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RESERCHES REGARDING THE BEHAVING WAY OF SOME PRODUCTION CHARACTERS TO SOME FORAGE PLANTS

CERCETARI PRIVIND MODUL DE COMPORTARE A UNOR CARACTERE DE PRODUCTIE LA UNELE PLANTE FURAJERE

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Through annual plants cultivation is wanted to obtain a high quantity and quality of forage, in spring as early as possible.In this paper I have studied Lolium multiflorum var. westerwoldicum specie and two annual clover species (Trifolium incarnatum, Trifolium resupinatum), observing the behavior of those ones from the point of view of some production characters. Researches have shown that in which regards characters: tillers number, plant's height and weight of the bush, variability is in general medium and small at all species, that shows that those characters are less influenced of pedo-climatic conditions and leaf's surface presents a great variability, this one could be influenced of climatic and soil conditions.

Key words: annual forage plants, bush weight, phenophases

Introduction

Lolium mutiflorum is high quality forage and is consumed in all forms (green fodder, hay, and silo). It has capacity to enrich soil in organic matter, leaving after harvest the equivalent of organic substance of 30 t of farmyard manure. Due to fact that harvests are big, the great quantity of green mass makes hay to be hardly prepared, the rains during preparing producing a lot of damage (TAPANI K., BOSWALL P., 2005, COJOCARIU LUMINITA, 2005, VAN WAES J. et al 2002, DAREN D. 2002,).

Trifolium incarnatum is a annual clover specie that can be used in horned animals feed as green mass, because one of it qualities is that it does not produce bloats. This fact is even more important because as *Trifolium incarnatum* is used more as green mass, because hay is of medium quality (TWAI J. et al. 2002, GAINA ANA, 2003).

Trifolium resupinatum L. is an annual leguminous forage plant. It can be used in pure culture, as forage culture or for remaking grass lands. It has an excellent regenerating capacity after grazing or cut. Also, has a great nutritive value for green

mass and for hay. In case of late varieties these can give two cuts (C. K Lee et al 1999).

Material and Methods

The experiences have been realized at Didactic Station of University of Agricultural Sciences and Veterinarian Medicine of Banat Timisoara and in these experiences have been realized studies on annual ryegrass species (*Lolium multiflorum var. Westerwoldicum)* and clovers (*Trifolium incarnatum, Trifolium resupinatum*).

Year 2007, in vegetation period, have been characterised through high temperatures, over the average of multiannual temperatures, with a few precipitations, what got to different results comparative to specialty bibliography.

During vegetation period have been realized quantitative determinations (weight of bush), biometric measures also (plant's height, number of tillers, leafs surface) on main production characters at the cultivated species. These determinations have been realized in 3 different phenophases (51 – Inflorescence emergence, or blooming, 61 – First flowers open, 69 – Complete flowering).

The correlations between these characters have been studied on the base of correlation coefficients.

Results and Discussions

Table 1.

Estimative values for bush weight, plant's height, number of brothers and leafs surface at studied species in 51 phenophase

Specie	**Tillers/ broathers no**		**Plant's height (cm)**		**Leafs surface (cm^2)**		**Bush weight (g)**	
	$\bar{x} \pm S_{\bar{x}}$	S%	$\bar{x} \pm S_{\bar{x}}$	S%	$\bar{x} \pm S_{\bar{x}}$	S%	$\bar{x} \pm S_{\bar{x}}$	S%
Lolium multiflorum	19.4±0.98	15.97	25.17±1.21	15.27	21.46±1.94	28.55	280±16.19	18.29
Trifolium incarnatum	4.6±0.16	11.23	14.55±0.79	17.09	36.15±2.06	18.06	210±8.94	13.47
Trifolium resupinatum	6.1±0.88	14.35	17.4±0.49	8.84	7.18±0.44	19.36	310±11.35	11.58

At *Lolium multiflorum* specie, in 51 phenophase, plant's height was about 25 cm and number of brothers was of 19.4. In which it regards characters variability it can

be said that for the characters: number of brothers, plant's height and bush weight, variability is medium, and for leafs surface variability is height.

At *Trifolium incarnatum* specie, in 51 phenophase the medium number of tillers was 4.6, having a medium height of 14.55 cm. In this phenophase the characters: number of tillers, plant's height, leaf surface and bush weight has a medium variability.

Trifolium resupinatum in this phenophase had 17.4 cm and a medium number of tillers of 6.1. Variability is medium for characters: number of tillers, leafs surface and bush weight, and for plant's height variability is low.

Table 2.

The values of correlation coefficients at studied species in 51 phenophase

Specification		**Plant's height (cm)**	**Leafs surface (cm^2)**	**Bush weight (g)**
No. tillers	*Lolium multiflorum*	0.457	0.154	0.847^{**}
	Trifolium incarnatum	0.45	-0.053	0.913^{***}
	Trifolium resupinatum	0.388	0.33	0.954^{***}
Plant's height (cm)	*Lolium multiflorum*		0.031	0.229
	Trifolium incarnatum		0.332	0.419
	Trifolium resupinatum		-0.167	0.399
Leafs surface (cm^2)	*Lolium multiflorum*			0.420
	Trifolium incarnatum			-0.18
	Trifolium resupinatum			0.269

In 51 phenophase from the correlation coefficients study, can be observed that at all 3 species studied, number of tillers is directly correlated with bush weight, but it does not exist a dependence between number of tillers and plant's height, or between number of tillers and leafs surface.

Table 3.

Estimative values for bush weight, plant's height, number of brothers and leafs surface at studied species, in 61 phenophase.

Specie	Tillers/broathers no		Plant's height (cm)		Leafs surface (cm^2)		Bush weight (g)	
	$\bar{x} \pm S_{\bar{x}}$	S%	$\bar{x} \pm S_{\bar{x}}$	S%	$\bar{x} \pm S_{\bar{x}}$	S%	$\bar{x} \pm S_{\bar{x}}$	S%
Lolium multiflorum	28.6±1.4	15.48	35.0±0.8	7.2	35.05±1.41	12.74	330±11.25	10.78
Trifolium incarnatum	5.3±0.33	19.99	27.57±1.01	14.02	51.5±3.62	22.23	250±10.54	13.33
Trifolium resupinatum	6.8±0.47	21.7	34.74±1.54	19.65	10.65±0.68	20.19	370±21.55	18.42

At *Lolium multiflorum* specie, in 61 phenophase, plant's height was of approximately 35 cm and number of brothers was of 28.6. In which it regards variability it can be said that Lolium multiflorum specie for number of brothers, leafs surface and bush weight is medium, and for plant's height variability is low.

At *Trifolium incarnatum* specie, in 51 phenophase the medium number of tillers was of 4.6 having a height of 14.55 cm. In this phenophase the characters: number of tillers, plant's height and bush weight presents a medium variability and for leafs surface variability is big.

In this phenophase *Trifolium resupinatum* had a 17.4cm and a medium number of tillers of 6.1. variability is height for the characters: number of tillers and leafs surface and for plant's height, bush weight, variability is medium.

Table 4.

Values of correlation coefficients at studied species in 61 phenophase

Specification		Plant's height (cm)	Leafs surface (cm^2)	Bush weight (g)
No. tillers	*Lolium multiflorum*	-0.233	0.167	0.924^{***}
	Trifolium incarnatum	0.659^{*}	-0.543	0.315
	Trifolium resupinatum	0.388	0.137	0.84^{**}
Plant's height (cm)	*Lolium multiflorum*		0.283	-0.156
	Trifolium incarnatum		-0.372	-0.14
	Trifolium resupinatum		-0.548	0.343
Leafs surface (cm^2)	*Lolium multiflorum*			0.096
	Trifolium incarnatum			0.37
	Trifolium resupinatum			0.042

In 61 phenophase, from the study of correlation coefficients it can be observed that number of tillers influences positive the bush weight at *Lolium multiflorum* and *Trifolium resupinatum*, but it has no participation at *Trifolium incarnatum* specie.

In which it regards the correlation between tillers number and plant's height exists a direct correlation at *Trifolium incarnatum* specie, but there is no dependence between tillers number and leafs surface.

Table 5

Estimative values for bush weight, plant's height, number of brothers and leafs surface at studied species, in 69 phenophase

Specie	Tillers/ broathers no		Plant's height (cm)		Leafs surface (cm^2)		Bush weight (g)	
	$\bar{x} \pm S_{\bar{x}}$	S%	$\bar{x} \pm S_{\bar{x}}$	S%	$\bar{x} \pm S_{\bar{x}}$	S%	$\bar{x} \pm S_{\bar{x}}$	S%
Lolium multiflorum	38.9±0.41	3.31	40.49±0.44	2.73	45.45±0.66	4.59	410±12.29	9.48
Trifolium incarnatum	6.6±0.4	19.71	35.43±0.39	3.45	82.36±3.08	11.84	340±21.2	19.49
Trifolium resupinatum	8.00±0.45	17.68	42.9±0.28	1.75	22.25±1.71	24.37	460±20.99	14.59

At *Lolium multiflorum* specie, in 69 phenophase, plant's height was of appreciatively 40 cm and number of brothers was of 38.9. In which it regards characters variability can be said that for number of brothers, plant's height, leafs surface and bush weight, variability is small.

At *Trifolium incarnatum* specie, in 69 phenophase the medium number of tillers was of 6.6, having a height of 35.43 cm. in this phenophase characters: number of tillers, leafs surface and bush weight, variability is medium and for plant's height variability is small.

In this phenophase *Trifolium resupinatum* had 42.9 cm and a medium number of tillers of 8. In which it regards the variability, this is small for number of tillers and bush weight, for plant's height variability is small and for leafs surface variability is big.

Table 6

Values of correlation coefficients at studied species in 69 phenophase

Specification		**Plant's height (cm)**	**Leafs surface (cm^2)**	**Bush weight (g)**
No. tillers	*Lolium multiflorum*	-0.339	-0.529	0.911^{***}
	Trifolium incarnatum	0.375	0.085	-0.097
	Trifolium resupinatum	0.247	-0.455	-0.272
Plant's height (cm)	*Lolium multiflorum*		-0.067	-0.411
	Trifolium incarnatum		-0.067	0.639
	Trifolium resupinatum		-0.486	-0.254
Leafs surface (cm^2)	*Lolium multiflorum*			-0.521
	Trifolium incarnatum			0.108
	Trifolium resupinatum			0.399

From the study of correlation coefficients in 69 phenophase can be observed that at Lolium *multiflorum* specie, number of tillers is correlated with bush weight, but it doesn't exist dependency between number of tillers and plant's height, or number of tillers and leafs surface.

Conclusions

From the correlations studies that have been realized between main production characters at some annual forage cultures can be observed the followings:

- In 51 phenophase exists direct correlations between number of tillers and bush weight at all studied species
- In 61 phenophase can be observed that number of tillers influence in a negative way the bush weight at *Lolium multiflorum and Trifolium resupinatum*, but it has no participation at *Trifolium incarnatum* specie.
- In 69 phenophase at Lolium *multiflorum* specie, number of tillers is directly correlated with bush weight, but it doesn't exist a dependency between number of tillers and plant's height, or number of tillers and leafs surface.
- Weight per biggest plant is in 69 phenophase (complete flowering)
- In which it regards the characters: number of tillers, plant's height and bush weight, variability is in general medium and small at all species, which shows that those characters are less influenced of pedo-climatic conditions and the character leafs surface presents a gig variability, this one could be influenced of clime and soil conditions.

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