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(NDF)

(p< / )

**NDF**

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(p> / )

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(p< / )

(p> / )

(p> / )

:

(Allen, 2000)

(Onetti et al., 2001)

)

(Harrison et al., 1995)

(

(Madison-Anderson et al., 1997)

±

±

±

(Harvatine & Allen,

/ ±

(Cant et al.,

2006a)

1991)

(Elliott et al., 1996; Allen, 2000)

\*

(Grummer, 1988)

%

%

%

( )

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pH

(Palmquist & Jenkins, 1980)

( )

(2001) NRC

(Chalupa et al., 1986)

( )

(Palmquist & Weiss, 1994)

(Grummer, 1988; Benson & Reynolds, 2001)

...

:

(Maekawa et al., 2002)

(1990) AOAC

	( )		
	/	/	/
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	/	/	/
B-	/	/	/
(1990) AOAC	/	/	/
	/	/	/
	/	/	/
(BCS)	/	/	/
(1982) Wildman et al,	/	/	/
	/	/	/
	/	/	/
(2003) SAS			( )
Proc Mix	/		( )

$$Y_{ijkl} = \mu + T_i + A_j + P_1 + Pa_n + R_k + e_{ijkl}$$

Energizer-10 (IFFCO-SDN.BHD).  
Magnapac (NOREL-MISR).

$T_i$        $\mu$        $Y_{ijkl}$   
 $Pa_n$        $P_1$        $A_j$   
 $e_{ijkl}$        $R_k$  ( )

( % )			
/	/	/	(%)
/	/	/	(%)
/	/	/	(%)
/	/	/	(%)
/	/	/	(%)
/	/	/	(%)

(P<0.01)

(Allen, 2000)

(1992) Drackley et al. (2000) Allen

(Choi & Palmquist, 1996)

(Beam & Butler, 1998)

(NEL) (1993) Chilliard

/

(1994) Beam & Butler (1990) Grummer et al.

( )

/ (Weigel et al.,1997; Jenkins et al., 1998; Grummer, 1988)

/ /

( )

P <sup>2</sup>	SEM <sup>1</sup>				
/	,	/ <sup>b</sup>	/ <sup>b</sup>	/ <sup>a</sup>	( )
/	/	/ <sup>b</sup>	/ <sup>b</sup>	/ <sup>a</sup>	( )
/	/	/ <sup>b</sup>	/ <sup>b</sup>	/ <sup>a</sup>	( )
NS <sup>3</sup>	/	/	/	/	( )
NS	/	/	/	/	( )
NS	/	/	/	/	( )
NS	/	/	/	/	( )
NS	/	/	/	/	( )

p < /

\*

...

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P	SEM				
NS	/	/	/	/	( )
NS	/	/	/	/	( )
/	/	/ b	/ b	/ a	,
NS	/	/	/	/	( )
NS	/	/	/	/	( )
NS	/	/	/	/	( )
NS	/	/	/	/	( )
NS	/	/	/	/	( )
NS	/	/	/	/	( )
NS	/	/	/	/	( )
NS	/	/	/	/	( )
NS	/	/	/	/	( )
NS	/	/	/	/	( )

p < /

P	SEM				
NS	/	/	/	/	( )
NS	/	/	/	/	( )
NS	/	/	/	/	,
NS	/	/	/	/	( )
NS	/	/	/	/	( )
NS	/	/	/	/	( )
NS	/	/	/	/	( )
NS	/	/	/	/	( )
NS	/	/	/	/	( )
NS	/	/	/	/	( )
NS	/	/	/	/	( )
NS	/	/	/	/	( )
NS	/	/	/	/	( )
NS	/	/	/	/	( )

Schingoethe & Casper

/

(1991)

(1990) Casper et al. ,

(Weigel, et al., 1997; Douglas et al., 2004)

.(Onetti et al., 2001)

( )

(1996) Elliott et al. (1978) Wrenn et al.

(1986) Chalupa et al.

(Grinari et al.,  
( ) .1998)

Schneider et al. .  
(1990)

(BCS)  
( )

Wrenn et al. (1996) Elliott et al.  
(1978)

(Madison-Anderson et  
.al., 1997)

(Cant et al., 1993; Drackley  
et al., 1992)

P	SEM
NS	/ / / / ( )
NS	/ / / /
NS	/ / / / ( )
NS	/ / / /

( )

(1997) Madison-Anderson et al.

P	SEM
NS	/ / / / ( )
NS	/ / / / ( )
NS	/ ( )
NS	/ / / / ( )
/	/ / / / / ( )
/	/ / / / / ( )

Madison-Anderson (Onetti et al., 2001)  
(1997) et al.

/ )  
(

(P<0.05)

(2001) Benson & Reynolds  
(2006b) Harvatine & Allen

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