly, the rates of getting roughage from their own land, purchasing and partial purchasing options were determined as 30.30%, 45.50% and 24.20%, respectively. The rates of getting concentrate the for same options

were reported as 3.10%, 84.80% and 12.10%, respectively. In the current study, it was determined that roughage was mostly produced in farms, but concentrate was purchased (90%) and in this respect, this finding is generally similar to the work of (Ödevci and Karşlı, 2019). Denli and Demirel (2016) reported that 88% and 91% of the fattening operators in Diyarbakır city center bought roughage and concentrate, respectively, from outside. The present study is inline with the mentioned study for the source of concentrate supply. Aygül and Özkütük (2012) reported that 2/3 of the fattening operators in Malatya province produced the roughage themselves and the rest (1/3) purchased it from the outside and this differed with the current study. Eren (2006) reported the rates of farms that produced roughage and concentrate themselves in the district of Göksun as 14.5% and 12.5%, respectively. Roughage production determined in the current study was higher, concentrate production was lower compared to mentioned study. In Siirt province (Kibar and Bakır, 2019), the purchase rates of roughage and concentrate feed were found to be 54.9% and 97.2%, respectively.

Findings related to concentrate using and rate

Almost all of the farms used concentrate (Table 4). Differences between districts of farm for concentrate use were found to be significant ($p < 0.01$). The farms that use the least concentrate were in Hasköy district, and the ones that use the most were in Center and Korkut districts. 64.6% of the operators offered a ration consisted of “mostly roughage” to their animals (Table 4). Another ration type, ‘half and half roughage and concentrate’, was used at the rate of 21.4%. Concentrate has an important place in terms of balanced nutrition in animal feeding. In animal feeding, concentrate improves feed utilization by accelerating the development of rumen. Especially in the feeding of young animals, a certain amount of concentrate should be used. Therefore, it is not possible to obtain the desired yield from animals fed mainly roughage. It is determined that the operators who know this prefer to use concentrate at certain proportions, although it is more expensive than roughage. Accordingly, 66.7% of the farms in Hasköy used the “half and half roughage-concentrate”, while the farms in Malazgirt, Varto,

Bulanık and Center districts generally used “mostly roughage” rations in feeding.

Eren (2006) reported the rates of concentrate use in farms having 2-30 and 31+ heads in Göksun district as 90.5% and 84%, respectively, that were similar to ratios determined in the current study. Budağ and Keçeci (2013) determined the mostly used combinations as 50% roughage-50% concentrate (36%), 50% roughage-50% concentrate (74%) and 40% roughage-60% concentrate (66%) at the beginning, in the middle and at the end of the fattening, respectively, in fattening farms, in the central district of Van province. Generally, it was seen that concentrate use was at least 50% during fattening in Van province. This study differed from the presented study in the amount of roughage used in the ration. Köknaroğlu *et al.* (2006) reported that as the amount of concentrate used in the ration increased, daily live weight gain and feed utilization rate increased and feed consumption decreased. However, the researchers found that as the use of concentrate increased, the profitability decreased. For these reasons, the concentrate-roughage ratio should be adjusted very well. In addition, since the quality of the roughage and concentrate to be used will affect the issues given above, they must be adjusted in an economical way. In his study conducted in Erzurum province, Topcu (2004) reported the ratio of concentrate used in fattening farms as 44.46% and was found partially similar to the values determined in the current study. In Siirt province, 82.2% of the farmers have been reported to use concentrate, the ratios of concentrate-roughage are ‘mostly roughage’ (55.6%) and ‘50% concentrate-50% roughage’ (23.5) (Kibar and Bakır, 2019).

In general, 58.4% of operators fed twice a day and 29.5% fed three times a day (Table 4). The rate of free-feeding practicing farms was 2.7%. It was thought that operators in Malazgirt, Varto, Centrum and Bulanık used a large amount of roughage to feed their animals because either due to lack of financial sources or adequate information. With the use of roughage alone, it is not possible to obtain the desired level of weight gaining. Roughages are given to meet the living needs of animals. The contribution of offering only roughage to the yield of animals is limited. In this case, yield losses occur causing dissatisfaction and

reluctance to sustain animal husbandry. In order to eliminate this negativity and ensure sustainability, barriers preventing the use and conventionalization of concentrate should be eliminated. Aygül and Özkütük (2012) stated that two-thirds of the fattening farmers in Malatya fed their animals 2 times a day and this was in line with the current study. In Siirt province, it was determined that the livestock were fed twice (53.3%) or thrice (38%) a day (Kibar and Bakır, 2019).

Findings related to rangeland

Almost all of the farms took their animals to rangeland as of April (68.3%) and kept them there mostly for 5-7 months (Table 5). The farms took their animals to rangeland at the earliest were in Malazgirt and Hasköy districts, while the farms utilized the rangeland most were in Varto district. It was thought that farms took their animals to rangeland in the early period in order to decrease the cost of roughage. However, there are concerns as to whether rangeland is ready for grazing during early periods. Officials warn that taking animals to the rangeland in the early period may cause the destruction of rangeland and reduction of the feeding capacity of the rangeland in the following periods. The operators should be informed about the time when rangeland is ready to be grazed.

Ödevci and Karşlı (2019) reported that 50.80% of the operators took their animals to the rangeland and the majority (48.50%) benefited from the rangeland for 3-5 months. With the current study, significant differences were observed in taking animals to rangeland and the duration of the use of rangeland. Han (2008) found that 77.2% of the fattening operators in Ergani district of Diyarbakır took their animals to rangeland and 78.3% of kept their animals there for 2 months. Eren (2006), on the other hand, reported that animals stayed in rangeland for at least 30, and maximum 180 days in the district of Göksun in Kahramanmaraş. The same researcher reported that 87.8% of the operators did not use the rangeland appropriately. Considering the values obtained in the current study, it can be concluded that the rangelands are not used appropriately. Eren (2006) interpreted this inappropriate use of rangeland as results of lack of knowledge and the practice of subjecting animals to short-term fattening in rangeland prior to sell. It has been found that 81.5% of the fattening operators

in Siirt province placed their animals on rangeland, 65.3% of them began use of rangeland in April and 22.7% in March and average grazing period was 5-8 months (84%) (Kibar and Bakır, 2019).

While half of the operators did not find the rangeland area adequate, 29.2% stated that it was adequate and 20.8% found it fairly enough (Table 6). It was also determined that 60.9% of the operators had insufficient grass production capacity and 54.3% of the operators supplemented their animals in addition to grazing on rangeland (Table 6). Differences were determined between three characteristics in terms of these characteristics were found significant ($p < 0.01$). It has been determined that 83.3% of the farms in Varto district considered rangeland area and grass production capacity of rangeland as adequate and therefore they did not supplement their animals in addition to grazing on rangeland. On the other hand, almost all of the operators in the center stated that the rangeland area and grass production capacity was inadequate, and therefore, 89.1% of the farms supplemented their animals in addition to grazing. In places with strong rangeland, feed costs were greatly reduced. The way to achieve efficiency on an economic scale and to compete in the national and international arena is through obtaining economic products. From this perspective, it is understood that rangelands are very important in animal production. For this reason, it is thought that it would be beneficial to inform the operators in terms of rangeland care, grass diversity, grazing capacity and protection.

In Siirt province, 32.6% of the operators answered the question of rangeland status as adequate, 43% not adequate and 24.4% fairly enough. 43.5% of the operators considered rangeland capacity as adequate while 56.5% did not. In addition, 53.7% of the operators reported that they supplemented animals on the rangeland and 46.3% of them did not (Kibar and Bakır, 2019).

Findings related to feed types used and feed additives

In addition to roughage (46.5%), the feedstuff used in fattening were fattening feed (80.4%), pulp (25%), barley (8.7%) and molasses (6%) (Table 7). Majority of the farms considered that the fattening feed positively affected fattening performance and

profitability. The differences between the district of farm and the feed types used were found to be significant ($p < 0.01$). Accordingly, it has been determined that the feed types consisting of "fattening feed + roughage" or "pulp + fattening feed + roughage" are used extensively in Central, Bulanık and Varto districts. On the other hand, it has been found important in terms of nutrition that farms in Korkut district use 55.9% concentrate feed beside roughage. In particular, concentrate was considered to be preferred depending on the knowledge and accumulation level of the producers. In the farms, the ways of offering concentrate to animals were to be offering as mixed feed or adding feedstuffs such as barley, pulp, bran and molasses that are rich in nutrients and having concentrate properties to straw. It has been observed that conscious producers pay attention to the ideal rates of roughage and concentrate in rations and avoid of unbalanced feeding. Budağ and Keçeci (2013) found the roughage and concentrates used in fattening farms in Van province as alfalfa dry grass, sainfoin dry grass, prairie dry grass, wheat or barley straw, lentil straw, corn silage, sugar beet, barley, wheat and wheat bran. Except the basic feedstuff used in the farms, other feedstuff differed depending on the products raised in the regions. For example, while lentil straw is used in Van province, different feedstuffs are used in regions where lentil cultivation is not performed. Straw is important for growers because it is mostly used for rumen stuffing and can be made of almost any roughage. It has been determined that 22.5% of fattening operators in Siirt province used stalk-straw, 23.6% vetch and 16.9% meadow grass (Kibar and Bakır, 2019).

It has been determined that almost none of the farms made silage, 82.8% used lickstones and 60.9% used vitamins and minerals as feed additives (Table 8). Significant ($p < 0.01$) differences were found among districts of farm for the use of silage, licking stone and feed additive. Accordingly, the farms that made silage most (21.4%) were identified in Hasköy district, the farms used lickstones most (93.9%) were found in Bulanık district and the companies used feed additive most (92.6%) in Varto district. Silage, which is one of the types of roughage that has become widespread in animal nutrition in recent

years, is mainly made of green corn in farms. It is believed that operators are aware that silage is a very important and cheaper source of roughage in animal feeding. Although silage production has increased in the regions where this research was carried out, it is thought that the reasons for usage of silage not to become widespread were the negative effect of climate to preserve silage and lack of information of farmers about the importance of silage. In insufficient feeding in terms of concentrates in animals, animals are not getting enough nutrients such as vitamins and minerals. This causes significant yield losses. Operators are trying to fill this gap with feed additives and lickstones.

Ödevci and Karşlı (2019) reported that 3% of fattening operators used only vitamins, 27.30% used vitamins and minerals, 3% used probiotics / periodics, 7.60% used all additives and 59.10% did not use any additives. Although the findings in the current study were similar to those reported in the mentioned study in terms of the high rate of those who use vitamins and minerals, a significant difference has been observed in terms of the rate of those who do not use additives. Yaylak and Alçiçek (2003) reported that corn silage is an important feed ingredient in meeting the protein and energy needs, which constitute the most important cost in fattening. In this regard, fattening operators are considered to take this situation into consideration and it is recommended that growers should use corn silage. Eren (2006) reported the rate of fattening farms that made silage with 2-30 and 31+ heads as 13% and 36%, respectively, in Göksun district. The same researcher reported the rate of using additives as 47.8% and 88%, respectively, to make animals more healthy in the same groups. It was determined that 92.2% of the fattening farms in Siirt province did not make silage, 62.5% used licking stones and 40% used vitamin + mineral additives and 34.4% used no additives (Kibar and Bakır, 2019). It was determined that 41.8% of the animal farms in Malatya province made silage (Köseman and Şeker, 2016).

As a result, it has been determined that the operators engaged in fattening cattle in Muş

province have an average cultivation area of 57.4 da, the majority of the growers are planting forage crops and about half of them have sufficient knowledge. Having sufficient information is important as it will affect the profit to be obtained from livestock due to its yield per unit area. While roughage concentrate feed rate is adjusted in farms, mostly roughage rate is kept higher. However, reaching the highest live weight with the least feed, which is the main target in fattening, will not be achieved in this way. For this reason, operators should adjust the rough-concentrate feed ratio in an optimum way. It is also a general fact accepted by experts that free feeding (ad libitum) should be performed while feeding. When operating expenses are taken into consideration, it is thought that growers should produce their own roughage and concentrate as much as they can. It has been determined that breeders benefit from the rangeland largely and for a long time. However, breeders reported that rangeland area and grass production capacity were not sufficient and that they made supplemental feeding. At this point, the biggest job again falls on growers. Because it is thought-provoking that rangeland area is insufficient and grass production capacity is insufficient in a district with wide plains such as Muş. In this regard, growers should pay attention to the time of rangeland and use of the rangeland in favor of the rangeland.

CONCLUSION and RECOMMENDATIONS

As a result, it was determined that feeding in the farms was based on intensively utilized concentrate and hay and prairie grass as roughage. Some works need to be done for the dissemination of information regarding to silage usage which is a source of cheap roughage and used in very few farms in the region, and to solve problems that prevent use of it. Since growers cultivate barley-wheat to earn additional income, it is thought that government support should be given to increase the use of silage. In addition, since the applications in small enterprises are generally made by looking at each other, it is thought that it would be beneficial to select pilot farmers and to spread the desired applications.

Table 1. Forage crops and it's appropriate knowledge and distribution of amount of cultivation area of districts of Muş province.
Çizelge 1. Yem bitkisi ekimi, yeterli bilgi ve ekim alanı miktarının Muş ilinin ilçelerine göre dağılımı.

Districts İlçeler	Forage crops cultivation Yem bitkisi ekimi			Apropriate knowledge* Yeterli bilgi*			Forage crops cultivation area** Yem bitkisi ekim alanı**					
	Yes Evet	No Hayır	Total Toplam	Yes Evet	No Hayır	Total Toplam	<25	26-50	51-75	76-100	100>	Total Toplam
Central	50 86.2	8 13.8	58 100.0	18 36.7	31 63.3	49 100.0	14 29.8	13 27.7	5 10.6	13 27.7	2 4.3	47 100.0
Malazgirt	56 75.7	18 24.3	74 100.0	35 54.7	29 45.3	64 100.0	3 13.0	0 0.0	1 4.3	13 56.5	6 26.1	23 100.0
Bulamık	65 89.0	8 11.0	73 100.0	35 57.4	26 42.6	61 100.0	20 47.6	4 9.5	2 4.8	9 21.4	7 16.7	42 100.0
Hasköy	16 100.0	0 0.0	16 100.0	11 68.8	5 31.3	16 100.0	6 50.0	2 16.7	1 8.3	3 25.0	0 0.0	12 100.0
Korkut	55 84.6	10 15.4	65 100.0	28 48.3	30 51.7	58 100.0	28 59.6	8 17.0	1 2.1	3 6.4	7 14.9	47 100.0
Varto	41 82.0	9 18.0	50 100.0	15 33.3	30 66.7	45 100.0	6 18.2	8 24.2	1 3.0	17 51.5	1 3.0	33 100.0
Total	283	53	336	142	151	293	77	35	11	58	23	204
Toplam	84.2	15.8	100.0	48.5	51.5	100.0	37.7	17.2	5.4	28.4	11.3	100.0
Chi-square value (Ki-kare değeri)	NS (ÖD)			12.39			61.53					

NS (non-significant)/ ÖD (Önemli değil); *, **: Statistically significant at: p<0.05 and p<0.01; (İstatistiksel olarak *: p<0,05 ve **: p<0,01 önemlidir).

Table 2. Types of roughage used and distribution of roughage offering methods of districts of Muş province.
Çizelge 2. Kullanılan kaba yem çeşitleri ve yem verme şekillerine göre dağılımı.

Districts İlçeler	Types of roughage** Kaba yem çeşitleri**										Types of roughage offering** Kaba yem verme şekli**			
	Prairie Çayır otu	Straw Saman	Alfalfa Yonca	Prairie grass+ straw Çayır otu+ saman	Prairie grass+ alfalfa Çayır otu+yonca	Straw+alfalfa Saman+yonca	Prairie grass+straw +alfalfa Çayır otu+saman +yonca	Prairie grass+straw /12/32*Çayır otu+saman/12/ 32ş	Total Toplam	Straw Saman	Bale Balya	Straw+bale Saman+balya	Total Toplam	
Central % Number (Adet)	4 6.9	2 3.4	0 0.0	8 13.8	2 3.4	1 1.7	38 65.5	3 5.2	58 100.0	51 98.1	0 0.0	1 1.9	52 100.0	
Malazgirt % Number (Adet)	13 20.0	17 26.2	1 1.5	9 13.8	0 0.0	0 0.0	8 12.3	17 26.2	65 100.0	56 83.6	11 16.4	0 0.0	67 100.0	
Bulanık % Number (Adet)	5 6.8	14 18.9	16 21.6	7 9.5	8 10.8	8 10.8	7 9.5	9 12.2	74 100.0	67 97.1	1 1.4	1 1.4	69 100.0	
Hasköy % Number (Adet)	0 0.0	1 7.7	4 30.8	0 0.0	1 7.7	4 30.8	1 7.7	2 15.4	13 100.0	11 78.6	2 14.3	1 7.1	14 100.0	
Korkut % Number (Adet)	6 9.2	16 24.6	9 13.8	5 7.7	4 6.2	8 12.3	13 20.0	4 6.2	65 100.0	38 55.1	29 42.0	2 2.9	69 100.0	
Varto % Number (Adet)	10 18.9	4 7.5	2 3.8	23 43.4	2 3.8	3 5.7	7 13.2	2 3.8	53 100.0	49 90.7	4 7.4	1 1.9	54 100.0	
Total Toplam %	38 11.6	54 16.5	32 9.8	52 15.9	17 5.2	24 7.3	74 22.6	37 11.3	328 100.0	272 83.7	47 14.5	6 1.8	325 100.0	

Chi-square value (Ki-kare değeri)
***. Statistically significant at: p<0.01 (statistiksel olarak **; p<0.01 önemlidir).
12/32ş: fig-alfalfa/samfon-alfalfa. 196.75

Table 3. Distribution of roughage and concentrate supply place of districts of Muş province.
Çizelge 3. Kaba yem temin yeri ve kesif yem alım yerinin Muş ilinin ilçelerine göre dağılımı.

Districts İlçeler	Roughage supply place** Kaba yem temin yeri**					Concentrate supply place** Kesif yem alım yeri**					
	Farm İşletme	Leased land Kiralık arazi	Buying Satın alma	Farm+buying İşletme+satin alma	Farm+leased land+buying İşletme+kiralık arazi+satin alma	Dealer Bayi	Cooperative Kooperatif	Feedmill Fabrika	Farm İşletme	Dealer+coop. /farm Bayi+koop. +işletme	Total Toplam
Central	Number (Adet) 27	2	14	13	2	26	11	4	2	13	56
	% 46.6	3.4	24.1	22.4	3.4	46.4	19.6	7.1	3.6	23.2	100.0
Malazgirt	Number (Adet) 24	19	15	9	3	13	3	27	10	0	53
	% 34.3	27.1	21.4	12.9	4.3	24.5	5.7	50.9	18.9	0.0	100.0
Bulanık	Number (Adet) 40	2	14	2	16	44	9	3	1	3	60
	% 54.1	2.7	18.9	2.7	21.6	73.3	15.0	5.0	1.7	5.0	100.0
Hasköy	Number (Adet) 6	2	6	0	1	9	0	3	0	0	12
	% 40.0	13.3	40.0	0.0	6.7	75.0	0.0	25.0	0.0	0.0	100.0
Korkut	Number (Adet) 3	3	41	10	1	17	3	23	0	17	60
	% 5.2	5.2	70.7	17.2	1.7	28.3	5.0	38.3	0.0	28.3	100.0
Varto	Number (Adet) 29	3	8	13	0	47	0	1	0	0	48
	% 54.7	5.7	15.1	24.5	0.0	97.9	0.0	2.1	0.0	0.0	100.0
Total	Number (Adet) 129	31	98	47	23	156	26	61	13	33	289
	% 39.3	9.5	29.9	14.3	7.0	54.0	9.0	21.1	4.5	11.4	100.0
Chi-square value (Ki-kare değeri)				145.25					174.79		

** Statistically significant at: $p < 0.01$ (İstatistiksel olarak **; $p < 0.01$ önemlidir).

Table 4. Distribution of concentrate use, concentrate / roughage rate and the number of daily feeding of districts of Muş province.
Çizelge 4. Kesif yem kullanımı, kesif/kaba yem oranı ve günlük yemleme sayısının Muş ilinin ilçelerine göre dağılımı.

Districts İlçeler	Use of concentrate** Kesif yem kullanımı**			Half and half concentrate/roughage Yarı yarıya kaba/kesif yem			Concentrate/roughage rate** Kesif/kaba yem oranı**			The number of daily feeding** Günlük yemleme sayısı**						
	Number (Adet)	Yes Evet	No Hayır	Total Toplam	11	10	9	8	7	6	5	4	3	2	1	0
Central	57	98.3	1.7	58	19.6	12.5	67.9	38	56	2	32	25	0	59	0	0
Malazgirt	57	78.1	21.9	73	7.3	21.8	70.9	39	55	9	51	11	3	74	3	0
Bulanık	65	89.0	11.0	73	13	6	44	63	63	2	51	18	5	76	5	0
Hasköy	12	75.0	25.0	16	4	0	2	6	6	1	9	5	0	15	0	0
Korkut	69	98.6	1.4	70	13	14	31	58	58	18	11	33	0	62	0	0
Varto	49	92.5	7.5	53	16	1	30	47	47	0	44	8	1	53	1	0
Total	309	90.1	9.9	343	61	40	184	285	285	32	198	100	9	339	9	0
Toplam	309	90.1	9.9	343	21.4	14.1	64.6	100.0	100.0	9.4	58.4	29.5	2.7	100.0	2.7	0.0
Chi-square value (Ki-kare değeri)																46.67
** Statistically significant at: p<0.01 (istatistiksel olarak **; p<0.01 önemlidir).																96.43

Table 5. Status of placing animals on rangeland, month of placing on rangeland and duration of grazing time in different districts of Muş province.
Çizelge 5. Hayvanları meraya çıkarma, çıkarma ayı ve merada otlatma süresinin Muş ilinin ilçelerine göre dağılımı.

Districts İlçeler	Placing on rangeland* Meraya çıkarma*			Month of placing on rangeland** Meraya çıkarma ayı**				Duration of grazing (month)** Merada otlatma süresi (ay)**				
	Yes Evet	No Hayır	Total Toplam	March Mart	April Nisan	May Mayıs	Total Toplam	4-5	5-6	6-7	7-8	Total Toplam
Central	54 91.5	5 8.5	59 100.0	2 4.1	31 63.3	16 32.7	49 100.0	3 6.1	12 24.5	27 55.1	7 14.3	49 100.0
Malazgirt	75 100.0	0 0.0	75 100.0	11 15.3	40 55.6	21 29.2	72 100.0	12 16.9	31 43.7	26 36.6	2 2.8	71 100.0
Bulamık	86 100.0	0 0.0	86 100.0	7 9.0	37 47.4	34 43.6	78 100.0	12 14.1	35 41.2	29 34.1	9 10.6	85 100.0
Hasköy	16 100.0	0 0.0	16 100.0	2 13.3	12 80.0	1 6.7	15 100.0	5 35.7	3 21.4	6 42.9	0 0.0	14 100.0
Korkut	68 97.1	2 2.9	70 100.0	1 1.6	60 95.2	2 3.2	63 100.0	11 17.7	33 53.2	18 29.0	0 0.0	62 100.0
Varto	53 98.1	1 1.9	54 100.0	1 2.0	44 86.3	6 11.8	51 100.0	4 8.9	15 33.3	10 22.2	16 35.6	45 100.0
Total	352	8	360	24	224	80	328	47	129	116	34	326
Toplam	97.8	2.2	100.0	7.3	68.3	24.4	100.0	14.4	39.6	35.6	10.4	100.0
Chi-square value (Ki-kare değeri)	14.80			59.79				64.52				

*, **: Statistically significant at: p<0.05 and p<0.01 (İstatistiksel olarak *: p<0.05 ve **: p<0.01 önemlidir).

Table 6. Adequacy of rangeland area and weed capacity and distribution of additional feed in rangeland of districts of Muş province.
Çizelge 6. Mera alanının ve ot kapasitesinin yeterliliği ve merada ilave yem vermenin Muş ilinin ilçelerine göre dağılımı.

Districts İlçeler	Adequacy of rangeland area** Mera alanı yeterliliği**				Grass capacity of rangeland ** Meranın ot kapasitesi yeterliliği**				Supplementing in rangeland** Merada ilave yem verme**				
	Yes Evet	No Hayır	Not bad İdare eder	Total Toplam	Yes Evet	No Hayır	Total Toplam	Yes Evet	No Hayır	Total Toplam	Yes Evet	No Hayır	Total Toplam
Central	1	57	1	59	0	56	59	49	5	54	49	5	54
%	1.7	96.6	1.7	100.0	5.1	94.9	100.0	90.7	9.3	100.0	90.7	9.3	100.0
Malazgirt	24	15	32	71	38	33	71	35	32	67	35	32	67
%	33.8	21.1	45.1	100.0	53.5	46.5	100.0	52.2	47.8	100.0	52.2	47.8	100.0
Bulank	23	43	18	84	29	51	80	43	39	82	43	39	82
%	27.4	51.2	21.4	100.0	36.3	63.8	100.0	52.4	47.6	100.0	52.4	47.6	100.0
Hasköy	5	10	0	15	3	11	14	4	11	15	4	11	15
%	33.3	66.7	0.0	100.0	21.4	78.6	100.0	26.7	73.3	100.0	26.7	73.3	100.0
Korkut	8	45	16	69	17	50	67	42	24	66	42	24	66
%	11.6	65.2	23.2	100.0	25.4	74.6	100.0	63.6	36.4	100.0	63.6	36.4	100.0
Varto	40	3	5	48	45	9	54	15	36	51	15	36	51
%	83.3	6.3	10.4	100.0	83.3	16.7	100.0	29.4	70.6	100.0	29.4	70.6	100.0
Total	101	173	72	346	135	210	345	188	147	335	188	147	335
Toplam	29.2	50.0	20.8	100.0	39.1	60.9	100.0	56.1	43.9	100.0	56.1	43.9	100.0
Chi-square value (Ki-kare değeri)	167.66												
** Statistically significant at: p<0.01 (İstatistiksel olarak **; p<0.01 önemlidir).	86.62												

Table 7. Distribution of feed types used in feeding of districts of Muş province.
Çizelge 7. Beslemede kullanılan yem çeşitlerinin Muş ilinin ilçelerine göre dağılımı.

Districts İlçeler	Feed types used** Kullanılan yem çeşitleri**										Total Toplam
	Wheat pulp Küspe	Fattening feed Besî yemi	Roughage Kaba yem	Fattening feed+wheat pulp Besî yemi+küspe	Fattening feed+molasses Besî yemi+melas	Fattening feed+roughage Besî yemi+ kaba yem	Barley+fattening feed/molasses/roughage Arpa+besî yemi/melas/kaba yem	Wheat pulp+fattening feed+roughage Küspe+besî yemi +kaba yem			
Central	0	12	2	2	1	20	2	20	20	59	
%	0.0	20.3	3.4	3.4	1.7	33.9	3.4	33.9	33.9	100.0	
Malazgirt	0	16	13	1	9	12	19	1	1	71	
%	0.0	22.5	18.3	1.4	12.7	16.9	26.8	1.4	1.4	100.0	
Bulanık	5	23	2	4	0	32	6	5	5	77	
%	6.5	29.9	2.6	5.2	0.0	41.6	7.8	6.5	6.5	100.0	
Hasköy	0	4	1	1	0	3	1	3	3	13	
%	0.0	30.8	7.7	7.7	0.0	23.1	7.7	23.1	23.1	100.0	
Korkut	10	38	4	5	7	1	0	3	3	68	
%	14.7	55.9	5.9	7.4	10.3	1.5	0.0	4.4	4.4	100.0	
Varto	0	13	1	4	1	10	1	24	24	54	
%	0.0	24.1	1.9	7.4	1.9	18.5	1.9	44.4	44.4	100.0	
Total	15	106	23	17	18	78	29	56	56	342	
%	4.4	31.0	6.7	5.0	5.3	22.8	8.5	16.4	16.4	100.0	

Chi-square value (Ki-kare değeri)

188.04

** : Statistically significant at: $p < 0.01$ (İstatistiksel olarak **: $p < 0.01$ önemlidir).

Table 8. Distribution of silage, licking stone and feed additives of districts of Muş province.
Çizelge 8. Silaj yapma, yalama taşı ve yem katkı maddesi kullanımının Muş ilinin ilçelerine göre dağılımı.

Districts İlçeler	Making silage** Silaj yapma**			Using licking stone** Yalama taşı kullanma**			Using feed additives** Yem katkı maddesi kullanma**					
	Yes Evet	No Hayır	Total Toplam	Yes Evet	No Hayır	Total Toplam	Vitamin Vitamin	Mineral Mineral	Vitamin+mineral Vitamin+mineral	No using Kullanmıyor	Total Toplam	
Central %	10 17.5	47 82.5	57 100.0	47 82.5	10 17.5	57 100.0	7 12.1	2 3.4	34 58.6	15 25.9	58 100.0	
Malazgirt %	9 13.0	60 87.0	69 100.0	39 53.4	34 46.6	73 100.0	11 14.7	10 13.3	38 50.7	16 21.3	75 100.0	
Bulanık %	3 3.8	75 96.2	78 100.0	77 93.9	5 6.1	82 100.0	10 12.8	0 0.0	49 62.8	19 24.4	78 100.0	
Hasköy %	3 21.4	11 78.6	14 100.0	13 86.7	2 13.3	15 100.0	1 6.7	0 0.0	3 20.0	11 73.3	15 100.0	
Korkut %	1 1.4	69 98.6	70 100.0	59 86.8	9 13.2	68 100.0	3 4.4	13 19.1	47 69.1	5 7.4	68 100.0	
Varto %	1 1.8	55 98.2	56 100.0	54 100.0	0 0.0	54 100.0	4 7.4	0 0.0	41 75.9	9 16.7	54 100.0	
Total Toplam	27 7.8	317 92.2	344 100.0	289 82.8	60 17.2	349 100.0	36 10.3	25 7.2	212 60.9	75 21.6	348 100.0	
Chi-square value (Ki-kare değeri)	22.11			63.48			68.72					

** : Statistically significant at: p<0.01 (statistical olarak **; p<0.01 önemlidir).

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