Making School Gardens more sustainable

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Remember your favourite outdoor play place when you were a kid?
What did it feel like to be there?
What made it so good?
How can we bring that into the school garden?

Sustainable School gardens

Sustainable = ?

1. Sustainability through modelling natural ecosystems
2. One solution to watering problems
3. Making the garden more fun for kids
4. Perennials: getting off the annual treadmill

Permaculture

- Aims for efficiency by mimicking natural systems and designs
- Prioritises household & community sustainability, so focuses on things like food production, efficient housing and transport, energy consumption and on-site waste processing.
- Includes a set of formal design principles which can be applied to school gardens. The following slides include some examples – but add your own…

Permaculture design applied to school gardens

- Observe & interact
  - Children are tuned in to the natural world.
  - Opportunities to observe with all the senses.
  - Children observe seasonal growth, flowering and harvest cycles
  - Adults observe how children use and interact within the garden
  - Adults introduce new elements (objects or stories) and observe how the children respond (interact) with the new possibilities that are created

- Catch & store energy
  - Garden captures sun, wind, water energy in water tanks, increased soil fertility, passive solar structures, food plants, windmill pumps
  - Children's energy is captured to increase food production
  - Families which might otherwise move through a space without 'depositing' energy, are 'caught' by the engaging design and stay to make a contribution (aka community working bees)

- Obtain a yield
  - Children eat food *as* they play
  - Children harvest food and prepare it together (social yield as well as produce)
  - Children's increased knowledge of how to grow food produces a life-long yield of productivity

- Apply self-regulation & accept feedback
  - Plants & animals have their own cycles and these must be accepted (by the children)
  - Feedback on the design is immediately given – do the children play? how?
  - Elements within the system are self-reliant and robust enough to deal with the disturbance imposed by children's play
  - Accept the way children play & design around those patterns

- Use & value renewable resources & services
  - Use natural materials
  - Use local labour and tradespeople
  - Save seed for annual replanting
  - Use retirees or annual community working bees for routine maintenance
  - Produce or cycle what you need within the system (chicken litter composted for plants to feed chickens, guinea pig tractor mows lawn)

- Produce no waste
  - Worm farms, chickens and compost consume all carbon-based "waste"
  - Water captured and used on site
  - Abundant harvests preserved for future consumption
  - 'in time' eating eliminates over-catering or 'portion control' issues with kids (also a great example of self-regulation – unless they gorge themselves on berries until sick.. But then the self-regulation/feedback principle kicks in)
  - If at school or kinder, avoid big summer garden which peaks when no-one is there (unless your system is designed around this)

- Design from patterns to detail
  - Over-arching patterns, like how children like to play, are considered *before* details of which plant foods are liked. e.g. children love circuits so designing impassable rows will stop them playing and defeat the purpose of the garden, regardless of how excellent a straight row is for some desired plant.
  - Edible gardens are for intensive production (permaculture zone 1)
  - Zone 4 (managed wild land) might be developed outside main vegetable garden

- Integrate rather than segregate
  - Garden integrated into school grounds
  - Activities integrated into curriculum
  - Play structures, fruit trees, berries, veggies & herbs are intermingled
  - Each element designed to perform multiple functions (e.g. chicken house is also a windbreak, climbing frame wall & site for espaliered fruit trees. Chickens provide eggs, companionship, compost & build children's sense of responsibility, cluster of berry bushes direct flow of children's movement).
  - Pre-existing elements enhanced (e.g. vines added to shade structures, berries espaliered on fences)

- Use small & slow solutions
  - Design from 'kids-eye' view
  - Kids are part of design process
  - Kids are part of construction
  - Purchase from local businesses
  - Use community-build rather than contractors
  - Request donations of materials from local community (compost, manure, seedlings, building materials, rock, stone, timber)
  - Work on one part of the garden at a time
  - Implement over several years

- Use and value diversity
  - Use the space for music & art
  - Use as wide a range of species as possible
  - Create or value micro-climates
  - Stimulate all the senses across the seasons (always something flowering, fruiting, giving off scent, creating visual diversity)
  - Allow for different sorts of play – quiet or boisterous, solo or group
  - Spread the harvest across the seasons

- Use edges and value the marginal
  - Maximise edge in your design (e.g. meandering pathways, mandala garden, plantings beside all paths, building edges and structures)
  - Use microclimates to find spots for marginal species
  - Create multiple spaces so each child can find their own favourite
  - Use marginal biodegradable materials (e.g. pine log edging, hay bale garden walls) – giving them temporary value & utility rather than 'writing them off' .

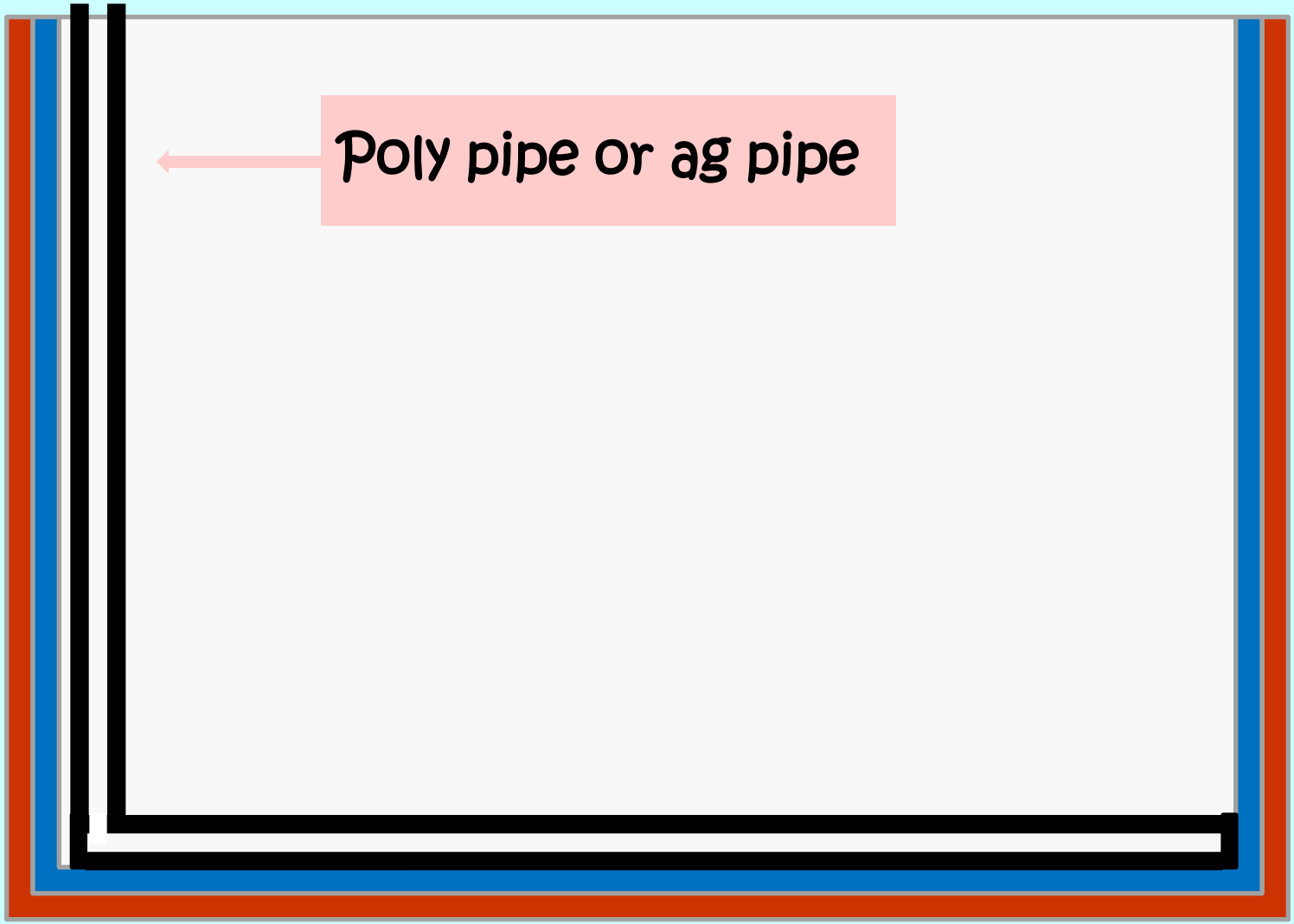
- Creatively use and respond to change
  - Design for ecological succession – how will plants change over years and when will some need replacement?
  - At a kinder or school, be aware of each new intake of students and prepare for educating them 'into' the playscape & design processes so each year can have input into the design
  - Change the garden or playscape to suit the needs of the children
  - If parts of the design don't 'work' – respond creatively: try something else!
  - If kids ask for something, respond to them
  - If the garden becomes a catalyst for change at home (or other communities want to replicate it), be prepared to respond & support this

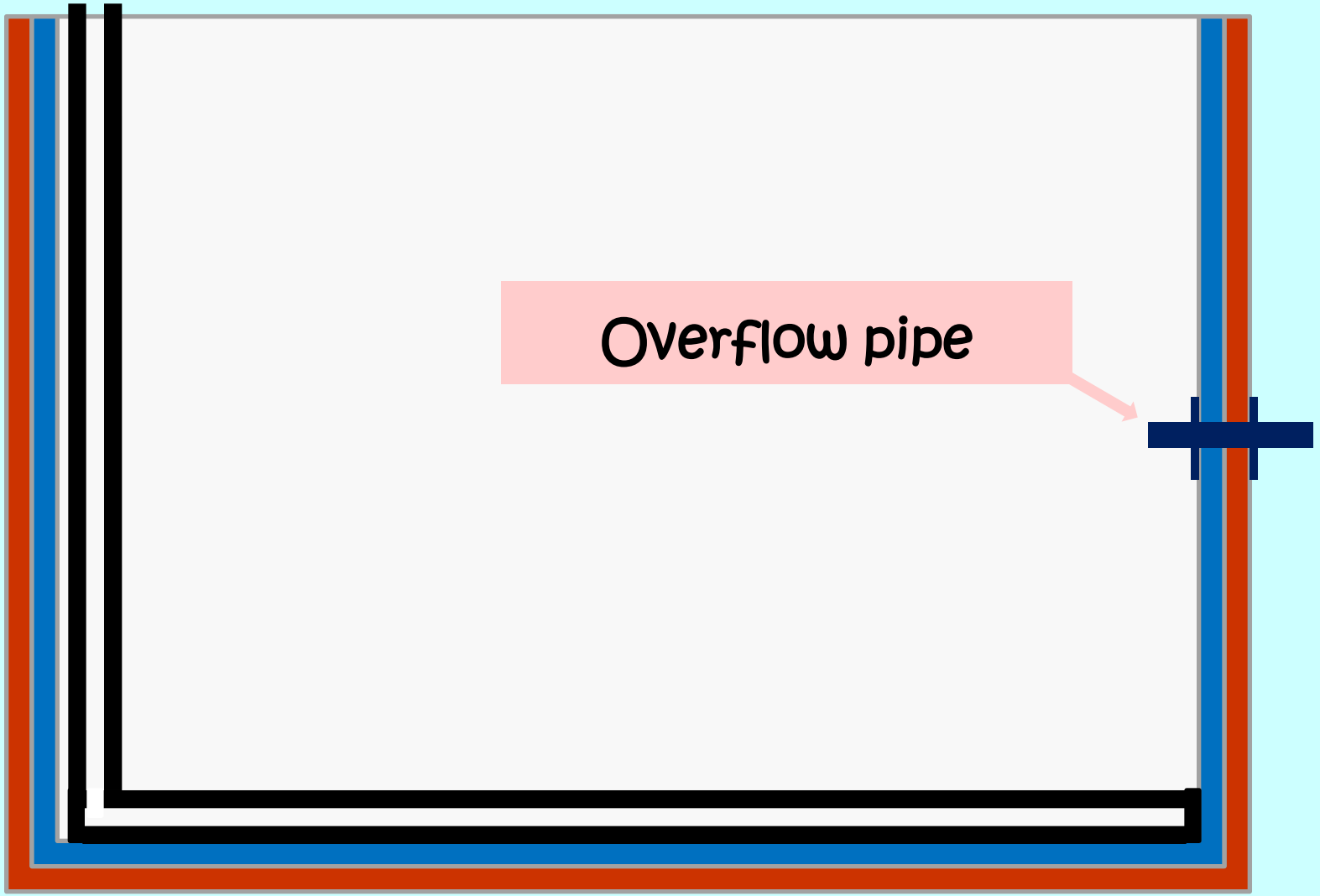
Wicking beds

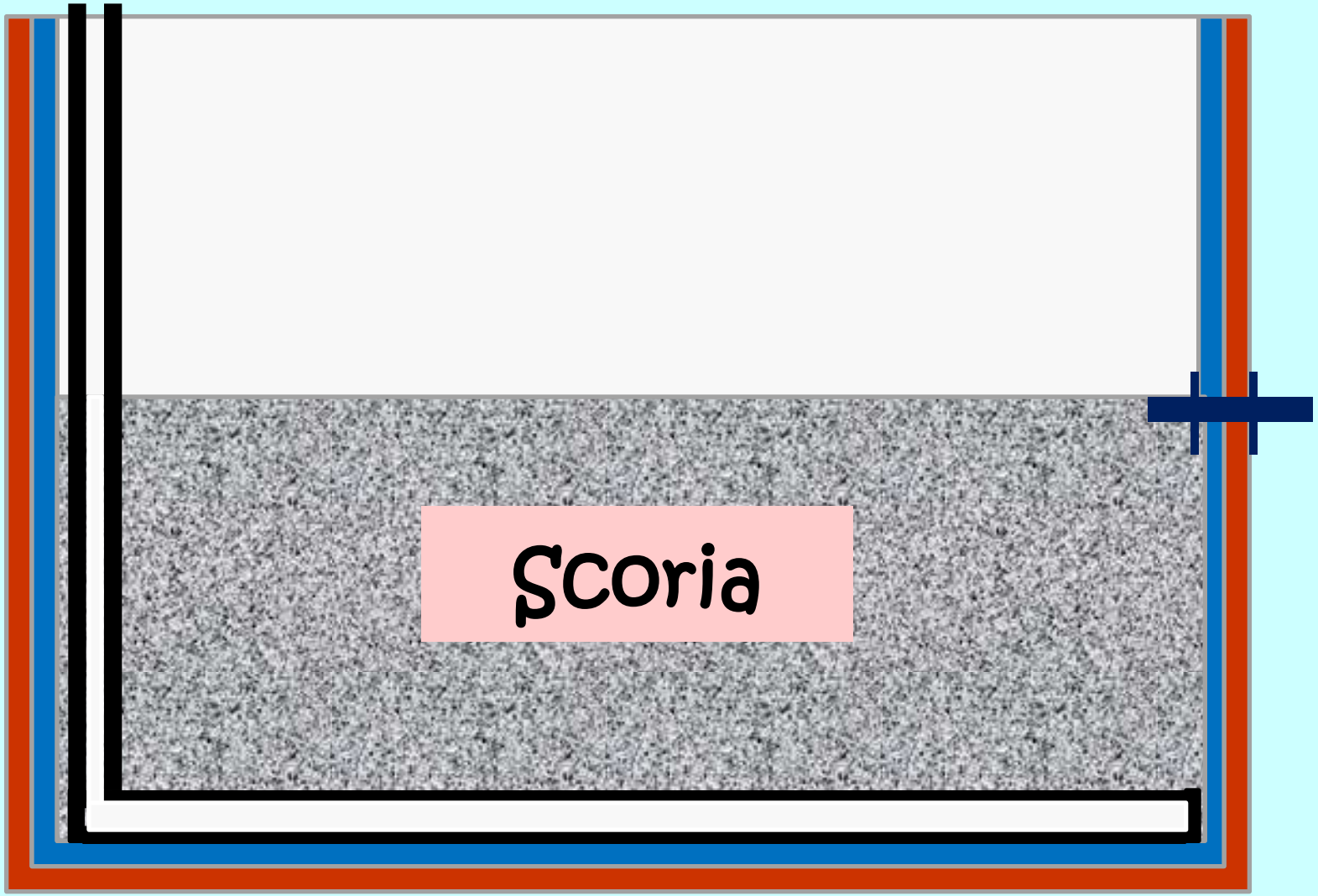
- Each bed contains a water reservoir below the soil
- Water is added directly to the reservoir rather than surface of bed (reducing evaporation)
- Appropriate for drought prone areas or intermittent watering regimes
- Often built using salvaged materials

Spud box or bath tub

Plastic lining (e.g. builder's plastic)


Poly pipe or ag pipe


Overflow pipe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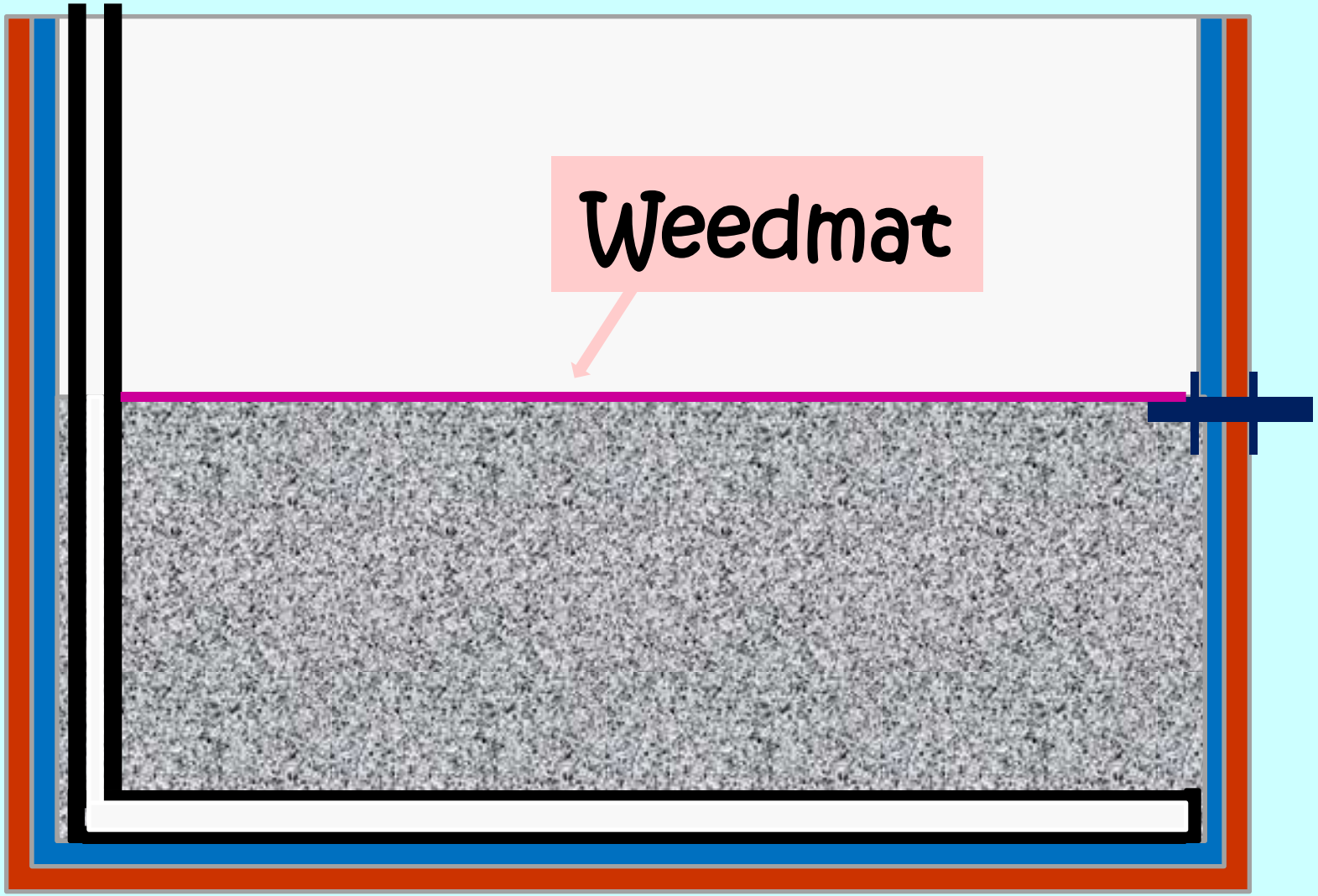
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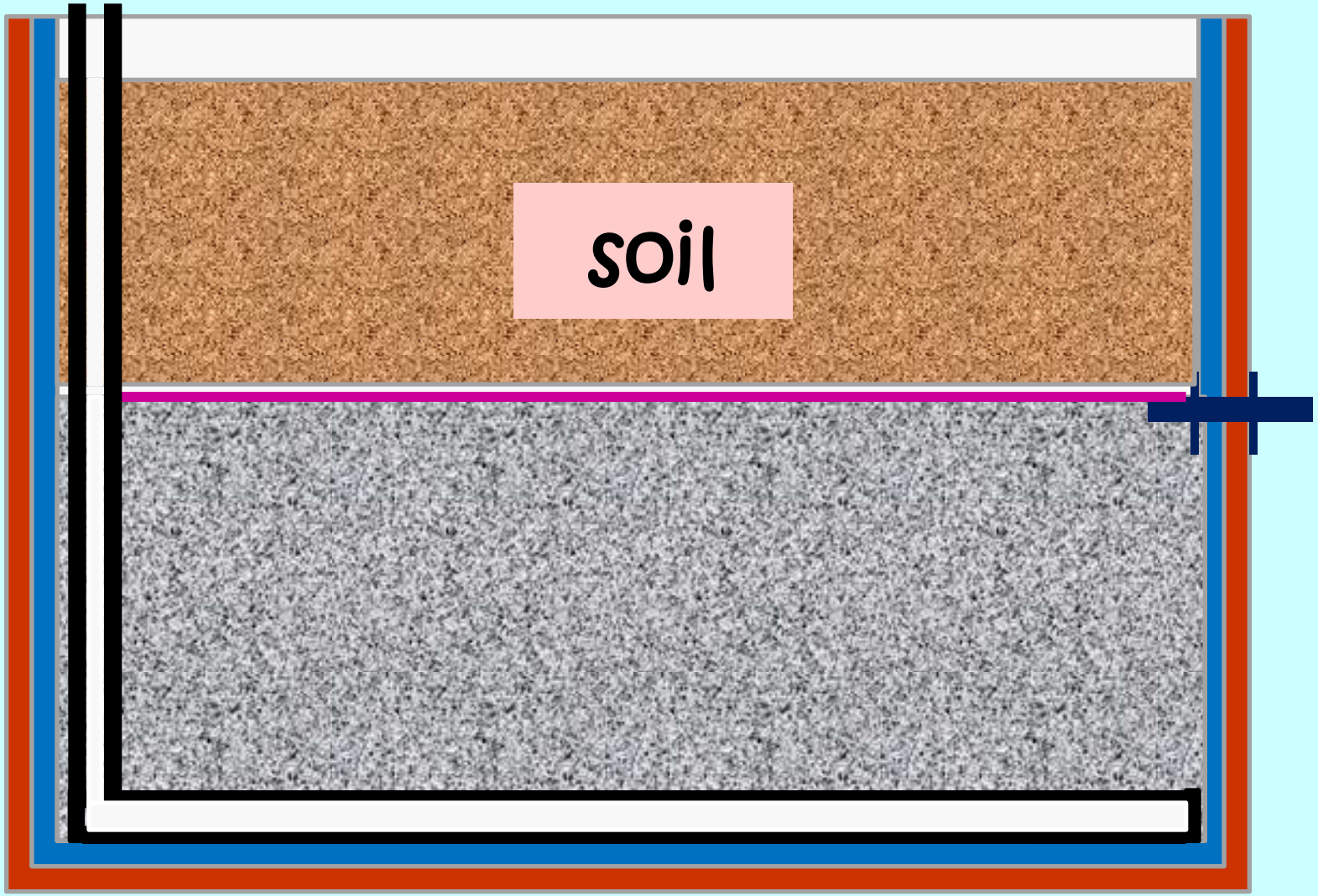
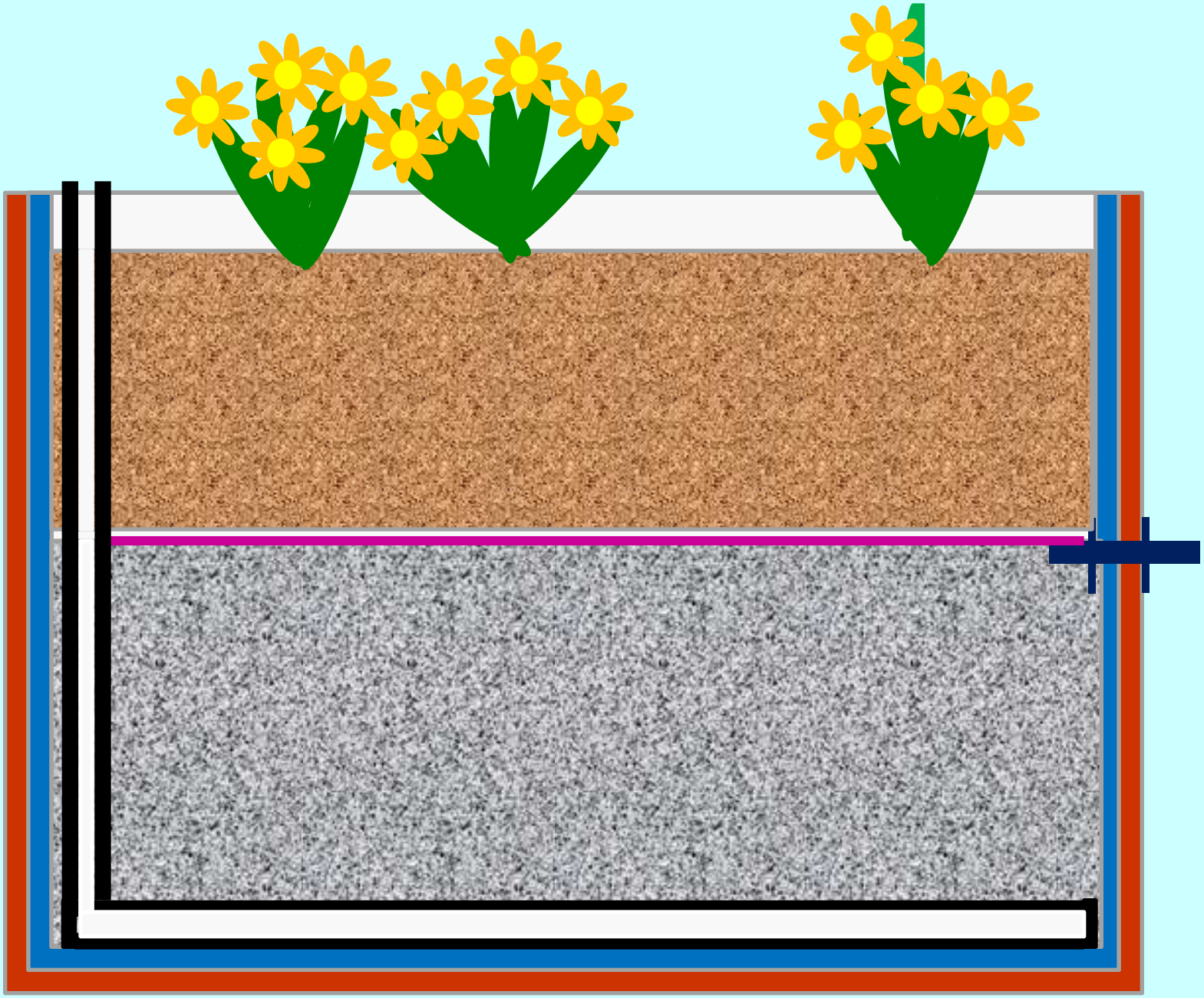

soil








Create surrounding structure to enable ease of use by adults and children together

Natural Playscapes
Rusty Keeler

Making the garden sustainable by making it a more kid-friendly place: one that reflects kid's natural patterns

What is a natural playscape?

- "A natural playscape … is filled with art, hills, pathways, trees, herbs, open areas, sand, water, music and more. Here, children will find places to run, climb, dig, pretend, and hide, with opportunities to bellow or be silent. Natural playscapes offer endless possibilities for play and discovery as they change with the day and the seasons."

  - Rusty Keeler "Natural Playscapes: Creating outdoor play environments for the soul" (2008, Exchange Press)

Outcomes for children

- Curiosity about nature
- Observation skills
- Appreciation of nature's beauty
- Empathy for living creatures (and plants), care for the environment and respect for dead creatures and plants – important emotional skills for preschoolers
- Using all the senses to make discoveries
- Understanding self and relationship to natural world
- Ability to communicate about nature
- Foundation that improves reading, maths and science skills
- Visual-spatial learning
- Experimenting
- Physical development from being outdoors
- Increases confidence

– From Rusty Keeler

Is it a playground?

…not really…

- Playgrounds are designed from an adult perspective and typically include metal and plastic ‘single use’ objects like swings and slides.
- Natural playscapes are designed from a child’s eye view, are built from natural materials and are deliberately ambiguous so that children create the meaning and purpose of how each element is played with.

Key design approaches

- What we show children shapes their perception of the world.
- Children need to discover seasonal cycles and changes. We can create environments that sing and celebrate the seasons (e.g. sunflower spirals, bean tee pees, berry tunnels).
- Individual elements are combined in creative ways (e.g. "built-in" like fruit trees espaliered to form play houses, "loose parts" like logs and planks that could be see-saws or roads or made into huts)

- Rusty Keeler doesn't specifically include edible elements in his work – an oversight
- Yonke van Geloven (Clunes) has coined the term "edible playscapes" to describe natural playscapes that include edible plants, such as her work at the Clunes Kindergarten
- Adding natural playscape elements will make your garden more attractive to kids; their increased engagement increases viability & sustainability

The senses

- Natural playscapes must engage:
  - Touch
  - Smell
  - Sight
  - Hearing
  - Taste

hence, the use of natural materials - children experience the world at this multi-sensory level – up-close &"between the toes"

Ingredients and elements within a natural playscape

The following slideslist key elements of natural playscapes


sand

hills


water

plants

pathways

stages

artwork


sound


hide outs

open areas

seating

gardens


Shapes, textures &
colours


loose
parts






Stage area

- Compass points – building familiarity
- Use of fruit trees and garden beds to define the space as well as for fruit and vegies and sensory experiences
- Multifunctional space – performance, play, enclosed area
- Performances once a season in line with solstices and equinoxes to increase awareness of seasons and sun paths


Beauty is
celebrated

Playful elements


outside the fence!

Perennial plants

Incorporating perennials into your gardens increases sustainability in multiple ways...

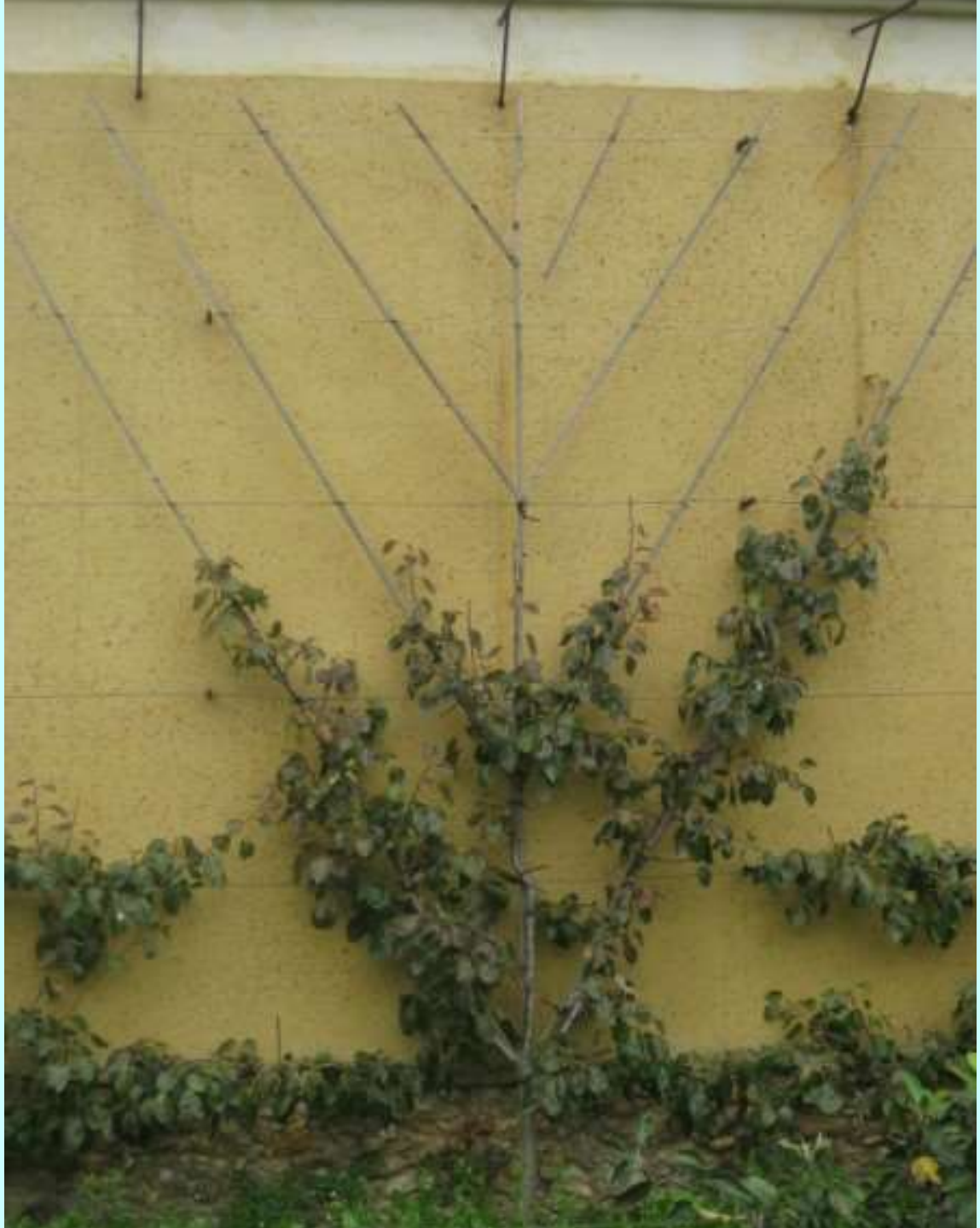
Plant once: harvest for years

Include a range of different plants to your garden (fruit trees)

Integrated pest management: Create habitat for beneficial insects

Add beauty with espaliered fruit trees


Espaliered fruit trees



Plant possibilities

- Full sun on northern slopes
- Shaded areas on southern side
- Hardy plants to cope with children climbing and running
- Plants grouped according to water needs (or your ability to supply)

Plant possibilities

- Perennial plant guilds at ends of annual beds
- Vines for shade over stage
- Espaliered fruit trees to enclose area and provide summer shade for audience
- Tall plants for further enclosure around perimeter
- Colourful, decorative plants – flower, coloured leaves
- Plants with distinctive seasonal characters – deciduous, bulbs, other flowers…

Plant possibilities

- Bush foods
- Taller/bigger plants and shrubs to create secret pathways
- Sensory plants – texture, smells, shapes and colours, and of course – taste!

Further help:

- Contact Steve for
  - permaculture designs, training or for presentations to schools or groups
  - Heirloom fruit trees – 150 varieties of apples, 40+ pears plus cherries, plums, figs and other trees available at discount rates
- Contact Yonke van Geloven for help or advice on planning & implementing edible playscapes