



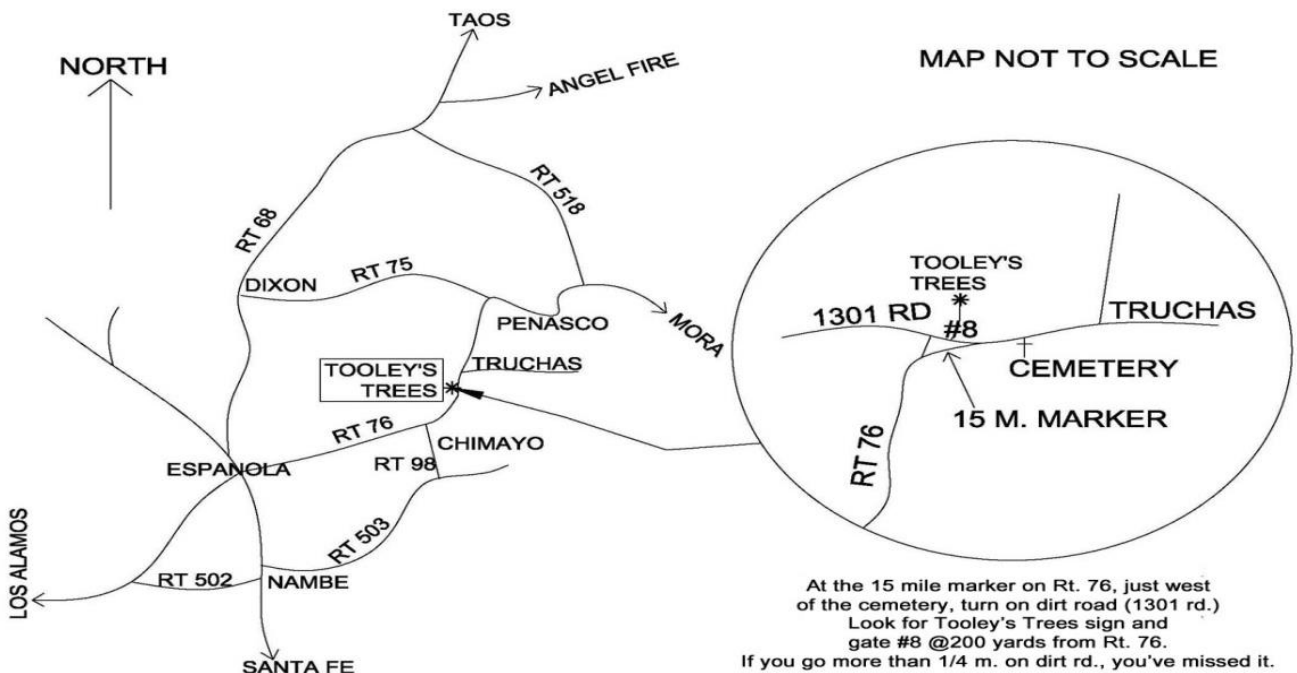
www.tooleystrees.com

2023 SPRING CATALOG

We offer a unique alternative to large commercial growers at great prices.

Quality Beauty Toughness

SUPPORT LOCAL AGRICULTURE



TOOLEY'S TREES & KEYLINE DESIGN
P.O.BOX 392 1301 RD. #8
TRUCHAS, NM 87578
(505) 689-2400 E-mail: info@tooleystrees.com
NM Nursery License # 6241
www.tooleystrees.com

Tooley's Trees is a retail and wholesale nursery in Truchas, NM, on the highroad between Santa Fe and Taos, at 7,960'. Focusing on varieties that are drought tolerant and adapted to high pH, we grow species trees, shrubs, and grafted fruits. We grow our trees and shrubs in native soil contained in fabric bags and rootmaker pots. Our stock is grown with organic methods and we practice holistic orchard management. These practices are time consuming and labor intensive, but result in healthier plants, soils, water quality and beneficial insect populations.

We have a limited selection of heirloom and uncommon varieties of grafted apples now, pears will be ready this fall. Some of them may be new to you but are an opportunity for you to grow varieties that have all but disappeared from our markets. Our grafts are on rootstocks carefully selected to match climate and soil types in this area. Our species trees and shrubs are easy to care for and will provide screening, habitat and food for wildlife and yourself.

Fruit trees are cultivated plants. They need regular water as well as protection from predators large(cows, horses, deer, elk, bear...) and small(rabbits, gophers, mice, voles...) Drought tolerant means just that. It doesn't mean trees will thrive without irrigation. We believe in selling small caliper trees with well-developed root systems. The fabric root bags we plant in are key factors in building a fibrous root structure. Smaller caliper trees establish more quickly with less transplant shock, and grow more vigorously in difficult sites than large caliper trees.

All our plants are healthy and true to name. Their survivability depends on their care once they leave this farm. No other warranties are implied. But if you have questions, please contact us by phone or email.

Thank you for your support, and for buying local,



Gordon Tooley and Margaret Yancey

HOURS FOR RETAIL SALES:

March 31 through May 28- Fridays, Saturdays and Sundays from 8-5.

Closed Easter Sunday.

We will be closed for the summer, re-opening on September 8 through October 1, unless we sell out sooner.

WE DO NOT ACCEPT CREDIT CARDS. CASH OR CHECK ONLY PLEASE

TREE AND SHRUB PLANTING GUIDELINES

The most common reasons for plant failure are planting too deep and over amending the soil.

THE ADVANTAGES OF FABRIC ROOT BAGS

- Plants grown in fabric bags are healthier and grow faster than plastic container grown stock.
- Containers are more susceptible to problems of inadequate or excess water and fertilizer.
- Roots often circle in pots.
- Plants grown in root control/rootmaker bags have fibrous roots.
- The tough fabric of the bag prunes the root structure so shock is reduced when the tree or shrub is transplanted.
- 90% of the plant's root structure remains intact in the bag.
- Traditional field digging can cut away too much of the root structure.
- At the nursery it is easier to keep bagged stock from drying out or tipping over than containerized stock.

INSTRUCTIONS FOR PLANTING FROM ROOT BAGS

Remove the bag before planting the tree.

Cut the fabric from top to bottom and peel it away.

Occasional roots may be caught in the fabric – cut these with hand pruners.

Do not jerk the fabric away from the root ball.

SITE PREPARATION

Dig shallow planting holes two to three times as wide as the root ball. Wide, shallow holes encourage horizontal root growth that trees and shrubs naturally produce. Trunk flare should not be below grade. In well-drained soil, dig holes no deeper than the trunk flare. In poorly-drained clay soil, dig holes two to four inches shallower so that trunk flare is higher than grade. This will help prevent crown rot.

Don't dig holes deeper than trunk flare or put loose soil beneath roots, because loose soil will settle over time, leaving trees and shrubs planted too deep. Widen holes near the soil surface where most root growth occurs. Score walls of machine-dug (auger, backhoe) holes to remove glazing.

Backfill holes with existing unamended soil. **Do not incorporate organic matter into backfill for individual planting holes.** This can cause problems with water movement and root growth between the root ball, planting hole, and surrounding soil. Backfill with soil, then water thoroughly to settle out air pockets. Then water again. Cover any exposed root ball tops with mulch, but keep the

mulch 2" away from the trunk flare. Spread any soil amendments you like to use around the tree on the surface of the soil, under the mulch. Soil builds from the top down so the amendments will do your plants more good spread in a wide area than dumped in the planting hole.

TREE CARE AFTER PLANTING

Remove tags and labels from trees and shrubs to prevent girdling branches and trunks. Make a map of planted area.

Good follow-up watering helps promote root growth. Drip irrigation systems and water reservoir devices facilitate efficient watering. Mulch, but don't over mulch, newly planted trees and shrubs. Two to three inches of mulch is best; less if a fine material, more if coarse.

Keep mulch from touching tree trunks and shrub stems. This prevents disease, insect and rodent problems if using organic mulches, and bark abrasion if using inorganic mulches.

Don't use black plastic beneath mulch around trees and shrubs because it blocks air and water exchange.

Only stake trees with large crowns or those situated on windy sites or where people may push them over. **Stake for a maximum of one year.** Allow trees a slight amount of flex rather than holding them rigidly in place. Use guying or attaching material that won't damage the bark such as wide cloth straps. Wrap the strap once around the trunk at half the height. Use 2 wood stakes, not metal. To prevent trunk girdling, remove all guying material after one year.

Most trees should not have their trunks wrapped. Wrapping often increases insect, disease, and water damage to trunks.

*****VERY IMPORTANT PROTECTION FOR YOUR TREES*****

For protection against small animals or equipment damage, install guards or a circle of ¼" hardware mesh fencing to protect the trunk. Be sure the guards or mesh are loose-fitting and permit air circulation. Remove plastic guards in spring.

For protection against larger animals (like deer) install a large ring of field fencing to keep the animals from nibbling at the leaves and young branches.

TREE PRUNING

Pruning is a very intuitive process. "Touch Trees". Feel that trees are living organisms; get to know your subjects. They all have different growth patterns to observe. Work with the natural form the trees possess.

Be a good investigator, take your time, pay attention to details, do a good job, educate yourself.

Why to Prune

- Control size and develop strong tree structure
- Reinvigorate old wood to productive wood
- Decrease vigor, issue new responses at cut site
- Increase fruit spurs and thin fruiting wood
- Open up canopy for better light penetration and air circulation
- Remove weak crotch angles
- Remove competing branches
- Remove co-dominant branching, crossing, and dead branches
- Remove interior non fruiting and marginal fruit sites(fruit spurs growing below branches)
- No sealers or paint on any cut surface ever
- Pruning influences fruit quality and balances vegetative growth with fruit load
- General Rules
- Never remove a branch or twig without having a reason to do so.
- Don't remove lower branches too early, lower branches aid in trunk flair, good anchorage, and branch development
- Seedling trees usually need less or very little pruning to maintain a natural habit
- Clonal rootstock tend to need more maintenance due to tendencies to produce more branches that want to grow vertical
- Spur types need very little training, thinning, or heading
- Pruning is a dwarfing process, increases vegetative growth, stimulates wood replacement, and reinvigorates tired, low productive wood
- Pruning reduces yield, removal of wood with flower buds reduces potential fruit,
 - Yields are less but quality is improved by size.
 - Weight load to scaffold is reduced- especially important in young trees
- Never top an established tree to lower size!
- Pay attention to natural tree shapes, try to work with what the tree wants to do.
- In most cases you can follow up with pruning that complements natural branching rather than making them do what they may not want to do.
- Tool hygiene; clean, sharp, keep off the ground, wipe or spray with 90 percent alcohol, approved bactericides and fungicides, or 5% bleach and water
- Cut or chip the cut branches and twigs into small pieces to create Ramial wood mulch. Remove all diseased wood.

Types of Cuts

Pruning is: thinning, heading, bench cuts, notching to increase or decrease bud vigor

- Thinning cuts: removal of competing branches and twigs, opens up light and air

- Heading cuts: reduce apical dominance, reduce length, control height and width, send new vigor to the next 3 to 5 buds below the cut to direct growth to spurs
- Never make flush cuts, they callus improperly and increase decay surface area
- Avoid stub cuts, final cuts should be at collar or branch bark ridge

Timing of Pruning

- Things that flower first, get pruned last; late in the dormant season or very early in the spring before bud break
- Heavy pruning in the growth flush, and before leaf drop in the fall should be avoided
- No more than ¼ of the trees canopy should be removed per season
- Young trees can respond to heavy pruning better than established trees
- Trees don't heal, they seal. Cutting wood at any time stimulates cell activity at the cut site to compartmentalize cell walls to seal out infection
- Early winter pruning can cause winter damage and interrupt dormancy clock, even causes some species to break bud too soon. It should be avoided.

Dormant Season Pruning

- Dormant pruning stimulates wood replacement, don't remove a branch unless you have a reason and make yourself aware of the response the tree will make at that site
- Very late winter or early spring is the preferred time to prune. This can aid in preventing premature bud break, fruit loss, and winter damage.
- Pruning delays fruiting, unpruned trees will flower and fruit sooner
- One to four year old trees should not be pruned too much in winter for these reasons
- Stone fruits (apricots, plums, cherries, peaches, nectarines) sometimes experience limb die back or gummosis caused by the fungus *Eutypa lata* or *Cytosporina*. It is safer to prune these in early summer during periods of low humidity.

Summer Pruning

- Summer pruning encourages spur formation and can lessen water sprout competition in trees that are heavily pruned or have an umbrella formation
- Summer pruning reduces canopy and root growth due to loss of leaf surface, can affect trunk flair and retard vigor in young trees, and delay fruiting
- Summer pruning stiffens branches so use caution when pruning narrow crotch angles that will eventually be pushed out with limb spreaders, since this can cause included bark which is more prone to splitting
- One to four year old trees should not be pruned too much in summer for these reasons
- Summer pruning can help bring biennial croppers into a more annual cycle
- Summer pruning is preferred for stone fruits

ADDITIONAL RESOURCES

'The Apple Grower', 'Mycorrhizal Planet' or 'The Holistic Orchard'- Michael Phillips. We encourage everyone to read these. They cover all aspects of tree care, healthy orchards and wildlife habitat. Also check out and support: www.GrowOrganicApples.com for a wealth of helpful information- not just on apples.

Alex Shigo – Anything he published

'Physiology of pruning fruit trees'- publication number 422-025, Virginia Tech cooperative extension

Cornell Cooperative extension publication #112

NMSU cooperative extension bulletins

'Encyclopedia of Organic Growing'- Rodale press

'The Pruning Book' or 'Grow Fruit Naturally' Lee Reich

'Organic Orchardng'- Gene Logston

'Fruit, Berry and Nut Inventory' Seed Savers Exchange

'Growing Food in the Southwest Mountains' Lisa Rayner

'Will Bonsall's Essential Guide to Radical, Self-Reliant Gardening' Will Bonsall

'Call of the Reed Warbler' Charles Massy

For more information on tree planting, look at the International Society of Arboriculture's website:

<http://www.treesaregood.org/treeowner/plantingtree.aspx>

SPECIES TREES & SHRUBS

***Acer tataricum*/Tatarian Maple**

Zone 3. 15'-20'. Width comparable to height. A large multi-stemmed shrub or a small rounded wide-spreading tree. Dark green in summer, yellow and red in fall. Tolerant of adverse conditions including drought and high pH. Good where a small tree is desired. Local beekeepers tell us that the bees love its early season flowers.

***Juniperus scopulorum*/Rocky Mountain Juniper**

30'-40' high by 3'-15' wide. Zone 3. Narrow, pyramidal tree often with several main stems. Valued for its use as screens, hedges, backgrounds. Very nice blue cast to the foliage. Withstands drought conditions very well.

***Picea pungens*/Colorado Spruce & *Picea pungens glauca* /Colorado Blue Spruce**

To 100', Zone 2. Foliage bluish-green or silver. Broad dense narrow pyramid with horizontal stiff branches to the ground. Is more drought tolerant than other Picea. Native to the southwestern states.

***Pinus ponderosa*/Ponderosa Pine**

60'-100'. Zones 3 to 6. Narrow, pyramidal when young, with time develops an irregularly cylindrical and narrow crown with numerous short stout branches. Prefers well drained soil, sunny, open exposure, intolerant of shade, resistant to drought, tolerates alkaline soils.

***Populus x acuminata*/Lanceleaf Cottonwood**

25' to 45'. Zone 3. Upright form with broad spreading crown. Introduced into cultivation in late 1800's. Good alternative to Aspens for lower elevations. Greenish, yellowish bark. Fairly fast growing, hardy, cottonless shade tree.

***Populus tremuloides*/Quaking Aspen**

To 50', Zone 2. Beautiful, fast growing native tree. Extremely cold hardy. Green, heart-shaped leaves flutter in the slightest breeze. Brilliant yellow, rarely red fall color.

***Ribes rubrum* /Mixed Currants**

Zone 2-6. Compact clusters of red or pink berries. Long stems for easy picking. Large 1/2" diameter berries. Excellent for jellies, preserves, tarts and muffins. Strong, vigorous, upright bush with dense foliage; 4'-6' tall and 2'-5' wide. Early bearing; produces fruit on two-year and older wood. Long ripening season; holds well on the bushes. Productive in partial shade. Excellent bird forage and windbreak plant. Ripens during July.

***Ribes sp.* /Hinnomaki Red Gooseberry**

Dark red medium size fruit with tangy outer skin and sweet flesh. Upright plants are adaptable to various growing systems. Favorite with home gardeners. Good mildew resistance. Self-fertile. Ripens in July. Zones 2-9. Originated in Finland.

***Rosa rubiginosa* (also known as eglanteria)/Sweetbrier Rose.**

6', Zone 4. Erect with unequal hooked prickles. Rose pink single flowers. Sweet spicy apple scented foliage. A pleasant vigorous informal hedge.

***Symphytum x uplandicum*/ Comfrey**

Typically grown in borders and shade gardens for its attractive foliage and Virginia bluebell-like spring flowers. Commonly known as Russian comfrey, a naturally occurring hybrid, typically grows in an upright clump to 18-24" tall. From pinkish buds, flowers open up rose but mature to purple. Comfrey has been grown in medicinal herb gardens for several centuries for the purported healing properties of the leaves and roots when applied as a poultice to inflammations and wounds. It is also a dynamic accumulator which gathers minerals or nutrients from the soil and stores them in a more bioavailable form and in high concentration in their tissues, then can be used as fertilizer or to improve mulch. **LEAVES ARE POISONOUS IF INGESTED.**

GRAFTED APPLES

We try to have a large selection of heirloom and newly developed grafted apples to offer you. We do much of the grafting here on the farm and select rootstocks and scion wood that should be productive in Southwestern soils and in this climate. These apples may be less well known, but merit attention in the trade. In addition to adding unique trees to your landscape, you help to preserve diversity and the unusual characteristics of these fruits by planting these trees. The majority of these apple trees are grafted on semi-dwarf rootstocks. These provide long lived semi-dwarf trees that are well anchored and perform well in most sites. EMLA 111 and Geneva 890 will generally produce 15'-18' trees. We also have some varieties on Standard rootstock; Malus Antanovka. Please enquire as they change from year to year. Mature tree size is a combination of the characteristics of the rootstock and the variety, as well as the quality of the soil and care given to the tree.

 Baking  Fresh eating  Processing  Cider  Storing

Brown's Apple 

Vintage English cider apple. Medium size, dark red fruit with crisp clean flavor. Often red staining in flesh. Makes a tangy, fruity cider. Tendency toward biennial bearing. Scab tolerant. Ripens in October. Hardy to -30 degrees F. Widely planted in Europe. Originated in south Devon in the early 1900s.

Brown Snout Apple 

Cider variety that produces a sweet, slightly astringent juice and a mild to medium bittersweet cider. Small fruit with green to yellow skin color with patches of russet and a brown russet eye at the calyx end of the fruit. This distinctive brown eye is how the fruit got its name. Self fertile. Susceptible to fire blight. Ripens October to November depending on location. Discovered in 1850 in England.

Canadian Strawberry Apple

Unknown parentage. Originally planted about 100 years ago in Solon, Maine. The only known trees are living and producing. Medium to large fruit is round to conic. Skin color is buttery yellow with some green background covered about 50% with stripes and spots of vibrant red-orange. Juicy, slightly tart flesh has a distinct flavor. Ripens early fall. Keeps one month. Hardy to Zone 4. Susceptible to Fire Blight.

Claygate Pearmain Apple

Good size, brown russeted fruit with beautiful splash of crimson in the sun. Crisp, juicy, yellowish flesh. Rich sugary flavor like the Ribston Pippin. Good keeper; excellent bearer. Ripens late. Zone 6. Fine old English apple found growing in a hedge in the hamlet of Claygate in Surrey before 1820.

Crimson King Apple

English Cider apple which is also excellent for fresh eating. Bright crimson skin. Tart flavor. A light fruity cider is produced from the acidic, non-astringent juice. Triploid. Ripens very late. First propagated by John Toucher of Bewley Down, Somerset, England, late in the 19th century.

Early Joe Apple

Small, round fruit. Green-yellow skin striped and splashed with dark red. Crisp, juicy flesh. Rich pear-like flavor. Susceptible to scab. Ripens from August to September depending on location. Originated in New York around 1800.

Giant Russian Apple

Red fleshed fruit over 3" across. Very tart flesh. Ripens mid to late season. Vigorous slightly upright tree is very productive. Pink flowers. May be scab resistant. Good for adding color to sauces and ciders. High tannin.

Lodi Apple

Montgomery x Yellow Transparent. Extra early, large, green cooking apple. Larger, firmer and keeps longer than Yellow Transparent, does not get mealy as fast. Clear, yellow skin. Crisp, juicy, mildly subacid, white flesh. Sweet-tart flavor. Harvest for pies and sauce when full size. Fine white applesauce, great for early pies. For fresh eating, pick when partly yellow. Dependable, productive tree. Less alternate bearing if properly thinned. Resistant to apple scab. Requires cross-pollination. Ripens during July. Hardy in Zones 4-8 and to -45 degrees F. Produced by the New York Fruit Testing Association in 1911.

Macoun Apple

McIntosh x Jersey Black. Size and shape like McIntosh; more striped with deeper red coloring. Dark purplish red blush over green background. Firm, aromatic, white flesh. High quality, all purpose, dessert apple. Good for local markets, not for shipping. Medium size, vigorous, hardy, spur type, productive tree. Upright habit; needs training to develop a spreading top. Must thin to maintain fruit size and annual bearing. Very resistant to fire blight. Blooms late. Ripens several weeks after McIntosh. Requires 600 hours of chilling. Hardy to zone 4. Developed at the Geneva Station. Introduced in 1923.

Maiden's Blush Apple & drying

One of the oldest American apples. Flat, perfectly round fruit. Thin, tough, smooth, waxy, yellow skin with crimson blush. Crisp, tender, white flesh with maybe a slight yellow tinge. Fine for cooking, eating fresh, drying or making cider. Vigorous grower; bears early and annually. Subject to scab. Long harvest period. Ripens from mid-August to mid-September depending on location. Hardy to -50 degrees F with occasional winter injury. Original tree traces back to New Jersey prior to 1817. Susceptible to Fire Blight.

Muscat de Dieppe Apple

French bittersweet cider apple. Precocious, productive tree. Ripens mid-September(in England). Winter hardy.

Northern Spy Apple

Large, round, often flattened greenish yellow fruit flushed and striped pinkish red with a delicate bloom and occasional russet patches. Fine grained, rather firm, very tender, crisp, juicy yellowish flesh. Tart, aromatic sub-acid flavor. Excellent all purpose apple, good keeper. Very large, vigorous, productive, upright tree; tends to bear biennially. Blooms late Requires pollination. Ripens late October. Zone 3-9. Seedling discovered about 1800 in East Bloomfield, New York.

Redfield Apple

Highly unusual cross between Wolf River and Niedzwetzskayana red crab. Medium to large, waxy pink to red fruit. The deep red flesh is slightly dry, making it a superb baking apple. Produces an exceptional jelly or blood red cider or vinegar. High in pectin. Not a fresh eating apple. Short storage life. Extremely hardy tree is disease and pest free. Heavy annual bearer. Highly ornamental with bronze leaves and red blossoms. Ripens in October. Zones 3-4. Developed at the New York Station, 1938.

Russell's Russet Apple

Chance seedling of unknown parentage. Excellent early fall dessert apple. Originated in Mt. Vernon, Maine. Discovered by Russell Libby. Brownish russet skin. Not a late keeper. Hardy to Zone 4.

Sops of Wine Apple

Old English cider and culinary apple. Medium to large fruit. Greenish yellow skin overspread with purplish red, mottled and splashed and sometimes striped with dark carmine. Soft, fine grained, juicy, yellowish flesh is often stained with pink or flecked with red. Aromatic, mild, subacid flavor. Highly regarded for cooking, cider and apple wine. Good dessert apple as well Fair storage ability. Medium to large tree bears early and reliably. Requires cross-pollination. Mid-season bloom. Ripens August -September depending on location. Introduced 1832. Hardy zones 5-9.

Summer Sweet Apple

Round –conic, yellow-green fruit with beautiful golden apricot-orange blush and occasional russet splash at the stem end. Yellow, firm flesh. Sweet distinctive flavor. Vigorous, upright, productive tree. Zones 4-6. Rare. Originated in Sidney, Maine about 1800.

Sweet 16 Apple

Malinda x Northern Spy. Red striped, conic fruit up to three inches. Aromatic, moderately acid, firm, crisp, cream colored flesh with high sugar content. Unique, pleasing, faintly nutty flavored cooking apple. Rates high as a pie and sauce apple; also an excellent dessert apple. Handles and stores well. Early bearing, late blooming tree with moderately spreading, vigorous habit. Dependable, annual bearer. Resistant to scab and fire blight. Extremely cold hardy variety. Can withstand -50 degrees.

Virginia Crabapple

AKA Hewes. Small fruit, 1.5". Dark green skin covered with dull, purple-red and many large white dots. Translucent, yellow flesh with strong, musky flavor. Produces a clear dry cider which is excellent on its own and used in cider blends. Productive tree is a good pollinator. Ripens September to October. Good keeper. Zones 3-7. Exact origin date is unknown. One hundred year old Hewes crab trees were discovered in Virginia in 1817.

Wealthy Apple

Medium size, pale yellow fruit splashed and striped with red. Ripens to all-over scarlet for fresh eating; used weeks earlier for pies, sauces and preserves. Refreshing, crisp, very juicy, white flesh with pink veins. Sprightly, vinous, distinctive flavor with hint of strawberry. Keeps into December. Fine quality. Small, compact tree bears young and heavily; tends to be biennial. Blooms profusely over a long period; excellent pollinator. Favorite for home orchards. Resistant to scab, fire blight, and cedar-apple rust. Hardy into Zone 2. Seedling of Cherry Crab planted in Minnesota about 1860.

Winekist Apple

Unknown parentage. Medium size fruit is wine-red with areas and stripes of darker red and very small white dots. Red flesh is extremely tart and coarse. Great addition to cider or sauce. Tree grows to 15 ft. Zone 4. Rare. Originated in Winthrop, Maine.

Winesap Apple

Round, medium sized dark red fruit, crisp, tart, very juicy yellow flesh. Top quality multi-purpose apple. Flavor is too sharp for some, preferred for dessert by others. Makes fine cider, good for cooking, excellent for sauce, keeps until May. Heavy producer, adapted to a wide range of soils and climates. Ripens from late September to early November depending on location. Originated in US around 1817. These scions came from an old orchard south of Santa Fe.

York Imperial Apple & drying

Medium to large, rectangular, intermediate to flat fruit. Bright green or yellow skin with light red or pinkish red flush. Firm, crisp, tender, juicy, yellowish flesh. Aromatic, subacid flavor. Excellent for baking, making cider and for drying. Susceptible to cedar apple rust, fire blight and cork spot. One of the best old-time winter keeping apples. Hold until Christmas for best flavor. Ripens in late October. Zones 4-8. Favorite in the East. Found about 1830 near York, PA.

PRICES AND DELIVERY

Everything described in the catalog but not listed here, including fruit trees, is priced by caliper. All the grafted fruit trees listed in the catalog are available at this printing, although some quantities are very limited. We try to keep our website www.tooleystrees.com, up to date. Delivery is \$3.00 per loaded mile at this printing. Prices and availability subject to change. All plants are in fabric root bags.

WE DO NOT ACCEPT CREDIT CARDS. PAYMENT IN CASH OR CHECK ONLY PLEASE

Caliper prices:

1/2"-3/4" . \$50. 3/4"-1" \$65.

Latin Name/Common Name

Acer tataricum/Tatarian Maple	\$34
Juniperus scopulorum/Rocky Mtn. Juniper	\$34
Picea pungens/Blue Spruce or CO Spruce 7 gal	\$50
Pinus ponderosa/Ponderosa Pine	\$60
Populus x acuminata/Lanceleaf Cottonwood	\$40
Populus tremuloides/Quaking Aspen	\$70

Ribes/ Currants, Gooseberries	\$34
Rosa rubiginosa/ Sweetbrier Rose	\$34
Symphytum x uplandicum/Comfrey	\$24

The Basics of Keyline Planning

The keyline design is unique to each property and will be formulated from evaluation of water movements over the land, with the idea of controlling and making use of this resource in the management of the land.

The keypoint occurs at the base of the steepest part of the slope in the center line of a valley. This is the fall line path that water currently follows.

The keyline of a valley is a contour line that runs through the keypoint. The ends of the keyline are where the contour changes direction from the valley to the ridge.

Water movement over the land and the land's features are directly related to each other, and water resources can only be used if they can be controlled.

Other factors such as climate, geology and rainfall patterns historically determined the land's topography. Controlling water is the main focus in keyline planning as this is one variable which can be manipulated.

Keyline Cultivation

Once the keypoints and keylines have been identified, the control of water movement over the land can be achieved through a keyline pattern of cultivation.

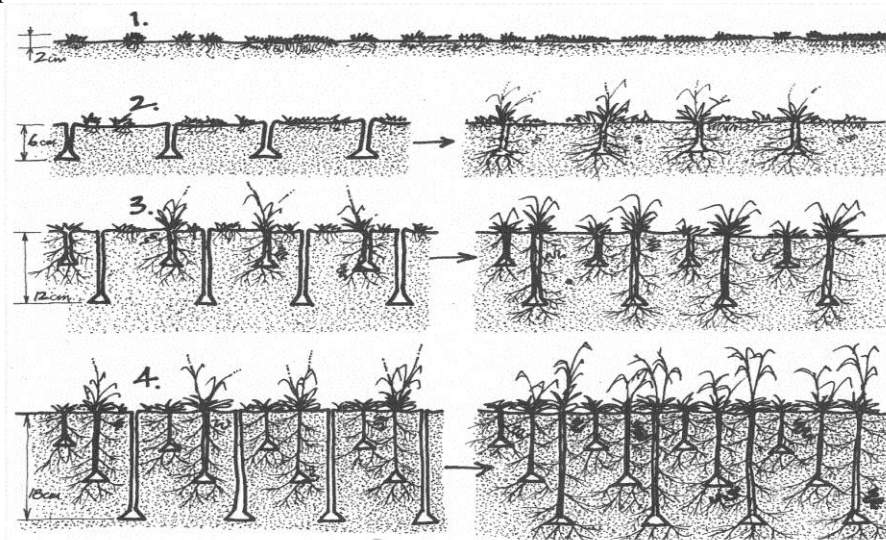


Figure 1. Soil development – mechanical method (Illustration adapted from the Permaculture; A Designers' Manual).

By cultivating parallel to identified keylines, both above and below the line, a cultivation pattern is developed which spreads the runoff evenly across the uplands and does not allow the water to follow its natural path and concentrate in the valleys. This aids in the stabilization of the valley and increases its ability to resist erosion.

The Long Term Benefits of Keyline Design

- Build resiliency into permanent landscapes
- Improve infiltration of precipitation
- Increase moisture retention
- Support habitat by increasing diversity
- Improve perimeters
- Break up hard pan and compaction
- Improve root zone and capillary activity
- Encourage soil building and reduce loss through wind and water erosion
- Reduce salinity problems
- Increase soil productivity by increasing soil biology. Biologically fertile soil has better structure and reduces runoff
- Stabilize soils and perimeters

Description of Tools Used

New Holland TM 175 Tractor and Yeomans plow with 5 26" shanks, coulters, crumble roller and 5 shank pot seeders for cover crops. A laser level will be used to locate keypoints and keylines.

Truax No Till Drill with 3 seed boxes to meter fluffy seed, large or heavy seed and tiny seed. 18 coulters incise the soil before the seed drops into 18 planter wheels. 18 packer wheels close the seeded openings making for good contact between seed and soil. The seed is effectively and efficiently metered with this tool which can also be used for interseeding to increase diversity in established grasslands. Dixon Imprinter and V Ditcher also available.