Chart 1 **TOP REGIONAL COVER CROP SPECIES**[1]

Bioregion	N Source	Soil Builder	Erosion Fighter	Subsoil Loosener	Weed Fighter	Pest Fighter
Northeast	red cl, hairy v, berseem, swt cl	ryegrs, swt cl, sorghyb, rye	rye, ryegrs, sub cl, oats	sorghyb, swt cl, forad	sorghyb, ryegrs, rye, buckwheat	rye, sorghyb, rape
Mid-Atlantic	hairy v, red cl, berseem, crim cl	ryegrs, rye, swt cl, sorghyb	sub cl, cowpeas, rye, ryegrs	sorghyb, swt cl, forad	rye, ryegrs, oats, buckwheat	rye, sorghyb, rape
Mid-South	hairy v, sub cl, berseem, crim cl	ryegrs, rye, sub cl, sorghyb	sub cl, cowpeas, rye, ryegrs	sorghyb, swt cl	buckwheat, ryegrs, sub cl, rye	rye, sorghyb
Southeast Uplands	hairy v, red cl, berseem, crim cl	ryegrs, rye, sorghyb, swt cl	sub cl, cowpeas, rye, ryegrs	sorghyb, swt cl	buckwheat, ryegrs, sub cl, rye	rye, sorghyb
Southeast Lowlands	winter peas, sub cl, hairy v, berseem, crim cl	ryegrs, rye, sorghyb, sub cl	sub cl, cowpeas, rye, ryegrs, sorghyb	sorghyb	berseem, rye, wheat, cowpeas, oats, ryegrs	rye, sorghyb
Great Lakes	hairy v, red cl, berseem, crim cl	ryegrs, rye, sorghyb, ryegrs, swt cl	oats, rye, ryegrs	sorghyb, swt cl, forad	berseem, ryegrs, rye, buckwht, oats	rye, sorghyb, rape
Midwest Corn Belt	hairy v, red cl, berseem, crim cl	rye, barley, sorghyb, swt cl	wht cl, rye, ryegrs, barley	sorghyb, swt cl, forad	rye, ryegrs, wheat, buckwht, oats	rye, sorghyb
Northern Plains	hairy v, swt cl, medics	rye, barley, medic, swt cl	rye, barley	sorghyb, swt cl	medic, rye, barley	rye, sorghyb
Southern Plains	winter peas, medic, hairy v	rye, barley, medic	rye, barley	sorghyb, swt cl	rye, barley	rye, sorghyb
Inland Northwest	winter peas, hairy v	medic, swt cl, rye, barley	rye, barley	sorghyb, swt cl	rye, wheat, barley	rye, mustards, sorghyb
Northwest Maritime	berseem, sub cl, lana v, crim cl	ryegrs, rye, sorghyb, lana v	wht cl, rye, ryegrs, barley	sorghyb, swt cl	ryegrs, lana v, oats, wht cl	rye, mustards
Coastal California	berseem, sub cl, lana v, medic	ryegrs, rye, sorghyb, lana v	wht cl, cowpeas, rye, ryegrs	sorghyb, swt cl	rye, ryegrs, berseem, wht cl	sorghyb, crim cl, rye
Calif. Central Valley	winter peas, lana v, sub cl, medic	medic, sub cl	wht cl, barley, rye, ryegrs	sorghyb, swt cl	ryegrs, wht cl, rye, lana v	sorghyb, crim cl, rye
Southwest	medic, sub cl	sub cl, medic, barley	barley, sorghyb		medic, barley	

[1]ryegrs=annual ryegrass. buckwht=buckwheat. forad=forage radish. rape=rapeseed. sorghyb=sorghum-sudangrass hybrid. berseem=berseem clover. winter peas=Austrian winter pea. crim cl=crimson clover. hairy v=hairy vetch. red cl=red clover. sub cl=subterranean clover. swt cl=sweetclover. wht cl=white clover. lana v=LANA woollypod vetch.

Chart 2 **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
NONLEGUMES	Annual ryegrass *p. 74*			2,000–9,000	◕	◕	◕	◕	◕	◕
	Barley *p. 77*			2,000–10,000	◕	◕	●	◕	◕	◕
	Oats *p. 93*			2,000–10,000	◕	◑	◕	●	◑	●
	Rye *p. 98*			3,000–10,000	●	●	●	●	◑	●
	Wheat *p. 111*			3,000–8,000	◕	◕	◕	◕	◕	◕
	Buckwheat *p. 90*			2,000–4,000	○	◑	◔	●	○	●
	Sorghum-sudan *p. 106*			8,000–10,000	●	●	●	◕	◕	●
BRASSICAS	Mustards *p. 81*		30–120	3,000–9,000	◑	◕	◕	◕	◑	◕
	Radish *p. 81*		50–200	4,000–7,000	●	◕	◕	●	◑	◕
	Rapeseed *p. 81*		40–160	2,000–5,000	◕	◑	◕	◕	◑	◕
LEGUMES	Berseem clover *p. 118*	●	75–220	6,000–10,000	◕	◕	◕	●	●	●
	Cowpeas *p. 125*	●	100–150	2,500–4,500	◔	◑	●	●	◑	◕
	Crimson clover *p. 130*	◕	70–130	3,500–5,500	◑	◕	◕	◕	●	◑
	Field peas *p. 135*	●	90–150	4,000–5,000	◔	◑	◕	◑	◕	◕
	Hairy vetch *p. 142*	●	90–200	2,300–5,000	◔	◕	◑	◑	◑	◔
	Medics *p. 152*	◑	50–120	1,500–4,000	◔	◑	◑	◕	◕	●
	Red clover *p. 159*	◕	70–150	2,000–5,000	◑	◕	◑	◕	●	◔
	Subterranean clovers *p. 164*	●	75–200	3,000–8,500	◔	◕	◕	●	◕	◑
	Sweetclovers *p. 171*	●	90–170	3,000–5,000	◔	●	◕	◕	◕	◑
	White clover *p. 179*	●	80–200	2,000–6,000	◔	◑	◕	◕	●	◔
	Woollypod vetch *p. 185*	●	100–250	4,000–8,000	◑	●	◑	●	◑	◕

[1]**Total N**—Total N from all plant. Grasses not considered N source. [2]**N Scavenger**—Ability to take up/store excess nitrogen.
[3]**Soil Builder**—Organic matter yield and soil structure improvement. [4]**Erosion Fighter**—Soil-holding ability of roots and total plant.
[5]**Good Grazing**—Production, nutritional quality and palatability. Feeding pure legumes can cause bloat.

○=Poor; ◔=Fair; ◑=Good; ◕=Very Good; ●=Excellent

Chart 2 **PERFORMANCE AND ROLES** continued

	Species	Lasting Residue[1]	Duration[2]	Harvest Value[3] F*	Harvest Value[3] S*	Cash Crop Interseed[4]	Comments
NONLEGUMES	Annual ryegrass	◕	◕	◑	◔	●	Heavy N and H2O 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 H2O user in spring.
	Buckwheat	○	◔	○	◔	◕	Summer smother crop; breaks down quickly.
	Sorghum-sudangrass	◕	●	●	○	○	Mid-season cutting increases yield & root penetration.
BRASSICAS	Mustards	◔	◑	○	◔	○	Suppresses nematodes and weeds.
	Radish	◔	◑	◕	◔	◔	Good N scavenging and weed control; N released rapidly.
	Rapeseed	◑	◕	◔	●	○	Suppresses *Rhizoctonia*.
LEGUMES	Berseem clover	◑	●	●	◕	◑	Very flexible cover crop, green manure, forage.
	Cowpeas	◔	●	◑	◑	◑	Season length, habit 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 seeddrop; overgrazing can be toxic.

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

○=Poor; ◔=Fair; ◑=Good; ◕=Very Good; ●=Excellent

Chart 3A **CULTURAL TRAITS**

	Species	Aliases	Type[1]	Hardy through Zone[2]	Tolerances: heat	drought	shade	flood	low fert	Habit[3]	pH (Pref.)	Best Established[4]	Min. Germin. Temp.
NONLEGUMES	Annual ryegrass *p. 74*	Italian ryegrass	WA	6	◔	◔	◕	◕	◔	U	6.0–7.0	ESp, LSu, EF, F	40F
	Barley *p. 77*		WA	7	◕	◕	◑	◔	◕	U	6.0–8.5	F, W, Sp	38F
	Oats *p. 93*	spring oats	CSA	8	◔	◔	◔	◑	◑	U	4.5–7.5	LSu, ESp W in 8+	38F
	Rye *p. 98*	winter, cereal, or grain rye	CSA	3	◑	◕	◕	◑	●	U	5.0–7.0	LSu, F	34F
	Wheat *p. 111*		WA	4	◑	◑	◑	○	◑	U	6.0–7.5	LSu, F	38F
	Buckwheat *p. 90*		SA	NFT	◑	○	◔	◔	◔	U/SU SU	5.0–7.0	Sp to LSu	50F
	Sorghum-sudan. *p. 106*	Sudax	SA	NFT	●	●	◑	◑	◑	U	6.0–7.0	LSp, ES	65F
BRASSICAS	Mustards *p.81*	brown, oriental white, yellow	WA, CSA	7	◑	◕	◑	◔	◔	U	5.5–7.5	Sp, LSu	40F
	Radish *p. 81*	oilseed, Daikon, forage radish	CSA	6	◑	◔	◑	◔	◔	U	6.0–7.5	Sp, LSu, EF	45F
	Rapeseed *p. 81*	rape, canola	WA	7	◔	◑	◑	◔	◔	U	5.5–8	F, Sp	41F
LEGUMES	Berseem clover *p. 118*	BIGBEE, multicut	SA, WA	7	◕	◑	◕	◑	◑	U/SU SU	6.2–7.0	ESp, EF	42F
	Cowpeas *p. 125*	crowder peas, southern peas	SA	NFT	●	◕	◑	◔	●	SU/C	5.5–6.5	ESu	58F
	Crimson clover *p. 130*		WA, SA	7	◑	◔	◕	◔	◑	U/SU	5.5–7.0	LSu/ESu	
	Field peas *p. 135*	winter peas, black peas	WA	7	◔	◑	◔	◔	◔	C	6.0–7.0	F, ESp	41F
	Hairy vetch *p. 142*	winter vetch	WA, CSA	4	◔	◑	◑	◔	◔	C	5.5–7.5	EF, ESp	60F
	Medics *p. 152*		SP, SA	4/7	●	◕	◕	◔	◑	P/Su	6.0–7.0	EF, ESp, ES	45F
	Red clover *p. 159*		SP, B	4	◔	◔	◕	◑	◔	U	6.2–7.0	LSu; ESp	41F
	Subterranean cl. *p. 164*	subclover	CSA	7	◑	◕	◕	◑	●	P/SP	5.5–7.0	LSu, EF	38F
	Sweetclovers *p. 171*		B, SA	4	◕	●	◔	◔	●	U	6.5–7.5	Sp/S	42F
	White clover *p. 179*	white dutch ladino	LP, WA	4	◑	◑	◕	◕	◑	P/SU	6.0–7.0	LW, E to LSp, EF	40F
	Woollypod vetch *p. 185*	Lana	CSA	7	◕	◕	◑	◑	◕	SP/C	6.0–8.0	F	

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

○=Poor; ◔=Fair; ◑=Good; ◕=Very Good; ●=Excellent

Chart 3B **PLANTING**

	Species	Depth	Seeding Rate					Cost ($/lb.)[1]	Cost/A (median)[2]		Inoc. Type	Reseeds[3]
			Drilled		Broadcast							
			lb./A	bu/A	lb./A	bu/A	oz./100 ft²		drilled	broadcast		
NONLEGUMES	Annual ryegrass	0–1/2	10–20	.4–.8	20–30	.8–1.25	1	.70–1.30	12	24		U
	Barley	3/4–2	50–100	1–2	80–125	1.6–2.5	3–5	.17–.37	20	27		S
	Oats	1/2–1 1/2	80–110	2.5–3.5	110–140	3.5–4.5	4–6	.13–.37	25	33		S
	Rye	3/4–2	60–120	1–2	90–160	1.5–3.0	4–6	.18–.50	25	35		S
	Wheat	1/2–1 1/2	60–120	1–2	60–150	1–2.5	3–6	.10–.30	18	22		S
	Buckwheat	1/2–1 1/2	48–70	1–1.4	50–90	1.2–1.5	3–4	.30–.75	32	38		R
	Sorghum-sudangrass	1/2–1 1/2	35	1	40–50	1–1.25	2	.40–1.00	26	34		S
BRASSICAS	Mustards	1/4–3/4	5–12		10–15		1	1.50–3.00	16	24		U
	Radish	1/4–1/2	8–13		10–20		1	1.50–2.50	22	32		S
	Rapeseed	1/4–3/4	5–10		8–14		1	1.00–2.00	11	16		S
LEGUMES	Berseem clover	1/4–1/2	8–12		15–20		2	1.70–2.50	22	39	crimson, berseem	N
	Cowpeas	1–1 1/2	30–90		70–120		5	.85–1.50	71	113	cowpeas, lespedeza	S
	Crimson clover	1/4–1/2	15-20		22–30		2–3	1.25–2.00	27	40	crimson, berseem	U
	Field peas	1 1/2–3	50–80		90–100		4	.61–1.20	50	75	pea, vetch	S
	Hairy vetch	1/2-1 1/2	15–20		25–40		2	1.70–2.50	35	65	pea, vetch	S
	Medics	1/4–1/2	8–22		12–26		2/3	2.50–4.00	58	75	annual medics	R
	Red clover	1/4–1/2	8–10		10–12		3	1.40–3.30	23	28	red cl, wht cl	S
	Subterranean clover	1/4–1/2	10–20		20–30		3	2.50–3.50	45	75	clovers, sub, rose	U
	Sweetclovers	1/4–1.0	6–10		10–20		1.5	1.00–3.00	16	32	alfalfa, swt cl	U
	White clover	1/4–1/2	3–9		5–14		1.5	1.10–4.00	19	30	red cl, wht cl	R
	Woollypod vetch	1/2–1	10–30		30–60		2-3	1.25–1.60	30	65	pea, vetch	S

[1]Per pound in 50-lb. bags as of summer/fall 2006;To locate places to buy seed, see *Seed Suppliers* (p. 166).
[2]Mid-point price at mid-point rate, seed cost only. [3]**R**=Reliably; **U**=Usually; **S**=Sometimes; **N**=Never (reseeds).