

The Effects of Animal Manure and the Time of Harvest of Two Kinds of Millets Quality

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ABSTRACT: Animal manure on soil prepares essential elements and increase water holding capacity and quality of plants. In order to investigate the effect of manure and harvest time in qualitative and quantitative characteristics of two types of millet, an experiment has done in Agricultural Institute of Zabol University in pieces of land as random blocks in three repetitions in 2013. The main factors are consist of different amounts of fertilizer: cow manure(F₁), lack of fertilizer(F₂), hen manure(F₃), struthio mature(F₄), sheep manure(F₅) and sub factor are consist of: combination of two types of millet and harvest time. Based on the obtained results of The flowering stage, the highest percentage of dry matter and water-soluble carbohydrates were observed in sheep manure treatment s and there wasn't significant difference between treated values. And the largest amount of soluble fiber in neutral solution and crude proteins was seen in litter treatment, have the most correlation and percent of dissolved hydrocarbons and dry matter also have positive and significant correlation in 1% probability level.

Keywords: Animal manure; crude protein; soluble carbohydrates; percentage of dry matter.

INTRODUCTION

Providing the animal protein necessity of a society because of its efficacy in growth and physical and mental health is one of the best typical of a country growth and development. By paying attention to annual protein materials and the country production capacity units, it is obvious that to prevent from going out of large amount of money to in port these materials, we should persuade inside product increase. By paying attention to this reality that the existent tore's in our country have damaged a lot because of large browse of animal and multiple droughts and have strenuous erosion, can't ready and answer to best nutrition, so implanting suitable provender plants such as Nitrified kind millet because of its low water necessity, and its low expectancy of soil and providing high quality provender can be a good way to feed bests, decreasing provender import to country and protecting from existent tore's.

Millets are from tiny grain corns and one year plants in warm areas and have different kinds of types and some of them are from the first group of plants which have become domestic. The millets have, kind such as panicum, setaria, Echinochloa, Eleusine, Pennisetum, paspalum and belong to two phylum: chloride and Paniceae. The main types of Panicum are:

P.miliacuem, P.miliare and P.ramosum (kocheiki 1994). In Iran and in different parts of this country, planting this plant is small sites in surface is common and mainly they use of its speeds to feed births and use itself for bests. As whole, natural millets are suppose as the small day erect plants with medium paw. The tiny and capillary wools on its branches and leaves of the plant are another important spaces of this millet. As spawn and seed kind, they are eligibility seeds that their body is smaller than morvaridi millet (americium Pennisetum) and are large fox tail by colors like cream, yellow, red, black, brownd (Cobley,1976).

Using natural materials like animal manure and sewerage in agricultural soil prolific have common from years in all over the world. By paying attention to lack of natural materials in dry and semidry areas soils, mixture of natural materials in these areas is good for improvement of physical and chemical effects of soil prolific. The manure value of bests and sewerages in common studies in different countries have shown that they are very expensive. From

other side, by increasing population and their manure like sewerage sludge's, probably the most wisely and confident way to avoid stock piling these increasable materials from biological seen is to adding them to agriculture lands (Alyouni and Rezaie nejad 2000).

Azizi (2003), in study about the chemical and animal manure effects on corn seed functions deducted that using animal manure with chemical manure will cause the usage of chemical dung from 240 kilograms in hectare. (Najafi and Rajba, 1995) express that using bestial dungs in Iran will increase wheat function which is exactly the same as (Rees and 1993) results in using animal manure. Moreover about wheat, soya and alfalfa also as two types of strategic agricultures in Iran that have good consistency with Iran climate.

Cow manure after collapse, helps to food element secure and acts as a huge energy supply for alive creatures, so by this it will increase the society and soil microorganisms and will increase the CEC capacity of plant and by absorbing more nutrient elements will avoid them from water washing (Hoseinian, 2002). Hen manure will cause the biological and chemical effect activities better and decrease the water necessity of plant by so percent and another profit of that is avoiding the plant theme burning, increasing the soil nitrogen amount, soil texture repair, imperceptible nitrogen phosphate and natural material freedom. Hen manure will decrease the eruption of plant in any plant time and have an effective impress on product growth and function (ogbonna and, 2007).

The effect of mutton manure is an natural carbon and phosphor changes that will magnet by plant (Mirzashahi and Kiani, 2003).

The limit of harvest is one of the most important and main effective factors on provender quality (Seddighina, 2005). So, the provender which harvest in the first process of their growth has the highest value of nutrition for the beasts. By increasing the plant age, in the time of harvest will find very differences in food and digestive sufficiency of them (Sepher,1998). By nomination of the best time of harvest for beats provender secure, we can get the best quality and quantity of food, and delicious food of provender and we can obtain the most value of that and its operation. Delay harvest of coin in order to use its provender cause increasing the quantity of their operation. In this case by closing to the end of the plant growth dare, the quality of its provender will decrease. These two factors operate opposite, so we should nominate the best time of harvest in order to get the highest operate with best product. (Rezvani moghadam and Nasiri Mahalati 2000). By paying attention to the irregular usage of farmers from chemical manure, the operation of natural materials in dry and semi dry soils in Iran and the effective factors of animal manure on physical and chemical factors of soil and plant growth factors and by paying attention to this that millet plant is resistant against dry stresses, so this study is done with the aims of study of effective factors of animal manure and the harvest time on quality factors of two kind of millets.

MATERIALS AND METHODS

This experiment was done in 2013 in Zabol university experimental land in 25 kilometers from the east of Zabol. This area is in the geographical length of 61 degree and 31 minutes of east and the geographical wide of 30 degrees and 54 north minutes in 480 meters high from the sea level. The area climate is breakdown to very hot and dry areas with hot and dry summers.

To the weather station statistics the average of long 20 years period of raining there is 63 millimeters and the annual vapor range is 4500 millimeters and the average of long period of temperature is 23 degrees and the minimum of that is -7 centigrade (Sobh khizi, 2006)

By paying attention the different parts of plant growth and in order to appoint the physical and chemical features of soil, from the farm where was the place of experiment before planting, we got some samples from 0 to 30 centimeters depth of soil. That soil was with Lumi gravel texture and pH of 7.5. To plant millet we need to have (cow, hen, struthio, sheep) manure with 220 grams Ammonium phosphate, 175 grams potassium sulfate, 110 grams ourah dung and 50 kilograms nitrogen in hectare. The results of soil analyze in site have shown in table (1-3).

The effect of animal manure and their harvest time on quality of two kinds of millet in case of plat split experiment and random perfect block design. By three times repeat ion was done. This experiment in the agriculture year of 2013 was done with bestial dungs of (cow, mutton, hen, ostrich) by the main factors and two kinds of millets (Sistan and Bastan location) by the secondary factors were choose.

This pattern contains 15 kart that the length of each is 8 meters and distance of their rows are 20 centimeters and the distance of their repeat ion from each other is 1.5 meters and the distance of the karts from each other is 0.5 meter.

RESULTS AND DISCUSSION

Discuss and conclusion

The table of comparison of the average of millet numeric quality by bestial dungs and the time of harvest (start of blossom)

Average of cubes										
Different sources	Freedom degree	Dry material	Solvable hydrates water	in	Crowed protein	fiber	Solvable wools in acid solution	Solvable wools in inactive solution	in	ash
repeat	2	6.38 ^{ns}	11.11 ^{ns}		0.94 ^{ns}	0.83 ^{ns}	20.93*	7.93 ^{ns}		0.01 ^{ns}
Bestial dungs	4	101.26**	64.00**		159.48**	5.65 ^{ns}	148.38**	334.65**		1.09**
Main error	8	5.26	25.14		31.89	10.68	15.35	128.15		0.22
Millet numbers	1	74.43 ^{ns}	3.24 ^{ns}		0.54 ^{ns}	1.62 ^{ns}	30.13 ^{ns}	2.93 ^{ns}		0.04 ^{ns}
A*B	4	14.85 ^{ns}	7.90 ^{ns}		12.88 ^{ns}	6.67 ^{ns}	21.96 ^{ns}	48.04 ^{ns}		0.26 ^{ns}
Secondary error	40	18.38	6.68		12.15	5.30	17.30	36.49		0.23
Change coefficient	-	6.61	22.12		6.07	6.02	13.69	9.68		6.40

In each column the averages which has common letters have meaningful different in 5% surface of possibility

Experimental cares	Dry material	Solvable carbohydrates	Crude protein	fiber	Solvable wools in acid solution	Solvable wools in inactive solution	in	ash
Cow	68.68a	13.77a	10.22b	38.15a	25.88c	56.98b		7.58b
Voucher	62.68b	7.98b	11.37b	38.51a	27.97bc	59.14b		7.21b
Hen	62.43b	12.40ab	19.59a	37.10a	34.94a	70.74a		8.04a
Ostrich	63.12b	11.08ab	12.73b	38.55a	31.59ab	63.55ab		7.55b
Mutton	67.19a	13.22a	12.92b	38.89a	31.45ab	61.60ab		7.46b
Millet numbers								
Sistan	7.60a	62.18a	29.66a	38.07a	13.27a	11.92a		65.94a
Bastan	7.54a	62.62a	31.07a	38.40a	13.46a	11.46a		63.71a

Table 4-5 the comparison of average quality of millet numbers by effect of bestial

Change sources	Freedom degree	Dry material	Solvable carbohydrate	Crude protein	fiber	Solvable wools in acid solution	Solvable wools in inactive solution	in	ash
Repeat	2	217.33*	16.62 ^{ns}	9.49 ^{ns}	0.73 ^{ns}	96.85*	9.82 ^{ns}		0.13 ^{ns}
Bestial dungs	4	329.28**	221.51**	200.54**	18.77*	476.05**	962.50**		1.90**
Main errors	8	119.98	38.89	21.33	13.14	88.21	141.32		0.43
Millet numbers	1	34.26 ^{ns}	7.66 ^{ns}	14.68*	4.93 ^{ns}	33.16 ^{ns}	32.94 ^{ns}		0.15 ^{ns}
A*B	4	40.67 ^{ns}	23.27*	7.98 ^{ns}	14.64*	48.98 ^{ns}	72.21*		0.46 ^{ns}
Secondary errors	40	52.63	8.55	3.34	5.13	27.04	24.19		0.36
Change coefficient	-	10.48	14.08	21.57	5.30	21.47	9.95		9.04

In each column the averages which has common letters have meaningful different in 5% surface of possibility

Experimental cares	Dry material	Solvable carbohydrates	Crude protein	fiber	Solvable wools in acid solution	Solvable wools in inactive solution	in	ash
Cow	73.91a	23.20ab	5.40b	42.21a	18.77c	41.21c		6.62abc
Voucher	63.50b	24.19a	5.99b	44.03a	20.08bc	44.86bc		6.17c
Hen	72.05ab	14.77c	15.40a	41.97a	33.14a	62.37a		6.91ab
Ostrich	63.54b	17.63bc	8.88b	41.32a	28.54ab	55.03ab		7.21a
Mutton	73.07ab	24.00a	6.70b	44.04a	20.54bc	43.63c		6.48bc
Millet numbers								
Sistan	6.73a	50.16a	24.96a	42.43a	8.97a	20.40a		68.46a
Bastan	6.63a	48.68a	23.47a	43.00a	7.98b	21.12a		69.97a

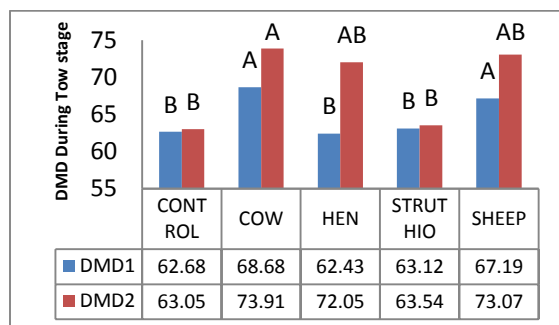
The suitable adjectives are survey in two follow parts:

First part: 4-1- start of blossom

Second part: 4-2- perfect growth

4-1-1. dry material (DMD)

By the analyze table (1-4) results, the main effect of animal manure on plant dry weight has meaning in one percent of surface that by paying attention to the average comparison table (2-4) the highest weight of dry material in cow and sheep manure cares that have outcome, show a meaningful increase by compare to voucher and hen and struthio manure cares haven't any meaning full different by voucher (table 2-4).

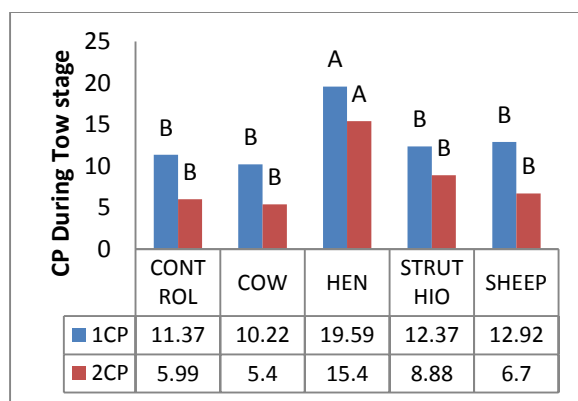


4-1-2- Solvable Carbohydrates in Water (WSC)

By paying attention to variance analyze table (1-4), the effect of animal manure on solvable carbohydrates in water in provender have meaning in one percent of probable surface. The comparison of averages show that in cow and sheep manure cares the solvable carbohydrate in water are 13.77 and 13.22 that have a meaningful increase in comparison to voucher surface in 5 percent, and also there is not any meaningful difference between hen and struthio manure, cares (table 4-2). The results of analyses table 1-4 expresses that the millet numbers and the reciprocal effects of bestial dungs and millet numbers don't have any meaning full effect on value of solvable carbohydrate in water. The percent of carbohydrates in Sistan type provender obtained 11.92 percent that have not shown any meaningful different by bastan type (table 2-4).

1-3- crude protein (cp)

The results of variance analysis show that the animal manure have meaningful affects on crude protein in one present surface (table 1-4). By paying attention to average comparison (table 4-2) in hen manure care, the most crude protein is obtained that have a meaningful different by voucher surface and also the amount of crude protein in cow, sheep and struthio manure care don't show any meaningful different with voucher. Emamy and 2007 reported that the different scales of well water and sewerage have a meaningful effect on average percent of crude protein of millet provender. As top diagram shows, the most value of crude protein was obtained in hen dung care (diagram 3-4).



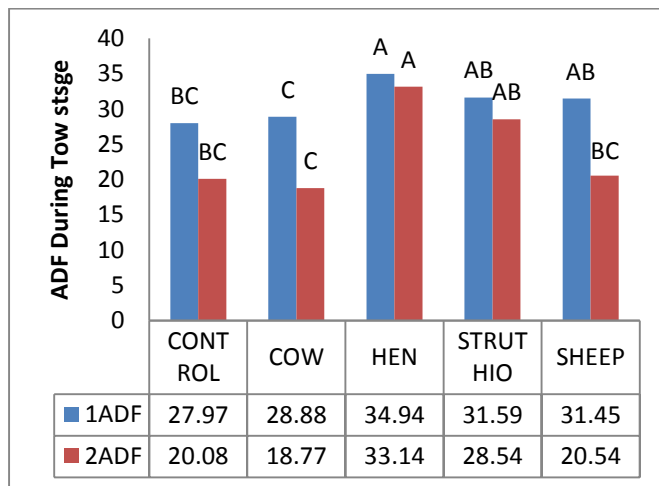
1-4- Fiber

On (table 2-4) data, the effects of animal manure and millet types and their reciprocal effects on each other, none of them have a meaningful effect on existence fiber in provender value. The results of average comparisons shows that between cow, hen, struthio and sheep manure cares there isn't any meaningful different with voucher.

4-1-5- Solvable fibers in acid solver (ADF)

As the same as variance analyze results, the effects of animal manure on value of solvable fibers in acid solver are meaningful in one percent surface (table 4-1).

The comparison of averages show that between hen, struthio and sheep manure cares is not a meaningful different in value of solver fiber in acid solver but these three cares show a meaningful increase with voucher surface also no meaningful show is seen between cow manure care and voucher (table 2-4).

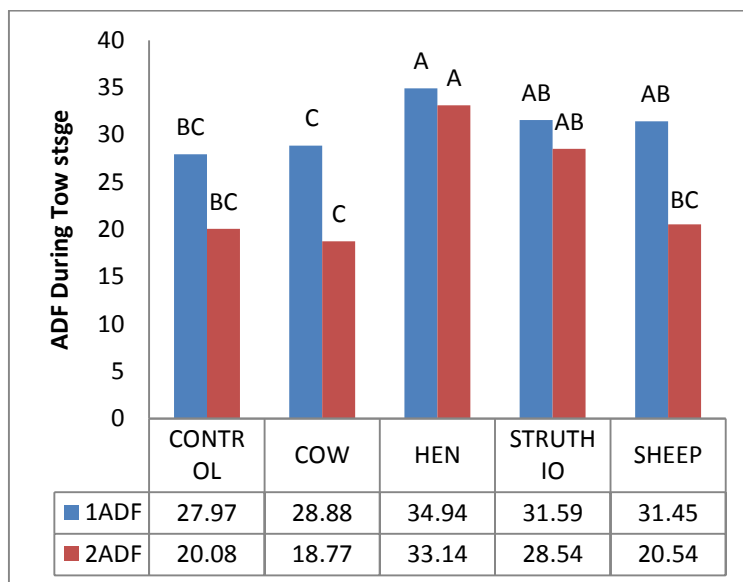


4-1-6- Solvable fiber in inactive solver (NDF)

Relevant to variance analyze results, the effects of animal manure on solvable fiber amount in inactive solver is meaningful in one percent of surface (table 4-1). The results of average comparisons show that the amount of solver fiber in inactive solver in hen dung care is about 70:74 percent that in comparison to voucher has increased 1.2 times and this increase is meaningful and also there isn't any meaningful different between cow, struthio and sheep manure cares with voucher about this adjective (table 4-2).

4-1-7- Ash

The results of variance analysis show that the effect of animal manure on ash value in one percent probable surface is meaningful (table 4-1). On comparison of averages the most value of ash is obtained in hen manure care that to voucher is meaningful and also the cow – struthio and sheep manure cares haven't any meaningful different with voucher (table 2-4).



Part 4-2 perfect attendance

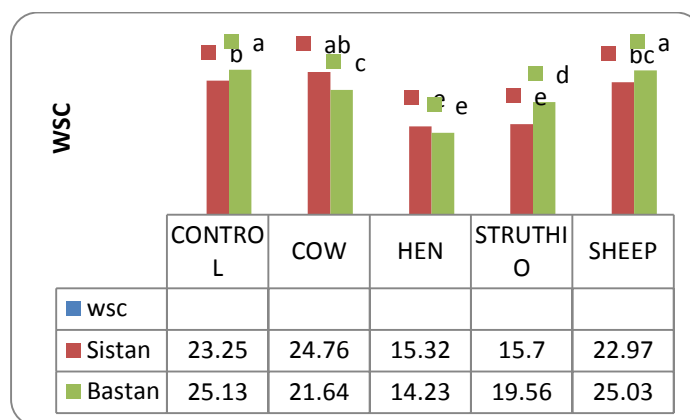
4-2-1 dry material (DMD):

Relevant to variance analyze results, the effects of animal manure on dry material is meaningful in one percent of surface, and the effects of millet types and also reciprocal effects of animal manure and millet types dry plant is not meaningful.(table 4-4). The results of average comparisons shows that the most dry weight have obtained in cow manure care that have meaningful different to voucher surface and also between hen, struthio and sheep manure cares haven't seen any meaningful different (table 5-4).

Gh. Tapeh and (2012) reported that irrigate cares with slopes have an effect an increasing the digesting the dry material of cheap provender. So meaningful that the most digestibility of this dry material was 63.97 percent in all dures of growth care and the least was shown in voucher care.

4-2-2- water solver carbohydrates (WSC)

The results of variance analysis show that the effects of animal manure on water solver carbohydrate amount in one percent of surface have meaning, and also the reciprocal effects of animal manure and millet types are meaningful in 5 percent of surface on water solver carbohydrates (table 4-4). Relevant to table 4-6, in cow and sheep manure cares in Sistan type, the amount of in solve hydro hydrate in water have meaningful increase to hen dung care.



2-3- protein (CP)

The variance analysis results express that the main effects of animal manure and millet types in probable surface are 1% and 5% meaningful respectfully (table 4-4). By comparison the averages, the most value of crude protein in

hen dung care is seen that shows a meaningful increase to voucher. In cow, struthio and sheep cares in this epithet don't have any meaningful different with voucher surface (table 5-4). In Sistan and Bastan numbers there is not any meaningful different as the case of value of seed protein and the Sistan protein number is more than Bastan protein number.

Many of scientists reported the crude protein percent increase in plant seeds and their airy bodies because of usage of sewerage (Ghanbari, 2006) (day & Tucher, 1997), (Adjei & Rechigl, 2002). The Najafi discovers in 13a showed that the main effects of animal manure on crude protein seed density of cow seeds were meaningful. Ghasemi (2002), survey the chemical and different animal manure effects on provender corn quality index and have seen that the manure effect was meaningful on protein percent.

(Saeed Nejad, 2010) showed that natural materials have effective impress on plant protein value and can increase the provender quality production. In this way the most value of crude protein was in hen manure care (15.4) and the least crude protein was in cow manure care (5.4) that was shown. (diagram 11-4)

2-4- fiber

On variance analyses surveys the main effect of animal manure and the reciprocal effects of animal manure and millet types on fiber value in probable surface of 5 percent is meaningful (4-4). As it is shown in table 7-4, in sheep manure care and bastan type of fiber which have obtained shows a meaningful increase with fiber value in voucher surface and Sistan type and also the least value of fiber is seen in struthio manure care and Sistan types.

5-2- solvable fiber in acid solver (ADF)

The results of table 4-4 show that the main effect of animal manure on solvable fiber value in acid solver in one percent probable surface is meaningful. On case of comparison of mediums in hen manure care, the most value of solvable fiber in acid solver which is obtained has a meaningful increase in voucher surface and also between struthio cares and cow and sheep with voucher surface that there isn't any meaningful different about this qualification (table 5-4).

4-2-6- Solvable fiber in inactive solver (NDF)

By paying attention to variance analysis of results (table 4-4), the main effect of animal manure and the reciprocal effects between animal manure and millet types on solvable fiber value in inactive solver are 1% and 5% in probable surface respectively and meaningful. By table 8-4 results the most value of solvable fiber in inactive solver obtained in hen manure care and Bastan types, a meaningful decrease in this epithet to voucher surface obtained.

4-2-7: Ash

The results of variance analysis show that the effects of animal manure on ash value in one percent surface are meaningful (table 4-4). By table 5-4 in hen and struthio cares, we see a meaningful increase in ash value to voucher surface and also there is not any meaningful different about this qualification between sheep and cow manure with voucher surface.

Ghasemi (2002) reported that the percent of ash in corn plant will meaningfully increase because of usage of chemical and different animal manure.

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