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(*Pennisetum americanum*) (*Zea mays*)
(*Sorghum bicolor*)

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Cenchrus) (*Panicum maximum*)

(*Heteropogon cotortus*)

(*ciliaris*

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(Festuca arundinaceae)

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(Panicum coloratum)

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(*Zea mays*)

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(*Pennisetum americanum*)

(*Sorghum bicolor*)

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kg/ha

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Quatropro 5.0

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(*Sesamia cretica*)

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(*Panicum maximum*)

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g/kg		ton/ha								
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/ a	/ a	/ b	/ a	/ b	/ a	/ a	/ a	/ bc	/ a	I
/ a	/ a	/ b	/ a	/ b	/ a	/ a	/ a	/ c	/ a	I
/ a	/ a	/ b	a /	/ b	/ a	/ b	/ a	/ b	/ a	M
/ b	/ b	/ b	/ c	/ a	/ b	/ a	/ b	/ a	/ b	S
/ ab	/ b	/ a	/ b	/ a	/ b	/ a	/ a	/ a	/ b	C
/ abc	/ a	/ cd	/ ab	/ cd	/ ab	/ b	/ cde	/ cd	/ b	MI
/ de	/ ab	/ bc	/ d	/ bc	/ c	/ b	/ e	/ a	/ cde	SI
/ e	/ ab	/ a	/ ab	a	/ ab	/ a	/ bcde	/ bc	/ e	CI
/ cde	/ ab	/ cd	/ ab	/ c	/ ab	/ ab	/ bcd	/ d	/ b	MI
/ bcd	/ ab	/ bc	/ bcd	/ b	/ ab	/ ab	/ de	/ ab	/ cde	SI
/ cde	/ b	/ b	/ bcd	/ bc	/ bc	/ ab	/ ab	/ ab	/ de	CI
/ abc	/ ab	/ cd	/ ab	/ d	/ ab	b	/ a	/ e	/ a	MI
/ abcd	/ ab	/ d	/ cd	/ cd	/ ab	/ ab	/ cde	/ bc	/ cde	SI
/ ab	/ ab	/ bc	/ abc	/ d	/ ab	/ b	/ abc	/ bc	/ bc	CI
a	/ ab	/ cd	/ a	/ d	/ a	b	/ ab	/ e	/ a	MI
/ bcd	/ ab	/ bc	/ abc	/ d	/ ab	/ ab	/ cde	/ bc	/ cd	SI
/ abc	/ ab	/ cd	/ bc	/ d	/ ab	/ b	/ abcd	/ bc	/ bc	CI
C	S	M	I	I	I	I	I	I	I	

gr/kg		ton/ha								
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/ a	/ a	/ ab	/ a	/ c	/ a	/ b	/ a	/ b	/ a	I
/ a	/ a	/ a	/ a	/ a	/ a	/ a	/ a	/ a	/ a	M
/ a	/ a	/ a	/ b	/ a	/ b	/ a	/ a	/ a	/ a	S
/ de	/ a	/ a	/ b	/ a	/ b	b	/ a	/ b	/ ab	MI
/ e	/ a	/ a	/ d	/ a	/ d	/ a	/ b	/ a	/ c	SI
/ cde	/ a	/ a	/ b	/ b	/ b	/ a	ab	/ b	/ bc	MI
/ cde	/ a	/ a	/ cd	/ bc	/ c	/ b	/ a	/ b	/ bc	SI
/ cd	/ a	/ a	/ a	/ cd	/ a	/ b	/ b	/ c	/ a	MI
/ ab	/ a	/ a	/ cd	/ d	/ b	b	/ a	/ c	/ a	SI
/ abc	/ a	/ a	/ a	/ cd	/ a	/ b	/ a	/ c	/ a	MI
/ a	/ a	/ a	/ c	/ d	/ b	b	/ a	/ c	/ a	SI

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(*Pennisetum purpureum* Schumacher)

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gr/kg		ton/ha								
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							/	S	M	

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REFERENCES

4. Asay, K.H., K.B. Jensen., B.L. Waldron., G.Han, & T.A. Monaco. 2002. Forage quality of tall fescue across an irrigation gradient. *Agron. J.* 94:1337-1343.
5. Berenguer, M. J., & J.M. Faci. 2001. Sorghum (*sorghum bicolor* L. Moench) yield compensation processes under different plant densities and variable water supply. *Europ. J. Agron.* 15: 43-55.
6. Bittman, S., G. M. Simpson, & Z. Mir. 1981. Effect of drought on leaf senescence and forage quality of three temperate grasses. *Proceedings of the 15th International Grass Land Conference Kyoto, Japan.* pp.360-362.
7. Burger, A.W., & W.F. Campbell. 1961. Effect of rates and method of seeding on the original stand tillering, stem diameter, leaf-stem ratio and yield of sudangrass. *Agron. J.* 53:289-291.
8. Buxton, D.R. 1996. Quality-related characteristics of forages as influenced by plant environment and agronomic factors. *Anim. Feed Sic. Technol.* 59: 37-49.
9. Chaparro, C.J., & L.E. Sollenberger. 1997. Nutritive value of clipped motte elephant grass herbage. *Agron. J.* 89: 789-793.
10. Cummins, D.G. 1981. Yield and quality changes with maturity of silage- type sorghum fodder. *Agron. J.* 73: 988-990.
11. Darby, H. M., & J. G. Lauer. 2002. Harvest date and hybrid influence on corn forage yield quality and preservation. *Agron. J.* 94:559-566.
12. Deinum, B. 1984. Chemical composition and nutritive value of herbage in relation to climate. *Proc. 10th. Gen. Meet. Europ. Grassland Federation, Norway.* pp. 338-350.
13. Halim, R.A., D.R. Buxton., M.J. Hattendorf, & R.E. Carlson. 1989. Water stress effects on alfalfa Forage quality after adjustment for maturity differences. *Agron. J.* 81: 189-194.
14. Holt, R.F., & D.R. Timmons. 1968. Influence of precipitation, soil water, and plant population interactions on corn grain yields. *Agron. J.* 60: 379-381.
15. Huda, A.K.S. 1988. Simulating growth and yield responses of sorghum to changes in plant density. *Agron. J.* 80:541-547.
16. Jones, D. I. H., & M. V. Hayward. 1973. A cellulase digestion technique for predicting the dry matter digestibility of grasses. *J. Sci. Fd. Agric.* 24:1419-1426.
17. Kang, Sh., W. Shi, & J. Zhang. 2000. An improved water-use efficiency for maize grown under regulated deficit irrigation. *Field Crop Research.* 67: 207-214.
18. Masuda, Y. 1977. Comparison of the *in vitro* dry matter digestibility of forage oats grown under different temperatures and light intensities. *J. Faculty. Agric. Kyushu Univ.* 21: 17-24.
19. Pitman, W.D., D.M. Vietor, & E.C. Holt. 1981. Digestibility of Klein grass forage grown under moisture stress. *Crop Sci.* 21: 251-253.
20. Snyman, L. D., & H. W. Joubert. 1996. Effect of maturity stage and method of preservation on the yield and quality of sorghum. *Anim. Feed Sci. Technol.* 57:63-73.
21. Tolera, A., F. Sundlédól., & A. N. Said. 1998. The effect of stage of maturity on yield and quality of maize grain and stover. *Anim. Feed Sci. Technol.* 75:157-168.
22. Van Soest, P.J., D.R. Mertens, & B. Deinum. 1978. Preharvest factors influencing quality of conserved forage. *J. Anim. Sci.* 47:712-720.
23. Vough, L.R., & G.C. Marten. 1971. Influence of soil moisture and ambient temperature on yield and quality of alfalfa forage. *Agron. J.* 63: 40-42.
24. Wilson, J.R. 1981. Effects of water stress on herbage quality. *Proceedings of the 15th International Grass Land Conference, PP.470-472. Lexington, Ky, U. S. A.* 1981.
25. Wilson, J.R. 1983. Effect of water stress on *in vitro* dry matter digestibility and chemical composition of herbage of tropical pasture species. *Aust. J. Agric. Res.* 34: 377-390.
26. Wilson, J.R., & T.T. Ng. 1975. Influences of water stress on parameters associated with herbage quality of *panicum maximum* var. trichoglume. *Aust. J. Agric. Res.* 26: 127-136.