

SELECTING CLOVER VARIETIES WISELY

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Red Clover

Although there are not a lot of new red clover varieties, several companies and Universities have active red clover breeding programs. In some ways, red clover is the easiest species to make variety recommendations for. Simply put, “only plant certified seed of improved varieties, never plant common seed.” University of Kentucky research has shown that the difference between improved varieties and common seed can be 6000 to 10,000 lb/acre in higher yield and 1 to 1 ½ years longer stand life. Sometimes you may “luck up” and find that the bag of cheap common seed you purchased was actually an overstock of an improved variety, but UK variety trials show that 9 times out of 10 certified seed of improved varieties showed higher yield and longer stand life.

Most red clover breeders continue to make small steady improvements in stand persistence through improved resistance to root and crown diseases, but no variety yet has the ability to dependably survive more than 3 growing seasons. There are two new traits that will be useful for producers coming out of breeding programs. One is improved grazing tolerance in red clover. Look at Kentucky’s and other state’s websites for the results from grazing tolerant trials. Another useful trait is the release of varieties with reduced stem and leaf pubescence. Less pubescence mean less dusty hay. About 5 years ago Dr. Norm Taylor (University of Kentucky) released the first low pubescent variety “Freedom!” and it is being distributed by Barenbrug Seeds.

White Clover

It is getting a little hard to make sense of new white clover varieties. In the past, the recommendation was to plant an improved variety of ladino white clover. Ladino types are closely related to the common Dutch types that seem to grow everywhere, but ladino white clover is taller with larger leaves than Dutch white. Therefore, larger plants and larger leaves produce higher yields. While that is true, ladino types do not live as long as Dutch whites. In recent years, many producers have stated that they could sacrifice some yield for longer persistence. Therefore, companies are now starting to release intermediate types

that are hybrids between ladino and Dutch whites. For the most part, these intermediates look to be a good compromise between their two parents. Make sure though that you review yield and stand persistence information from variety trial publications before planting new intermediate varieties on your farm. In addition, at least one company and one University have released (or soon will) a true Dutch white ecotype with lower yield, but much better persistence than the ladinos. Ecotype simply means that the variety originated from surviving plants collected from one location or a relatively small area.

Clover Variety Websites

Check out the University of Kentucky Forage Website (www.uky.edu/Ag/Forage) for more information on variety choices or ask from the most recent reports from your county Ag. agent. Simply go to the Forage home page and click on “Forage Variety Trials” for extensive variety trial information from five locations within Kentucky. If you are in a surrounding state, then go to the home page and click on “Forage Variety Trials: Other States”. The following sections provide example of the type of clover variety information that is available at the UK Forage Website.

Red Clover Forage Yield Reports

Table 1 provides red clover forage yield and percent stand data from our Quicksand, KY research station in eastern Kentucky. The title of each table in the forage variety reports indicates when each trial was planted. This trial was planted in the spring of 2005 and was harvested for yield during 2005, 2006, and 2007. The left hand column of Table 1 shows the varieties that are in the trial, including experimental varieties that are being tested by various companies and Universities. Not only do these reports include yield information, but they also show the stand persistence of each variety at the beginning and the end of each growing season. Of particular note in this trial is that the 3 year total forage yield was over 10 tons/acres for many of the varieties. The top two varieties actually had yields that were statistically higher than other varieties in the test (as noted by “**”). The two entries in the trial listed as Common A and Common C are actually not varieties, but were taken from seed bags purchased from local farm supply stores where the variety was not stated and are often referred to as “Common” seed. Normally this seed is cheaper than improved varieties, but as stated above, don’t be fooled by the initial low price tag. Farmers that planted red clover stands from these seed sources would have harvested average forage yields during the planting year, but been disappointed when the stands thinned severely during the second growing season, resulting in total 3 year yields that were 1/3 to 1/2 of the improved varieties. The old adage that you “get what you pay for” is almost always true when buying red clover seed.

Table 1. Dry matter yields and stand persistence of red clover varieties sown April 6, 2005 at Quicksand, Kentucky.

Variety	Percent Stand				Yield (tons/acre)							3-yr Total
	2006		2007		2005 Total	2006 Total	2007					
	Apr 18	Nov 3	Apr 12	Oct 17			Jun 5	Jul 12	Aug 15	Nov 21	Total	
Commercial Varieties-Available for Farm Use												
Freedom!	100	87	87	87	2.11	6.46	2.89	1.15	0.57	0.16	4.77	13.34*
Freedom! MR	100	82	80	75	2.41	6.00	2.59	0.87	0.43	0.06	3.95	12.36*
Kenton	100	83	80	60	2.42	5.85	2.25	0.88	0.36	0.06	3.55	11.82
Kenland (cert.)	100	80	72	68	2.41	5.81	2.20	0.91	0.36	0.06	3.54	11.76
Cinnamon Plus	100	87	68	47	2.42	5.66	2.28	0.80	0.32	0.04	3.43	11.51
Kenway	100	87	75	73	2.18	5.78	2.22	0.85	0.37	0.07	3.50	11.47
Dominion	98	77	67	50	2.31	5.24	1.89	0.67	0.27	0.06	2.89	10.44
AA117ER	98	77	70	52	1.57	5.43	2.20	0.70	0.39	0.04	3.33	10.32
TripleTrust 350	98	75	62	50	1.96	5.15	2.06	0.68	0.33	0.04	3.11	10.23
Solid	97	60	47	20	2.36	4.87	0.88	0.32	0.06	0.02	1.28	8.52
Common A	88	8	6	7	2.15	3.18	0.71	0.06	0.04	0.00	0.81	6.14
Common C	53	7	2	1	1.40	2.70	0.46	0.02	0.02	0.00	0.49	4.59
Experimental Varieties												
KY Tetraploid	98	85	87	85	1.74	6.55	3.00	1.15	0.64	0.12	4.92	13.20*
RC 9602	98	90	83	78	2.38	5.99	1.70	1.05	0.47	0.07	3.30	11.67
Low Phenolic	100	82	80	80	1.73	6.09	2.00	0.80	0.47	0.05	3.32	11.13
RC 9603	100	80	67	62	2.01	5.74	1.83	0.74	0.36	0.08	3.01	10.76
Mean	95.6	71.6	64.5	55.9	2.10	5.41	1.95	0.73	0.34	0.06	3.08	10.58
CV,%	5.0	10.6	16.4	22.4	16.83	7.47	25.10	16.60	26.60	63.20	18.60	6.49
LSD,0.05	8.0	12.7	17.6	20.9	0.59	0.67	0.81	0.20	0.15	0.06	0.96	1.14

* Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Red Clover Grazing Tolerance Reports

The University of Kentucky not only tests forage varieties for their yield potential and stand persistence when cut for hay, but we also conduct a series of trials for stand survival under grazing. These printed as separate reports from the Forage Yield Reports, but listed in the same location on UK's Forage Website. Table 2 below shows the survival of a range of red clover varieties that have been subjected to 2 years of rotational grazing. Though all stands thinned by the end of the second year, most of the improved varieties showed much higher survival under grazing.

Table 2. Seedling vigor and stand persistence of red clover varieties sown September 22, 2005 in a cattle rotational grazing tolerance study at Lexington, Kentucky.

Variety	Seedling Vigor ¹ Nov 7, 2005	Percent Stand			
		2006		2007	
		Apr 17	Oct 20	Mar 30	Oct 16
Commercial Varieties-Available for Farm Use					
Freedom!	3.7	89	96	84	28*
AA117ER	2.7	86	95	87	27*
Kenland	2.8	88	98	88	23*
Freedom! MR	3.2	86	94	83	21
Kenton	3.8	89	95	86	20
Triple Trust 350	2.8	90	95	83	13
Kenway	2.7	88	93	84	11
Common A	3.3	85	88	65	1
Common C	2.7	75	83	60	1
Experimental Varieties					
RC 0201	3.0	79	91	76	33*
RC 0303	2.8	84	95	89	29*
RC 0002	3.8	89	94	89	28*
Mean	3.1	86	93	81	20
CV,%	23.8	13	6	16	52
LSD,0.05	0.9	13	6	15	12

¹ Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

* Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

White Clover Grazing Tolerance Report

White clover shows better survival under grazing than red clover and has the additional advantage of being able to spread by above ground stolons as a stand thins. Table 3 show white clover stands after one year of grazing and also identifies the categories of each white clover variety (ladino, intermediate, and Dutch).

Table 3. Seedling vigor and stand persistence of white clover varieties sown September 8, 2006 in a cattle grazing tolerance study at Lexington, Kentucky.

Variety	Type	Seedling Vigor ¹ Oct 25, 2006	Percent Stand		
			2006		2007
			Oct 25	Mar 30	Oct 15
Commercial Varieties-Available for Farm Use					
Crescendo	Ladino	4.0	94	91	94*
Will	Ladino	3.3	93	92	91*
Patriot	Intermediate	2.5	86	75	91*
RegalGraze	Ladino	4.3	95	90	91*
Durana	Dutch	1.7	86	75	90*
Insight	Ladino	5.0	93	91	90*
Resolute	Intermediate	2.8	87	83	90*
Colt	Intermediate	1.5	80	83	88
Kopu II	Intermediate	3.5	94	82	86
Regal	Ladino	2.8	89	86	84
Barblanca	Intermediate	3.7	91	43	83
Seminole	Ladino	4.0	94	71	83
Experimental Varieties					
CW 204	Ladino	3.0	93	91	93*
CW 9501	Ladino	3.7	90	83	87
Mean		3.3	90	82	89
CV,%		20.7	7	13	4
LSD,0.05		0.8	8	12	4

¹ Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling growth.

* Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Summary of Clover Variety Yield and Grazing Tolerance Over Years

The University of Kentucky has recently started the publication of a summary of forage variety data. All the forage species and all forage varieties that have been tested in Kentucky over the last 10 years are included in the summary document entitled “Long Term Summary of Forage Variety Trials.” Just as with the regular reports the summary report is updated every year. This summary publication also includes a listing of the companies that have developed or are distributing each variety. In the summary document variety yield is listed as a percentage based on the mean yield for a particular trial. In other words, a variety with 100 produced the same yield as the average or mean for the trial; below 100 designates below average yield; and above 100 above average yield. The take home message is that the best varieties are those that performed close to or above average.

One of the most useful parts of each summary table is the right hand column where the average performance over multiple locations and years is listed. The number in parentheses designates the number of the trials that a specific variety has been tested in KY and those varieties that don't have an overall average listed were only planted at one test location.

Table 4. Summary of 1998-2007 Kentucky Red Clover Yield Trials (yield shown as a percentage of the mean of the named commercial varieties in the trial).

Variety	Proprietor	Lexington						Princeton					Quicksand				Eden Shale		Mean ³ (#trials)
		00 ^{1,2}	00	01	02	03	04	99	00	03	05	98	01	03	05	00	03		
		3yr ⁴	3yr	3yr	3yr	3yr	3yr	3yr	3yr	2-yr	3yr	2yr	2yr	3-yr	3yr	2yr			
AA117ER	ABI Alfalfa										87							90(2)	
Acclaim	Allied Seed				92													-	
Arlington	WI Agr. Exp.Sta.				72													-	
Belle	Agribiotech	88			82			93										88(3)	
Cherokee	FL Agr. Exp. Sta.	78			65													72(2)	
Cinnamon	FFR/Sou.St.	111			108			115				100						109(4)	
Cinnamon Plus	FFR/Sou.St.					97					112			103				104(3)	
Dominion	Seed Research of OR										95			93				94(2)	
Duration	Cisco Co.			86	100								106					97(3)	
Emarwan	Turf-Seed						91						101					96(2)	
Freedom!	Barenbrug	108	105	127	123	96	118	103	105	110	136	109	111	103	119	102	102	111(16)	
Freedom!MR	Barenbrug				118	115	102			106	101			94	111		118	108(8)	
FSG 9601	Allied Seed						89											-	
Greenstar	Genesis Turf											100						-	
Impact	Specialty Seeds	106	97						98									100(3)	
Kenland(cert.)	KY Ag. Exp Sta.	110	111	127	139	118	117	117	104	102	92	112	111	88	105	104	98	110(16)	
Kenland(uncert)	Public											78	83					81(2)	
Kenstar	KY Ag. Exp Sta.		105						104			107						105(3)	
Kenton	KY Ag. Exp Sta.	100	93	119	109	90	95	104	98	95	105		93	99	106	102	98	107(15)	
Kenway	KY Ag. Exp Sta.	106	104	111	134		97	103	100		94		100		103	102		105(11)	
Mammoth	Public							61										-	
Plus	Allied Seed	113			113			110								97		108(4)	
Prima	Public	92			74													83(2)	
Red Gold Plus	Turner Seed		97	97			95		95				98			98		97(6)	
RedlanGraze	ABI Alfalfa	95						101										98(2)	
RedlanGraze II	Americas Alfalfa			91	104								93					96(3)	
Redland Max	ABI Alfalfa						95											-	
Redstart	Syngenta	102			78													90(2)	