

Chart 1 - PERFORMANCE AND ROLES

Species	Legume N Source	Total N (lb./A) ¹	Dry Matter (lb./A/yr.)	N Scavenger ²	Soil Builder ³	Erosion Fighter ⁴	Weed Fighter	Good Grazing ⁵	Quick Growth
Annual ryegrass			2,000-9,000	●	●	●	●	●	●
Barley			2,000-10,000	●	●	●	●	●	●
Oats			2,000-10,000	●	●	●	●	●	●
Rye			3,000-10,000	●	●	●	●	●	●
Wheat			3,000-8,000	●	●	●	●	●	●
Buckwheat			2,000-4,000	○	●	●	●	○	●
Sorghum-sudan			8,000-10,000	●	●	●	●	●	●
Mustards		30-120	3,000-9,000	●	●	●	●	●	●
Radish		50-200	4,000-7,000	●	●	●	●	●	●
Rapeseed		40-160	2,000-5,000	●	●	●	●	●	●
Berseem clover	●	75-220	6,000-10,000	●	●	●	●	●	●
Cowpeas	●	100-150	2,500-4,500	○	●	●	●	●	●
Crimson clover	●	70-130	3,500-5,500	●	●	●	●	●	●
Field peas	●	90-150	4,000-5,000	○	●	●	●	●	●
Hairy vetch	●	90-200	2,300-5,000	○	●	●	●	●	●
Medics	●	50-120	1,500-4,000	○	●	●	●	●	●
Red clover	●	70-150	2,000-5,000	●	●	●	●	●	●
Subterranean clover	●	75-200	3,000-8,500	○	●	●	●	●	●
Sweetclovers	●	90-170	3,000-5,000	○	●	●	●	●	●
White clover	●	80-200	2,000-6,000	○	●	●	●	●	●
Woollypod vetch	●	100-250	4,000-8,000	●	●	●	●	●	●

¹Total N—Total N from all plant. ²N Scavenger—Ability to take up/store excess nitrogen. ³Soil Builder—Organic matter yield and soil structure improvement. ⁴Erosion Fighter—Soil-holding ability of roots and total plant. ⁵Good Grazing—Production, nutritional quality and palatability.

○=Poor; ◐=Fair; ◑=Good; ◒=Very Good; ◓=Excellent

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Chart 1 - PERFORMANCE AND ROLES (continued)

Species	Lasting Residue ¹	Duration ²	Harvest Value ³		Cash Crop Interseed ⁴	Comments
			F*	S*		
Annual ryegrass	●	●	●	●	●	Heavy N and H ₂ O user; cutting boosts dry matter significantly.
Barley	●	●	●	●	●	Tolerates moderately alkaline conditions but does poorly in acid soil < pH 6.0.
Oats	●	●	●	●	●	Prone to lodging in N-rich soil.
Rye	●	●	●	●	●	Tolerates triazine herbicides.
Wheat	●	●	●	●	●	Heavy N and H ₂ O user in spring.
Buckwheat	○	●	○	●	●	Summer smother crop; breaks down quickly.
Sorghum-sudangrass	●	●	●	○	○	Mid-season cutting increases yield and root penetration.
Mustards	●	●	○	●	○	Suppresses nematodes and weeds.
Radish	●	●	●	●	●	Good N scavenging and weed control; N released rapidly.
Rapeseed	●	●	●	●	○	Suppresses <i>Rhizoctonia</i> .
Berseem clover	●	●	●	●	●	Very flexible cover crop, green manure, forage.
Cowpeas	●	●	●	●	●	Season length, habits vary by cultivar.
Crimson clover	●	●	●	●	●	Established easily, grows quickly if planted early in fall; matures early in spring.
Field peas	●	●	●	●	●	Biomass breaks down quickly.
Hairy vetch	●	●	●	●	●	Bi-culture with small grain expands seasonal adaptability.
Medics	●	●	●	●	●	Use annual medics for interseeding.
Red clover	●	●	●	●	●	Excellent forage, easily established, widely adapted.
Subterranean clover	●	●	●	○	●	Strong seedlings, quick to nodulate.
Sweetclovers	●	●	●	●	●	Tall stalks, deep roots in second year.
White clover	●	●	●	●	●	Persistent after first year.
Woollypod vetch	●	●	●	●	●	Reseeds poorly if mowed within 2 months of seed drop; overgrazing can be toxic.

¹Lasting Residue—Rates how long the killed residue remains on the surface. ²Duration—Length of vegetative stage. ³Harvest Value—Economic value as a forage (F) or as seed (S) or grain. ⁴Cash Crop Interseed—Rates how well the cover crop will perform with an appropriate companion crop.

○=Poor; ●=Fair; ●=Good; ●=Very Good; ●=Excellent

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Chart 2 - Cultural Traits

Species	Aliases	Type ¹	Hardy thru Zone ²	Tolerances					Habit ³	pH (pref.)	Best Estab.	Min. Germ. Temp. (F)
				Heat	Drought	Shade	Flood	Low fert.				
Annual ryegrass	Italian ryegrass	WA	6						U	6.0-7.0	ESp, LSu, EF, F	40
Barley		WA	7						U	6.0-8.5	F, W, SP	38
Oats	Spring oats	CSA	8						U	4.5-7.5	LSu, ESp, W in 8+	38
Rye	winter, cereal, or grain rye	CSA	3						U	5.0-7.0	LSu, F	34
Wheat		WA	4						U	6.0-7.5	LSu, F	38
Buckwheat		SA	NFT						U/SU SU	5.0-7.0	Sp to LSu	50
Sorghum-sudan	Sudax	SA	NFT						U	6.0-7.0	LSp, ES	65
Mustards	Brown, oriental, white, yellow	WA CSA	7						U	5.5-7.5	Sp, LSu	40
Radish	Oilseed, Dalkon, forage radish	CSA	6						U	6.0-7.5	SP, LSu, EF	45
Rapeseed	Rape, canola	WA	7						U	5.5-8.0	F, Sp	41
Berseem clover	Bigbee, multicut	SA, WA	7						U/SU SU	6.2-7.0	ESp, EF	42
Cowpeas	Crowder peas, southern peas	SA	NFT						SU/C	5.5-6.5	ESu	58
Crimson clover		WA, SA	7						U/SU	5.5-7.0	LSu, ESu	
Field peas	Winter peas, black peas	WA	7						C	6.0-7.0	F, ESp	41
Hairy vetch	Winter vetch	WA, CSA	4						C	5.5-7.5	EF, ESp	60
Medics		SP, SA	4/7						P/SU	6.0-7.0	EF, ESp, ES	45
Red clover		SP, B	4						U	6.2-7.0	LSu, ESp	41
Subterranean clover	Sub clover	CSA	7						P/SP	5.5-7.0	LSu, ESp	38
Sweetclovers		B, SA	4						U	6.5-7.5	Sp/S	42
White clover	White dutch, ladino	LP, WA	4						P/SU	6.0-7.0	LW, E/LSp, EF	40

Woollypod vetch	Lana	CSA	7						SP/C	6.0-8.0	F	
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¹B=Biennial; CSA=Cool season annual; LP=Long-lived perennial; SA=Summer annual; SP=Short-lived perennial; WA=Winter annual. ²See USDA Hardiness Zone Map, inside front cover, NFT=Not frost tolerant. ³C=Climbing; U-Upright; P=Prostrate; SP=Semi-prostrate; SU=Semi-upright. ⁴E=Early; M=Mid; L=Late; F=Fall; Sp=Spring; Su=Summer; W=Winter.

=Poor; =Fair; =Good; =Very Good; =Excellent

Esp	Sp	Lsp	Esu	Su	Lsu	Ef	F	Lf
2/15-5/15	4/15-5/20	5/10-6/10	6/1-7/1	6/15-8/15	8/1-9/15	9/1-10-15	10/1-11/15	11/1-12/1

Chart 3 - Planting

Species	Depth (in)	Seeding Rate					Inoculant Type	Reseeds ¹
		Drilled		Broadcast				
		lb/A	bu/A	lb/A	bu/A	oz/100 ft ²		
Annual ryegrass	0-0.5	10-20	.4-.8	20-30	.8-1.25	1	R	
Barley	0.75-2	50-100	1-2	80-125	1.6-2.5	3-5	S	
Oats	0.5-1.5	80-110	2.5-3.5	110-140	3.5-4.5	4-6	R	
Rye	0.75-2	60-120	1-2	90-160	1.5-3.0	4-6	R	
Wheat	0.5-1.5	60-120	1-2	60-150	1-2.5	3-6	S	
Buckwheat	0.5-1.5	48-70	1-1.4	50-90	1.2-1.5	3-4	R	
Sorghum-sudangrass	0.5-1.5	35	1	40-50	1-1.25	2	S	
Mustards	0.25-0.75	5-12		10-15		1	U	
Radish	0.25-0.5	8-13		10-20		1	S	
Rapeseed	0.25-0.75	5-10		8-14		1	S	
Berseem clover	0.25-0.5	8-12		15-20		2	crimson, berseem N	
Cowpeas	1-1.5	30-90		70-120		5	cowpeas, lespedeza S	
Crimson clover	0.25-0.5	15-20		22-30		2-3	crimson, berseem U	
Field peas	1.5-3	50-80		90-100		4	pea, vetch S	
Hairy vetch	0.5-1.5	15-20		25-40		2	pea, vetch S	
Medics	0.25-0.5	8-22		12-26		2/3	annual medics R	
Red clover	0.25-0.5	8-10		10-12		3	red clover, white clover S	
Subterranean clover	0.25-0.5	10-20		20-30		3	clovers, sub, rose U	
Sweet clovers	0.25-1.0	6-10		10-20		1.5	alfalfa, sweet clover U	
White clover	0.25-0.5	3-9		5-14		1.5	red clover, white clover R	
Woollypod vetch	0.5-1	10-30		30-60		2-3	pea, vetch S	

¹R=Reliably; U=Usually; S=Sometimes; N=Never (reseeds)

Chart 3 - Potential Advantages

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Chart 4 - Potential Disadvantages

Species	Increased Pest Risk			Management Challenges					Comments Pro/Con
	Weed potential	Insects/nem atodes	Crop disease	Hinder crops	Establish	Till-kill	Non-kill	Mature incorporate	
Annual ryegrass	○	◐	◐	◐	●	●	●	◐	If mowing, leave 3-4" to ensure regrowth.
Barley	◐	◐	◐	◐	●	●	●	○	Can be harder than rye to incorporate when mature.
Oats	●	◐	◐	◐	●	●	◐	◐	Cleaned, bin-run seed will suffice.
Rye	◐	◐	◐	◐	◐	◐	●	○	Can become a weed if tilled at wrong stage.
Wheat	◐	◐	◐	◐	●	●	◐	◐	Absorbs N and H2O heavily during stem growth, so kill before then.
Buckwheat	○	◐	●	●	●	●	●	●	Buckwheat sets seed quickly
Sorghum-sudangrass	◐	◐	●	◐	●	◐	◐	◐	Mature, frost-killed plants become quite woody.
Mustards	◐	◐	●	◐	●	●	◐	●	Great biofumigation potential; winterkills at 25° F
Radish	◐	◐	●	●	●	●	●	●	Winter kills at 25° F; cultivars vary widely.
Rapeseed	◐	◐	●	◐	●	◐	◐	◐	Canola has less biotoxic activity than rape.
Berseem clover	●	◐	◐	●	●	◐	◐	◐	Multiple cuttings needed to achieve maximum N.
Cowpeas	●	◐	◐	●	●	●	●	●	Some cultivars, nematode resistant.
Crimson clover	◐	○	◐	●	◐	◐	◐	◐	Good for under-seeding, easy to kill by tillage or mowing.
Field peas	●	◐	◐	●	●	●	●	◐	Susceptible to <i>sclerotinia</i> in East.
Hairy vetch	◐	◐	●	●	◐	◐	●	◐	Tolerates low fertility, wide pH range, cold or fluctuating winters.
Medics	◐	◐	●	◐	◐	◐	◐	◐	Perennials easily become weedy
Red clover	◐	◐	◐	●	◐	◐	◐	◐	Grows best where corn grows well.
Subterranean clover	◐	○	◐	◐	●	◐	○	◐	Cultivars vary greatly.
Sweetclovers	◐	◐	●	◐	●	◐	◐	◐	Hard seed possible problem; does not tolerate seeding year mowing
White clover	◐	◐	◐	◐	◐	○	◐	◐	Can be invasive; survives tillage.
Woollypod vetch	◐	◐	◐	◐	◐	◐	●	◐	Hard seed can be problematic; resident vegetation eventually displaces.

○=Problem; ◐=Could be a moderate problem; ◑=Could be a minor problem; ◒=Occasionally a minor problem; ●=Not a problem

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