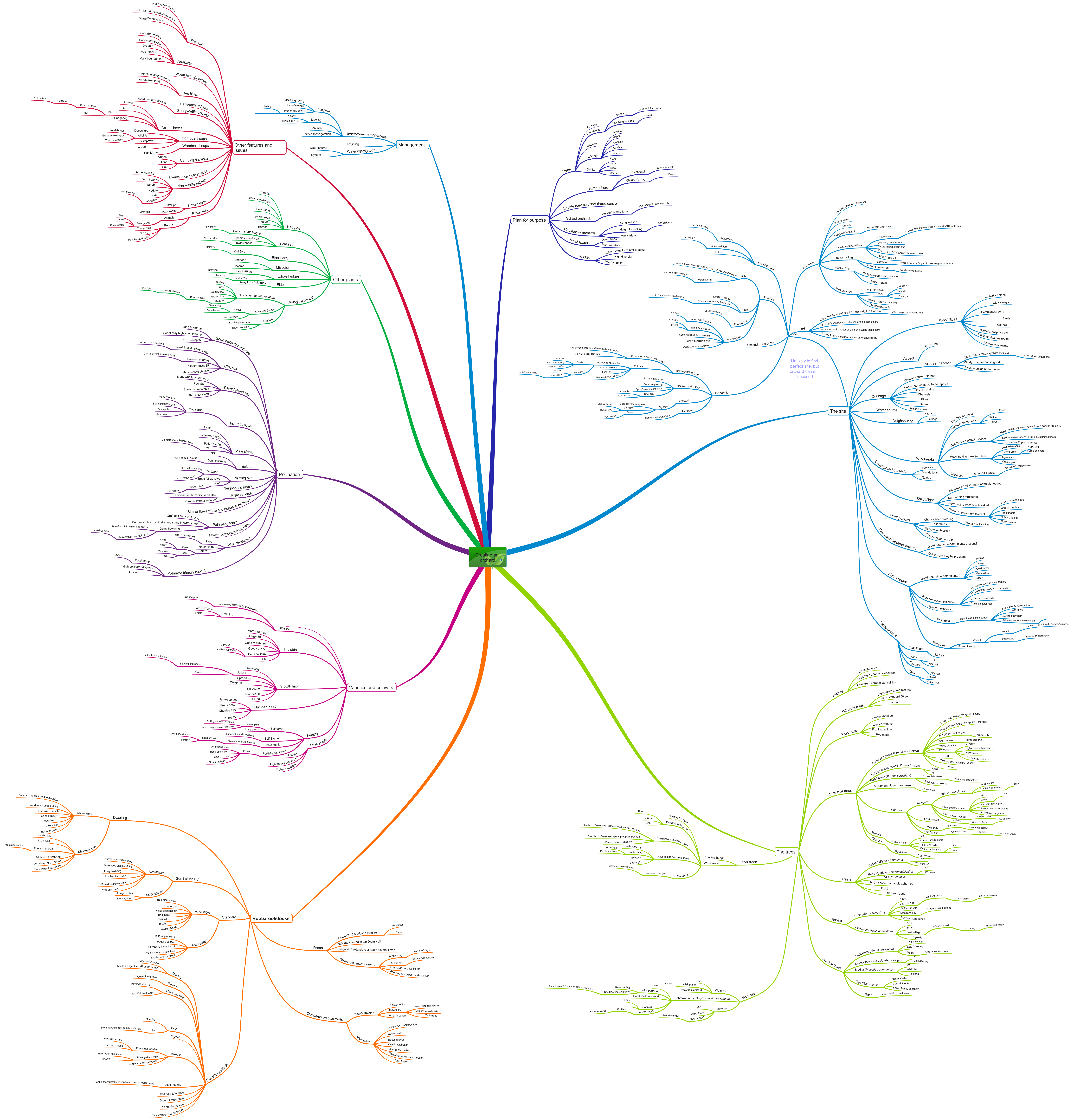
Creating an orchard
Other features and issues
Fruit fall
Not over paths etc.
Not near house/school windows
Wasp/fly nuisance
Artefacts
Suburbanisation
Handmade better
Organic
Add interest
Mark boundaries
Wood use eg. turning
Bee hives
Protection/ stings/allergy
Vandalism, theft
Hens/geese/ducks
Avoid primitive breeds
Sheep/cattle grazing
Animal boxes
Dormice
Bat
Bird
Sparrow hawk
< pigeons
Fruit buds >
Owl
Hedgehog
Compost heaps
Depository
Wildlife
Invertebrates
Grass snakes eggs
Toad hibernation
Soil improver
C trap
Woodchip heaps
Ramial best
Camping deck/site
Wagon
Tent
Hut
Events ,picnic etc spaces
Act as corridor?
Other wildlife habitats
10%+ of space
Scrub
Hedges
water
Grassland
var. Mowing
Patulin toxins
Bitter pit
Awareness
Most fruit
Protection
Animals
Tree guards
Size
Style
Construction
People
Tree guards
Fencing
Rough sward/nettles
Management
Understorey management
Equipment
Machinery turning
Lines of mowing
Type of equipment
To buy
Mowing
X per yr
Brambles > 1X
Animals
Aimed for vegetation
Pruning
Watering/irrigation
Water source
System
Other plants
Hedging
Corridor
Disease spread?
Pollinating
Wind break
Habitat
Barrier
Grasses
Cut to various heights
> diversity
Species to suit soil
Invasiveness
Yellow rattle
Blackberry
Cut 3yrs
Rotation
Mistletoe
Bird food
Income
Edible hedges
Lay 7-20 yrs
Rotation
Cut 3 yrs
Rotation
Elder
Away from fruit trees
Biological control
Plants for natural predators
Nettles
Hazel
Goat willow
Grey willow
Hwthorn
Disadvantage
Harbours disease
eg. Fireblight
natural predators
Over winter
Shelter
Disturbances
Non prey food
Habitats
Beetle/spider banks
Insect hotels etc
Pollination
Good pollinator varieties
Long flowering
Genetically highly compatable
Eg. crab apple
Cherries
Sweet & acid different spp.
But can cross pollinate
Flowering cherries
Can't pollinate sweet & acid
Modern most SF
Many incompatyable
Plums/gages etc.
Many wholly or partly SF
Few SS
Some incompatable
Should be close
Incompatability
Too similar
Many cherries
Some plums/gages
Few apples
Few pears
Male sterile
3 trees
stamens sterile
Pollen sterile
Eg marguerítte Marillat pear
Few
SS
Triploids
Don't pollinate
Need three or an SF
Planting plan
Distance
< 25 metres insects
<10 metres wind
Bees follow rows
Wind
Group plant
<10 metres
Neighbour's trees?
Sugar in nectar
Temperature, humidity, wind affect
< sugar<attractive to bee
Similar flower form and appearance better
Pollinating tricks
Graft pollinator on to tree
Cut branch from pollinator and stand in water in tree
Delay flowering
Stonefruit ok in wintertime shade
Mulch when ground frozen
>10 days later
Flower competition for bees
Bee introduction
Hives
<100 m from trees
No spraying
Safety
People
Stings
Allergy
Bees
Vandalism
Theft
Pollinator friendly habitat
Food plants
Over yr.
High pollinator diversity
Housing
Varieties and cultivars
Blossom
Brownlees Russet (exceptional)
Cerise pink
Timing
Cross pollination
Frosts
Triploids
More vigorous
Large fruit
Good resistance
Good survival
Don't pollinate
3 trees?
another self fertile
SS
Growth habit
Trainability
Upright
Eg.King of pippins
Underplant eg. berries
Pears
Spreading
Weeping
Tip bearing
Spur bearing
Mixed
Number in UK
Apples 2500+
Pears 500+
Cherries 223
Plums 350
Fertility
Self fertile
Few apples
Fruiting > cross pollinated
Many pears
Fruit quality > cross pollinated
Self Sterile
Different variety required
Male sterile
Stamens or pollen sterile
Don't pollinate
Another self fertile
3 trees?
Partially self fertile
Pome
Ok if spring good
Bad if spring poor
Bitter pit prone
Need 2 varieties
Fruiting habit
Biennial
Light/heavy croppers
Tip/spur bearers
Roots/rootstocks
Dwarfing
Advantages
Several varieties in space available
Low vigour > good training
Fruit in child reach
Easier to harvest
Productive
Little space
Easier to prune
Disadvantages
Easily browsed
Short lived
Poor competitors
Vegetation control
Brittle roots> breakage
Trees always need staking
Poor drought resistance
Semi standard
Advantages
Above deer browsing ht.
Don't need staking all life
Long lived (50)
Tougher than dwarf
More drought resistant
Well anchored
Disadvantages
Longer to fruit
More space
Standard
Advantages
Trap more carbon
Live longer
Make good habitat
Traditional
Aesthetics
Tough
Well anchored
Disadvantages
Take longer to fruit
Require space
Harvesting more difficult
Maintenance more difficult
Ladder work required
Rootstock affects
Keeping
Bigger/older better
MM106 longer than M9 so grow both.
Flavour
Bigger/older better
Flowering time
M9+M25 week late
MM106 week early
Fruit
Quantity
Set
Scion flowering/ root activity timing out
Vigour
Disease
Pome, get resistant
Fireblight bacteria
Crown rot fungi
Stone, get resistant
Root lesion nematodes
Viruses
Larger > better resistance
Less healthy
Root nutrient uptake doesn't match scion requirement
Soil type tolerance
Drought resistance
Winter hardiness
Resistance to wind throw
Roots
Reach=2 - 3 X dripline from trunk
sandy soil >
Clay <
85% roots found in top 60cm. soil
Fungal duff extends root reach several times
Feeder root growth seasons
Born spring
Life 14 -60 days
At fruit set
Til summer solstice
At harvest/lhalf leaves fallen
Soot and root growth rarely overlap
Standards on own roots
Disadvantages
Difficult to find
Slow to fruit
Good cropping dips 5+
Med cropping dips 6+
Triploids 10+
No vigour control
Advantages
Withstands > competition
Better health
Better fruit set
Quality fruit better
Storage fruit better
Pest disease resistance better
Taste better
Plan for purpose
Uses
Storage
For wildlife
Moss spp.
Laxton's future apple
Late hang for birds
Ida red
Dessert
Culinary
Bottling
Drying
Cooking
Leathers
Jams
Drinks
Cider
Perry
Juice
Cordial
Atmosphere
Traditional
Large rootstock
Children's play
Dwarf
Locate near neighbourhood centre
School orchards
Harvest during term
Plums/gages, summer hols
Community orchards
Long season
Height for picking
Little children
Large variety
Small spaces
Dwarf trees
Multi varieties
Wildlife
Collect some for winter feeding
High diversity
Priority habitat
Soil
Previous use
Fruit trees?
Replant disease
Fauna and flora
Inoculate?
Pollution
Structure
Clay
Don't improve when planting as hole acts sump > drowning
Waterlogging
see The site/drainage
Thin
Larger rootstock
Trees smaller than on better soil
M111 Cam Valley >smallish tree
Poor holding
Larger rootstock
Waterlogged
Some more tolerant
Quince
Cherries
Some less tolerant
Apricots
Some varieties more tolerant
Culinary generally better
Avoid canker susceptible
Underlying substrata
Preparation
Before planting best
Cover crop N fixer + nurse crop
Red clover higher micorrhizal affinity then white
v. dry use birds foot trefoil
Mulches
Deciduous wood chips
Ramial
<3" diam
Good N,P,K,CA,Mg
C:N 30:1 - 170:1
Stemwood
>3" diam
C:N 400:1-750:1
>N deficiency initially
Compost/leaves
Fungi like
See mulching mindmap
Inoculation with fungi
Soil when planting
Pot when growing
Spore/water around roots
Root dips
Homemade
Commercial
Livestock
Pigs/boar
Good for very overgrown
Chicken tractor
Chickens
High density
Geese
high density
Herbicides
Damage soil fauna/flora
Organisms
Orchard pests and diseases
Invertebrates
Bacteria
Fungi:bacteria ratio
10:1=forest edge=ideal
Transfer N+P from dynamic accumulator/N fixer to tree
Symbiotic mycorrhizae
100X root reach
Secrete growth factors
Sugars,vitamins from tree
K,N,P,Cu,Se,S,Zn,B,minerals,water to tree
Antibiotic protection
Beneficial fungi
Saprophytic
Organic matter > fungal biomass +organic acid chains
Parasitize larvae in soil
Eg. Bequveria bassiana
Problem fungi
Phytophora (root crown,collar rot)
Venturia (scab)
Mycorrhizal fungi
Tolerate wide pH
Hate
Disturbance
Bare soil
Excess N
Respond rapidly to changes
Most not host specific
pH
Stone and Pome fruit about 6.5 on sandy, to 6.0 on clay
Cox orange pippin needs >6.5
Some varieties better on alkaline or acid than others
Some rootstocks better on acid or alkaline than others
<5 and >7 reduce nutrient , micronutrient availability
Unlikely to find perfect site, but orchard can still succeed
The site
Possibilities
Canal/river sides
Old railways
Commons/greens
Fields
Council
Schools, hospitals etc
Cycle, guided bus routes
New developments
Aspect
S-SW best
Fruit tree friendly?
Cool,moist,sunny,airy,frost free best
E & WE sides of gardens
Windy, dry, hot not so good.
Peach/apricot, hotter better
Drainage
Choose canker tolerant
Pears tolerate damp better apples
French drains
Channels
Pipes
Berms
Raised areas
Water source
Neighbouring
Flora
Buildings
Windbreaks
Conifers too solid
Feathery trees good
Alder
Willow
Birch
Can harbour pests/diseases
Hawthorn (Rosaceae) - honey fungus,canker, fireblight
Blackthorn (Rosaceae) - plum pox, plum fruit moth
Beech, Poplar - silver leaf
Other fruiting trees (eg. fens)
Hardy damsons
Yellow egg
Hardy plums
Purple pershore
Myrobalan
Crab apple
Mixed spp
Increased diversity
increased predators etc.
Underground obstacles
Services
Foundations
Rubbish
Shade/light
Aim least S,SW W but windbreak needed
Surrounding structures
Surrounding trees/windbreak etc.
Some varieties more tolerant
Sour > more tolerant
Morello cherries
Red currants
Culinary apples
Gooseberries
Frost pockets
Choose later flowering
Lime delays flowering
Taller trees
Remove air blocker
Choose slope, not dip
Pests and Diseases present
Good natural predator plants present?
Old orchard may be problems
Flora present
Good natural predator plants ?
Nettles
Hazel
Goat willow
Grey willow
Elder
Base line ecological survey
Protected species > no orchard
Important/rare spp. > no orchard?
V. rich > no orchard?
Continue surveying
Speciesl richness
Fruit trees
Specific replant disease
Apple, peach, roses, citrus
Up to 15yrs
Sterilise chemically
some rootstocks more resistant
Cheery, Plum, Peach, Quince,Nectarine
Allelopaths
Walnut
Tolerant
Susceptible
Apple, pear, blackberry
Some pine spp.
Fauna present
Rabbit/hare
Eat bark
Voles
Eat bark
Squirrels
Eat bark
Deer
Eat bark
Eat shoots
The trees
History
Local varieties
Graft from a famous local tree
Graft from a tree historical link
Different ages
Plant dwarf to replace later
Semi standard 50 yrs
Standard 100+
Tree form
Variety variation
Species variation
Pruning regime
Rootstock
Stone fruit trees
Plums and gages (Prunus domestica)
Drop < leaf than pear<apple+ cherry
Cast l< shade than pear<apples+ cherries
Not OK school orchards
Fruit in hols
Short season
How to preserve
Wasp attractor
Myrobalan
V. hardy
High conservation value
Early nectar
Too early for pollinator
20'
Pigeons steal when fruit young
White
Bullace and damsons (Prunus institia)
White
16'
Myrobalans (Prunus cerasifera)
Flower late winter
Frost > low productivity
Good autumn colours
Blackthorn (Prunus spinosa)
white flw 2/3
Cherries
Category
Wild (P. avium,P. padus)
White Flw 4/5
P.padus = bird cherry
Hardier
Sweet (Prunus avium)
30'+
60'
Mazzards
Bacterial canker probs
Pollination from 2+ groups
Incompatability groups
Sour (Prunus cerasus)
smaller,bushier
Sterile seeds
Hybrids
Dukes or Royals
Short season
Pick early
Birds eat
Bread bags protect
Leaf fall high
> nutrients in soil
< diversity
Space more widely
Apricots
Just possible
20'
Check Canadian bred
S or SW walls
Pink/ white flw 2/3/4
Feb
frost
Peaches
Just possible
S or SW wall
Pears
Dessert (Pyrus communis)
50'
White flw 3/4
Perry Hybrid (P.communis/nivalis)
65'
White flw
Wild (P. pyraster)
Cast < shade than apples,cherries
Frost
Blossom early
Apples
Crab (Malus sylvestris)
Frost
Leaf fall high
>nutrients in soil
< diversity
Space more widely
Solitary in wild
Small shrubby
Dense, tangled, spines
Pollinates long period
Cultivated (Malus domestica)
30'+
Frost
Leaf fall high
>nutrients in soil
< diversity
Space more widely
Triploids
Other fruit trees
Mulberries (Morus nigra/alba)
30' spreading
Late flowering
Messy
King James var. usual
Quince (Cydonia vulgaris/ oblonga)
20'
WhiteFlw 4/5
Medlar (Mespilus germanica)
30'
White flw 6
Bletted
Figs (Ficus carica)
Warm shelter
Constrict roots
Brown Turkey best here
Elder
Allelopathic to fruit trees
Other trees
Conifers hungry
Windbreaks
Conifers too solid
Feathery trees good
Alder
Willow
Birch
Can harbour pests/diseases
Hawthorn (Rosaceae) - honey fungus,canker, fireblight
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Beech, Poplar - silver leaf
Other fruiting trees (eg. fens)
Hardy damsons
Yellow egg
Hardy plums
Purple pershore
Myrobalan
Crab apple
Mixed spp
Increased diversity
increased predators etc.
Nut trees
Walnuts
150'
Allelopathic
Apples
Away from orchard
Cob/hazel nuts (Corylus maxima/avellana)
Wind pollinated
20'
Block planting
Need 2 or more varieties
If A polinates B,B not necessarily pollinate A
Could use to windward
Coppice
Poles
Harvest August
Still green
Before squirrels
Almond
20'
White Flw ?
Require heat
Heat island city?