Planting Season	Name	Days to incorporation	Weeks to maturity	Best time to plant in the Mid-Atlantic	Mix With	Contribution to soil biomass (airdry in lbs/100sqft)	Primary Uses	Minimum Germination temp (farenheit)	Ounces seed needed per 100 sqft. Broadcast	Notes
Spring	**buckwheat**	40 days	9-13	Late spring is best for biomass, but it can be planted any time there is a window in crop rotations	sorghum sudan grass, red clover	4	weed supression, quick growth, soil building	50	3-4	Fast growth smothers weeds; loosens topsoil; captures phosphorus; blossoms for pollinators; decomposes quickly
	clover, berseem	30-60 days	9-12	Seed after last frost date (around April 15th)	oats, ryegrass	TBD	nitrogen fixing, grazing, quick growth, weed smothering, soil building	42	2	Least winter hardy of all clovers; can be winter killed as a cover crop. Cut multiple times, whenever it reaches 12-15 inches tall.
	clover, crimson	70-90 days	17-26	Quick growing -- it can be planted through out the growing season during short windows between crops or planted in rows along side crops. Unlikely to winter kill south of zone 5.	rye and other cereals, vetches, annual ryegrass, subclover, red clover	30	grazing, nitrogen fixing, soil building, weed supression, quick growth	35	2-3	Weak tap roots make it easy to kill by mowing at the early bud stage. Shown to produce more biomass than vetch or other clovers. Feeds pollinators; creates a home for pirate bugs that prey on thrips and other small pests. It may attract army worms. Excellent for grazing, especially when mixed with grasses.
	clover, red	60-70 days	17-26	Spring	small grains, sweetclover, grass forages	36	grazing, nitrogen fixing, soil building, weed supression, quick growth	41	3	Shade tolerant; easy to establish a planting; not picky about soil type; can be mown up to 3 times
Late Spring/ Early Summer	**buckwheat**	40 days	9-13	Late spring is best for biomass; but it can be planted any time there is a window in crop rotations	sorghum sudan grass, red clover	4	weed supression, quick growth, soil building	50	3-4	Fast growth smothers weeds; loosens topsoil; captures phosphorus; Blossoms for pollinators; decomposes quickly
	clover, crimson	70-90 days	17-26	Quick growing -- it can be planted through out the growing season during short windows between crops or planted in rows along side crops. Unlikely to winter kill south of zone 5.	rye and other cereals, vetches, annual ryegrass, subclover, red clover	30	grazing, nitrogen fixing, soil building, weed supression, quick growth	35	2-3	Weak tap roots make it easy to kill by mowing at the early bud stage. Shown to produce more biomass than vetch or other clovers. Feeds pollinators; creates a home for pirate bugs that prey on thrips and other small pests. It may attract army worms. Excellent for grazing, especially when mixed with grasses.
	clover, sweet	2 years	17-26	Biennial. April/May	small grains, red clover	30	soil building, nitrogen fixing, breaking up clay soils, relieving compaction	42	1.5	Slow to establish in year 1 and then high growth in year 2. Excellent nutrient scavenger, better than most other covers -at finding potassium, phosphorus and other soil nutrients. Deep 3 ft taproot is good for breaking up compact soils. Shade tolerant. Blossoms attract polinators and beneficial insects. Can be dangerous for cattle, if moldy.
	cow peas	90 days	9-12	Late spring. Soil temp needs to be at least 65F consistently; Or fall, at least 9 weeks before frost	sorghum sudangrass	12	nitrogen fixing, preventing erosion, weed supressing	58	5	Blossoms provide nectar to bees and beneficial insects. Moderate shade tolerance. High value hay or forage when seeds are mature. Mowing down will not kill the plants, tilling is needed.

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Summer	**buckwheat**	40 days	9-13	Late spring is best for biomass; but it can be planted any time there is a window in crop rotations	sorghum sudan grass, red clover	4	weed supression, quick growth, soil building	50	3-4	Fast growth smothers weeds; loosens topsoil; captures phosphorus; blossoms for pollinators; decomposes quickly
	forage radish	decomposes over winter	16-18	Plant in late August; teminates at first hard frost; plant 3-10 weeks before hard frost	cereal rye	TBD	breaking up clay soils, relieving compaction, weed suppression, nitrogen scavenging	45	1	Works well for no-till systems. Produces twice as much biomass when used as a winter cover crop in the Mid-Atlantic. Grows best in soil with good levels of nitrogen and sulfur.
	oats	winter killed in zone 7 and colder	13-17	Late summer or early fall	clover, pea, vetch, or similar	30	biomass generation, weed supression, erosion prevention	38	4-6	Oats provide good winter coverage (winter killed) and can be tilled in for early spring crops; allelopathic, wait 3 weeks after turning it under before following it with a seed crop; brassicas produce more N and grow faster than oats; Rye grows more and produces more biomass, but is harder to kill and till in; Oats are an excellent nurse crop , possibly the best of all the grains to grow in combination with legumes.
	sorghum sudan grass	45 + days	9	Either after soil warms in summer, or in the fall at least 6 weeks before first frost	buckwheat, cowpeas	12-40	soil building, breaking up clay soils, relieving compaction, nitrogen scavenging, growing fast	65	2	Mow at 3-4 ft tall (multiple times) to create more biomass and encourage deeper root penetration (relieving soil compaction). Allelopathic, produces sorgoleone, and can effectively smother weeds like crabgrass and pigweed. Helps control onion maggots and thrips.
	clover, crimson	70-90 days	17-26	Quick growing -- it can be planted through out the growing season during short windows between crops or planted in rows along side crops. Unlikely to winter kill south of zone 5.	rye and other cereals, vetches, annual ryegrass, subclover, red clover	30	grazing, nitrogen fixing, soil building, weed supression, quick growth	35	2-3	Weak tap roots make it easy to kill by mowing at the early bud stage. Shown to produce more biomass than vetch or other clovers. Feeds pollinators; creates a home for pirate bugs that prey on thrips and other small pests. It may attract army worms. Excellent for grazing, especially when mixed with grasses.
	clover, subterranean	100 days	13-14	Fall	other clovers and subclovers	18	nitrogen fixing, weed supressing, erosion prevention, soil building, grazing	38	3	Grows close to the ground; Good weed supressor; Hardy to zone 7; Excellent pasture plant - seed with ryegrass; Dies back naturally in early summer after it has set seeds; allelopathic, wait 4 weeks before seeding the next crop for residues to disintegrate.
	cow peas	90 days	9-12	Late spring. Soil temp needs to be at least 65F consistently; Or fall, at least 9 weeks before frost	sorghum sudangrass	12	nitrogen fixing, preventing erosion, weed supressing	58	5	Blossoms provide nectar to bees and. beneficial insects. Moderate shade tolerance. High value hay or forage when seeds are mature. Mowing down will not kill the plants, tilling is needed.

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Fall	**rapeseed**	6 months	TBD	Early fall -- grows rapidly	cereal rye	10	erosion prevention, nitrogen scavenging, weed supression	41	1	Very versatile; can handle warm or cool temps; reduces Rhizoctonia (canker and black scurf) on potato when used as green manure; supresses parasitic nematodes and weeds; grows 3-5 ft tall
	rye grass	60 days	17	Plant seeds in the fall, 40 days before first frost	legumes, grasses	30	soil building, erosion prevention, weed suppression	40	1	Mow to create more biomass; Allow 3 weeks or more for decomposers to release Nitrogen; Tendency to reseed can make it a potential weed in the mid atlantic.
	rye, winter/cereal	6 months	17	By October 1; Planted in fall, it overwinters and comes back in early spring; allows for early incorporation	legumes, grasses or other cereal grains	30	weed supression, soil building, erosion prevention	34	4-6	Sturdy grain, which can be planted later than most cereal crops. Mow down after flowering (12 inches tall or more), before seed matures. Allelopathic; may attract army worms; Winter rye (fall sown) covers and holds the soil, but can be hard to incorporate and break down. Allow 3 weeks or more for decomposers to release nitrogen from a rye cover crop
	sorghum sudan grass	45 + days	9	Either after soil warms in summer, or in the fall at least 6 weeks before first frost	buckwheat, cowpeas	12-40	soil building, breaking up clay soils, relieving compaction, nitrogen scavenging, growing fast	65	2	Mow at 3-4 ft tall (multiple times) to create more biomass and encourage deeper root penetration (relieving soil compaction). Allelopathic, produces sorgoleone, and can effectively smother weeds like crabgrass and pigweed. Helps control onion maggots and thrips.
	vetch, hairy	6 months	17	Plant in the fall, at least 45 days before killing frost, for over wintering (hardy to zone 4) and turn it under in the spring	small grains, cow peas, crimson clover, buckwheat	9	nitrogen fixing, soil building, weed smothering	60	2	Hairy vetch is a legume that will over winter and fix nitrogen which can be tilled in during the spring. Works well sown in combination with grass seeds

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