

# Climatic characteristics of balconies and terraces, basic principles of design





# The garden of the urban dweller

Balcony, terrace, roof garden: expanding the living space - decorating vertical space

- narrow streets of inner cities: balcony, windowsill - bad features
- residential complex: window, balcony - better facilities
- townhouse installation
- family house
- residential park







„garden” of the urban people





„garden” of the urban  
people







„garden” of the urban people





„Vertical garden”





Terrace of family house – connection of the flat with the garden



# Environmental characteristics of balconies and terraces

## 1./ Light

Effect of exposure

**N:** few direct sun + stronger wind



Difficult to decorate

**S:** Summer heat → radiant heat → the substrat overheats (>30°C!)  
heat stroke

**E:** ray of rising sun:

- worse light composition, but
- less transpiration

light types:

sunny (direct sun)

diffuse light

semi-shadow

deep shadow

**W:** ray in sunset:

- better light composition, but
- strong transpiration





Northern exposure window with  
tuberuous begonia





Southern exposure balcony with  
geranien





Exposure isn't the only thing that matters



## **2./ Rainfall:**

even if there is, it may not reach the plant

- direction of the rain
- rain shadow (gutter, roof, upper balcony)
- small surface (balcony boks, pot)



even if there was rain: supplement !!

## **3./ Problems in the towns:**

- exhaust gas + dust
- big difference between the floors
- not only water supplement → frequent washing (if the possibility is given)
- covered surface → low relative air humidity
- wind – wind tunnel – dominant wind direction



# Flower pots

- It is always small compared to the size of the plant! – the bigger is the better
- Ancient: broken milk holder







## Material of the pot:

### 1./ Burnt clay

- absorbs water, cools, but:
- heavy, breakable, the substrat dries out quickly

terracotta pots, boxes from Italy

















## 2./ Plastic: pots, containers, balcony boxes

15x15 → 100x20 cm, variable shape and size

a./ hole at the bottom with a washer





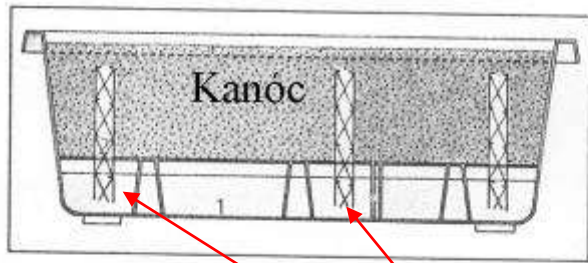


Water-holding pad, can  
be snapped into the  
balcony box

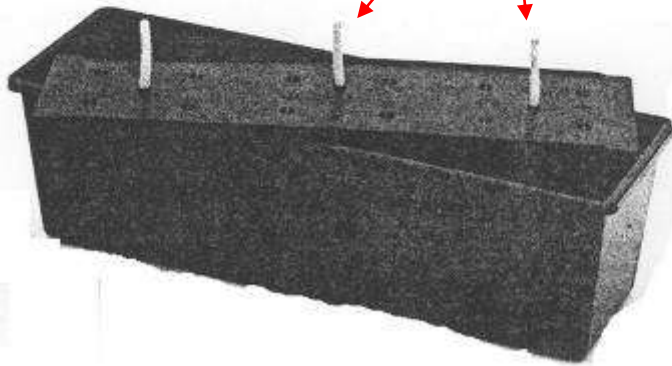








wick

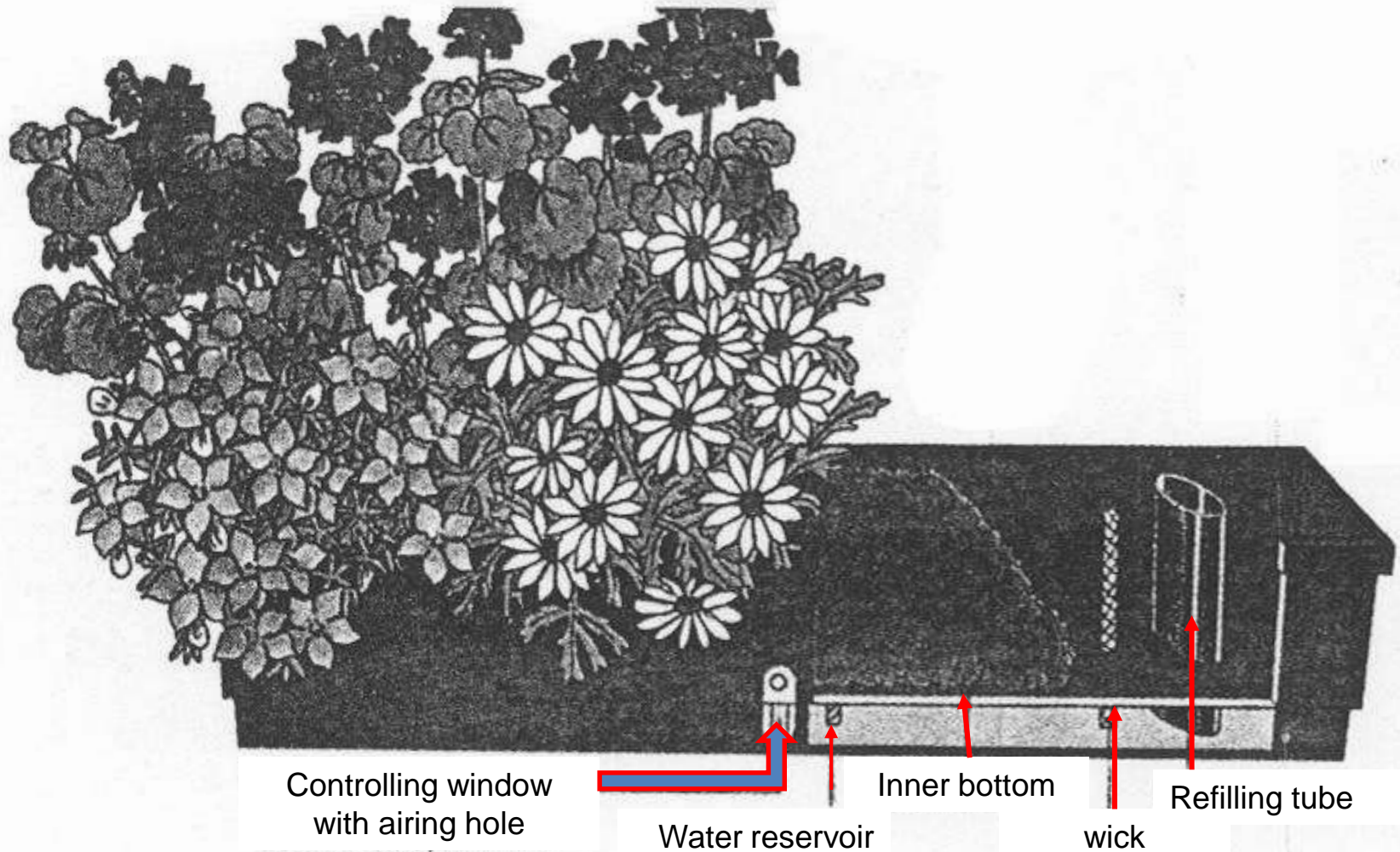


b./ „self-sufficient”: water reservoir at the bottom, wick into it from above → sucks



c./ „gardener's box”, „oasis-box”

- equipped with indicator float, water reservoir
- its side wall is also a reservoir (double wall)













# Plant holders

## Shape of the holder:

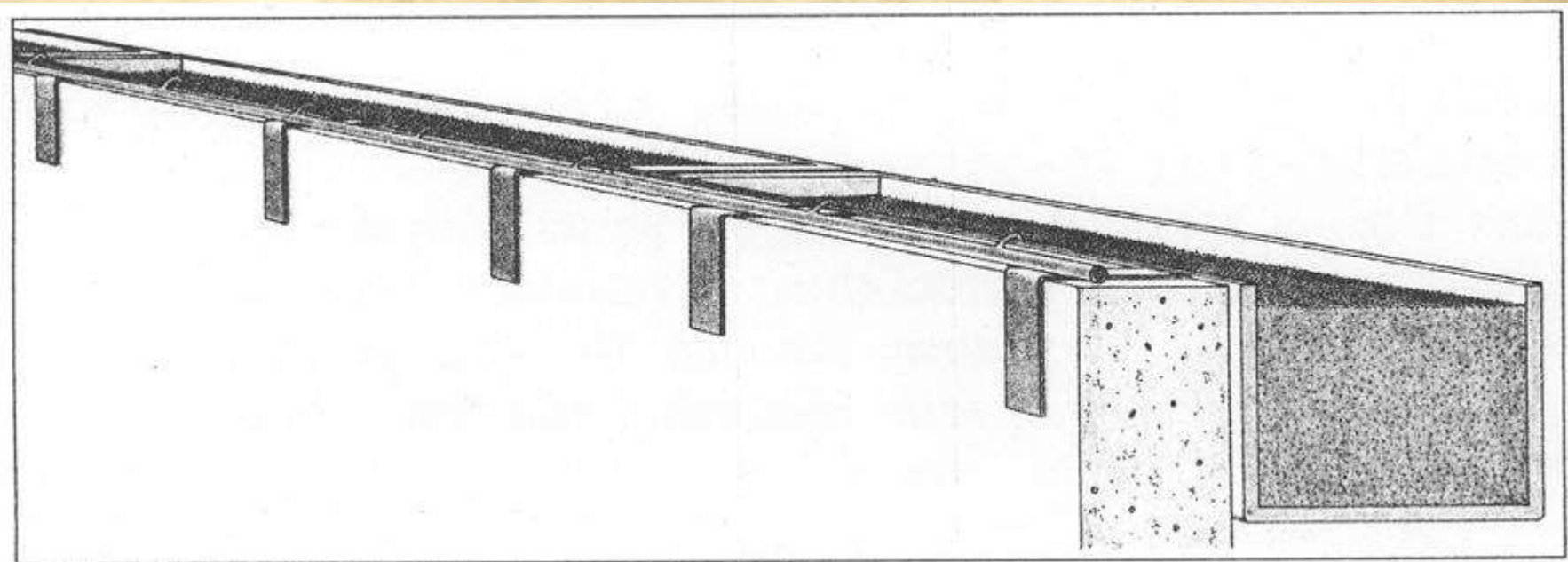
- pot shape: very variable size
  - hanging pot with hook: only made of plastic
- balcony box: burned clay (rare, only in small size), plastic, wooden
  - fixing: a./ bent iron strap min. 3 mm thick, 3 cm width
  - b./ distance adjusting screw
  - c./ console built into the balcony box
  - d./ place built in the building
- tub – circular, square, curved: special decorations (pillar)





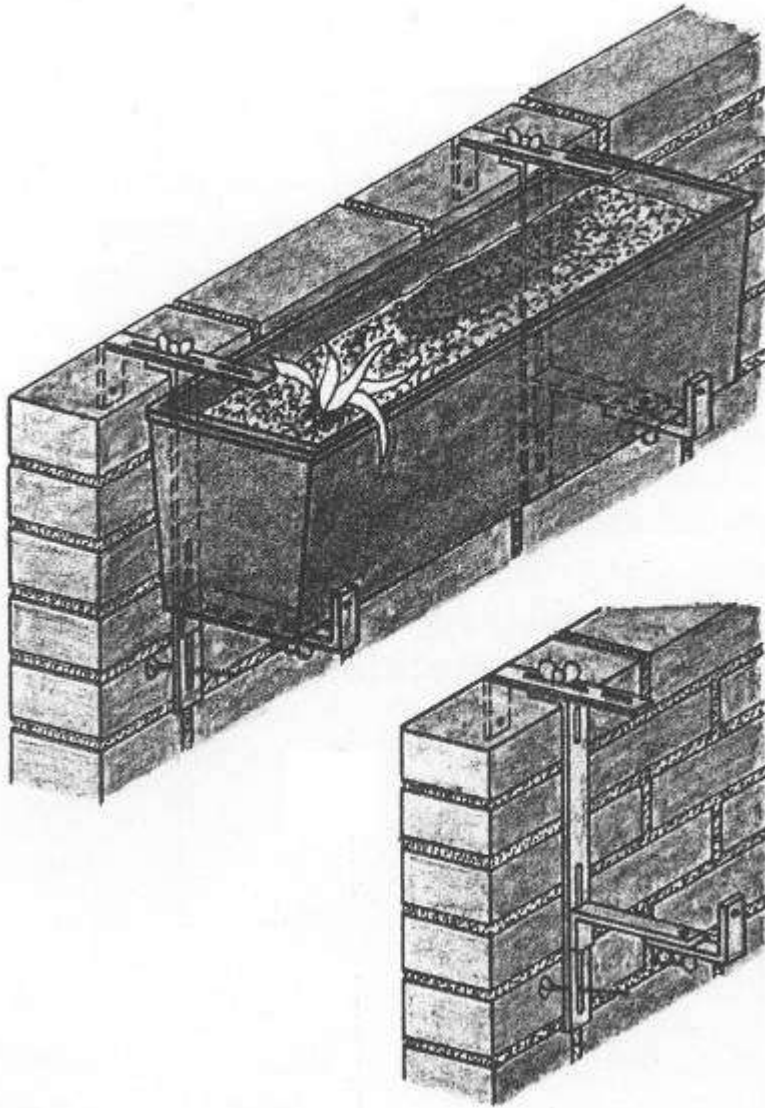
Hanging pots with hook





Fixing with bent iron strap





Fixing with iron strap  
Distance can be adjusted with a screw















### 3./ Cement trough

heavy, ugly – generally built-in  
larger substrat amount – more water and nutrient  
more place for the roots, keeps the heat







Nicer design





Cement trough













...SZOBAKÁRTYÁT F...  
EINTRITT NUR FÜR HOTE...  
BITTE DIE ZIMMERKARTE VO...  
FOR HOTELGUESTS ON...  
PLEASE SHOW YOUR ROOM...









#### 4./ **Artificial stone:** rustic, heavy → careful fixation!

- big size (min 40x40 cm)
- drainage hole – close to the canal system (on the street)
- drainage level on the bottom, felt on it, substrat on the top
- placed above pedestrian level – the walking surface must not be polluted by runoff water (in exposed areas)
- sometimes artificial marble cover
- if small provides bad conditions → only tolerant species in it!

placement in groups      → better microclimate  
   → more intensive decoration effect







Artificial stone plant holder









Small substrat content – continuous irrigation!

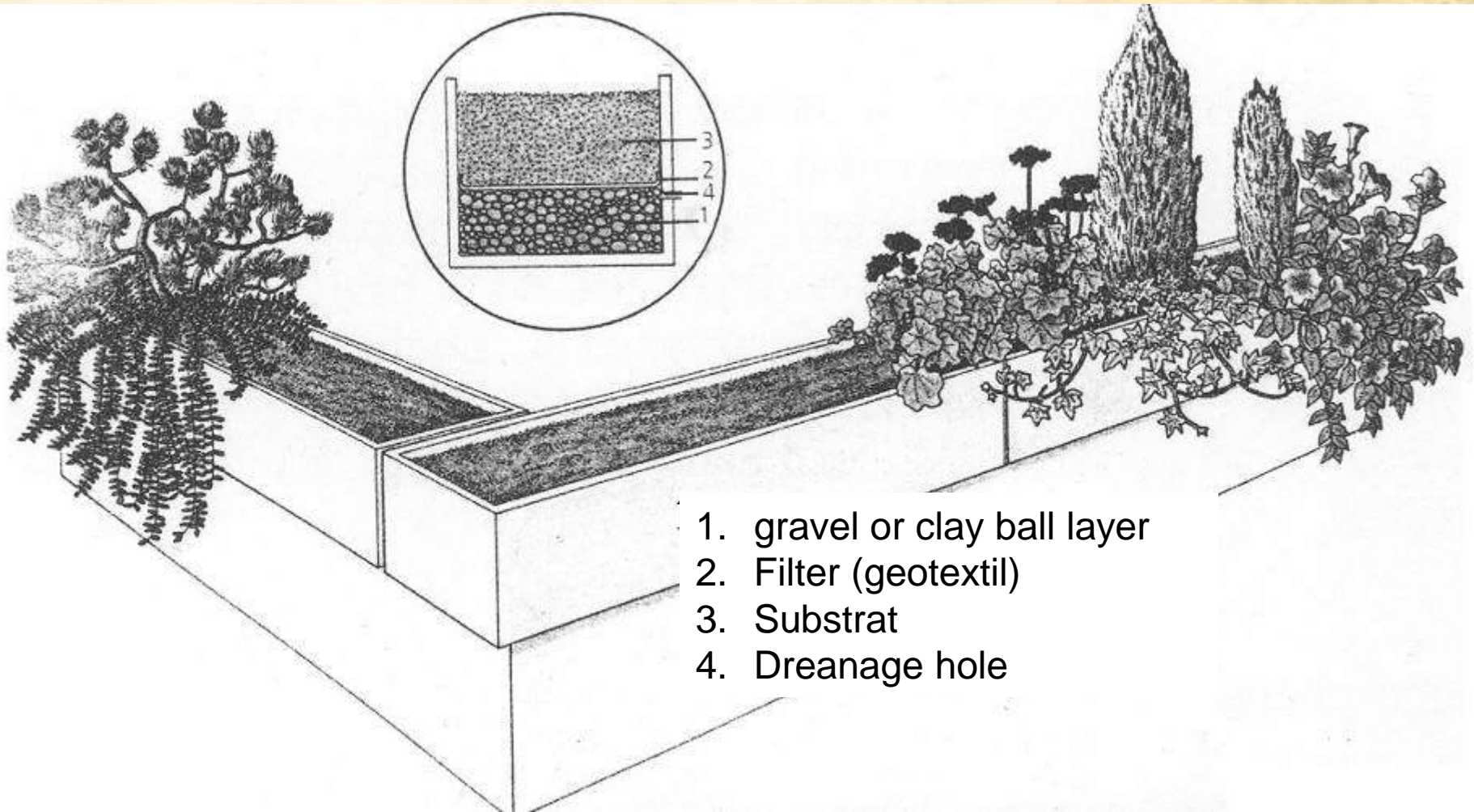




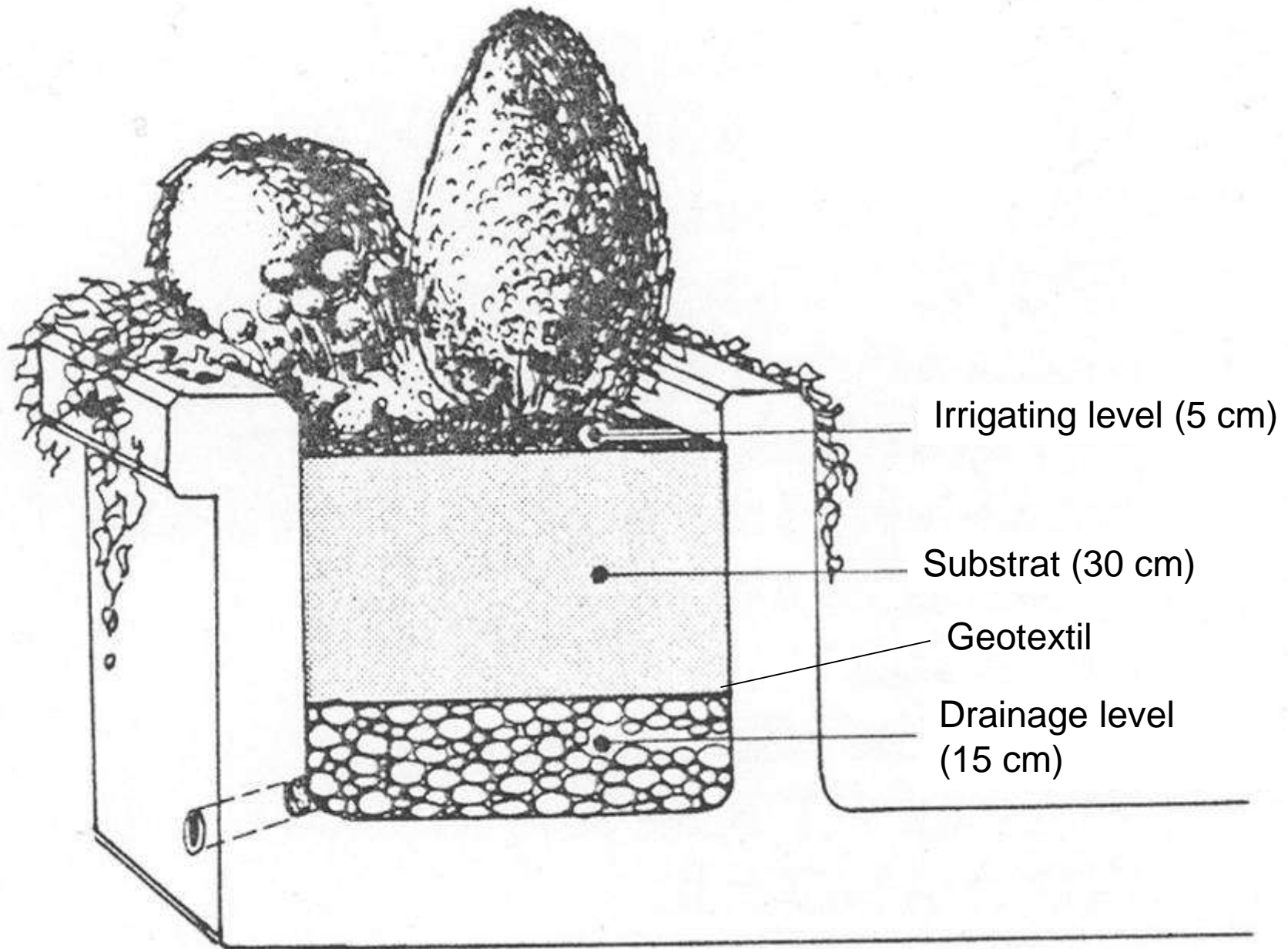
Vessels made of crushed stone



## Built-in plant holder

















## 5./ Wooden plant holders

- balcony boxes: min. 70 cm long, min. 20x20 cm height and width
- good living space: protects the roots from radiant heat
- but: rots!

protection: → impregnation

→ burning out

dries: drains the water in spring → soak, smash with a hammer

4-5 years life

- type of the wood: oak, acacia, pine
- palm tubes: they are used since Renaissance gardens

upper limit: 90-100 cm Ø

they are also available in clay and plastic

moving: roller plate or pallet lifter















Palm tub





Palm tub with iron bands









Problem is the scale deposit if the water can flow out











## 6./ Specially designed plant holders

it needs a lining!

wicker basket





## 6./ Specially designed plant holders

- wicker basket





- wire basket





- cart, barrow





- flower column









- flower pots mounted on lampposts

the worst for the plant: hanging in pots

\* small amount of substrat and water → as big pots as possible!!

\* special lamppost plant holders (Ráday street)

flue gas, draft, many suns, plant protection problems









- built plant holder: the cover in sync with the environment (Szeged)





- terrace of a restaurant





# Substrats

## traditional:

- garden soil, only if peas or beans was grown in it previously (if tomato or peper – not!)
- peat (2) : bark compost (1) : farmyard manure (1)
- self made compost: grass compost OK, vegetable compost not!

## Ready made substrat is the best (profi!):

contains basic fertilizers, structure stability, 15-20% clay

### - Special substrats:

geranien substrat mixture

balcony plant substrat mixture

Surfinia-mixture

## Additives:

choir, cocos chips

gravel, perlit, clay granulate



# Irrigation

1./ by hand: can

- in cool weather, in the morning
- small pots have to be irrigated more times pro day!

2./ Automatic (drip irrigation)

a.) equipped with a timer

the amount of water to be irrigated must be calculated!

b.) with float („WC tank system”)

it is compensated by the lowering of the water level until the float rises

c.) tensiometer controlled

detects the suction power of the root

it even provides plant-by-plant detection

d.) water reservoir plant holders: filling from a tap

- double bottom
- wick containing boxes
- oasis boxes, gardeners' boxes



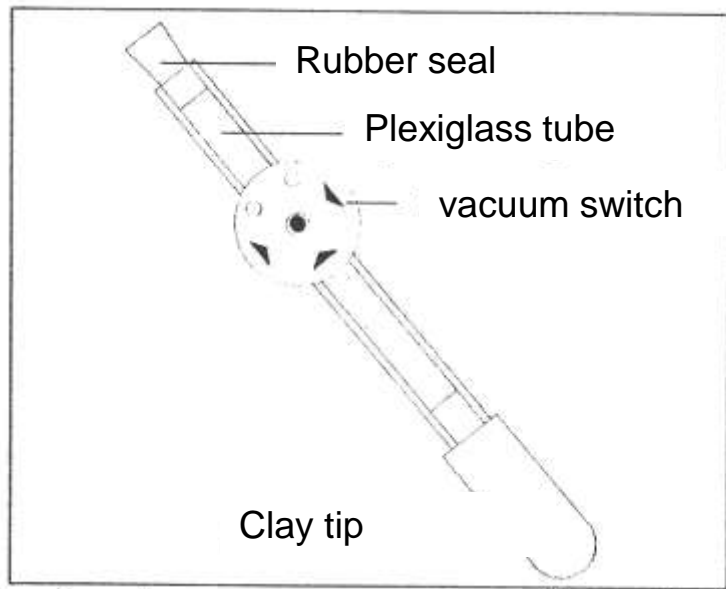
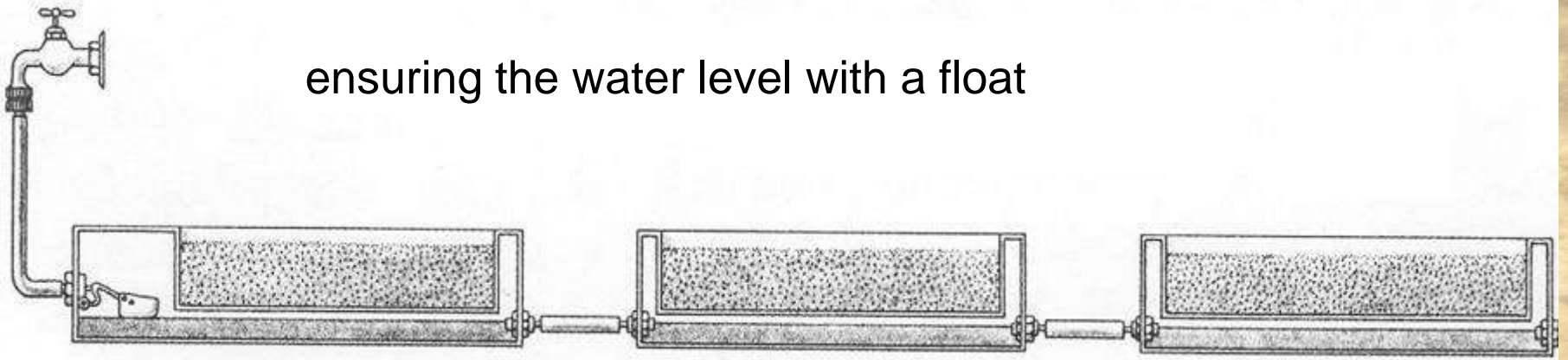


Drip irrigation system





ensuring the water level with a float



Tensiometer



# Fertilizing

## **Fertilizing is important!!**

In the substrat: 3-4 month CRF 5 g/l

Nutrient supplementation:

- starts 4 weeks after planting
  - K, P dominant
    - \* intensive: dayly 1 ‰
    - \* traditional: weekly 1-2x 2 ‰
  - supplenet of Fe! (not enough in ready made fertilizers)
- first dilute with water – do not get on plants (scorching)



# Planting

## Time:

for summer decoration: May

for autumn – winter decoration: September - October

## Way:

one or two row

1.) If the plants have to cover up the balcony:

- choose of dominant high plant: characteristic, well branching, rich flowering (geranien, Celosia, Argyranthemum, others): 3-4 plant/box

- complementary, accompanying plants: 3 plant/box

- cascadians into the front side: 3-4 plant/box

- the dominant plant can reach 60 cm

a common mistake is overcrowding

the number of plants depends on the size of the plant holder



# Planting

2.) If the aim is the decoration of the street: mainly cascadian species

dominant plant: max. 30-40 cm high, compact

very aggressive growing species:

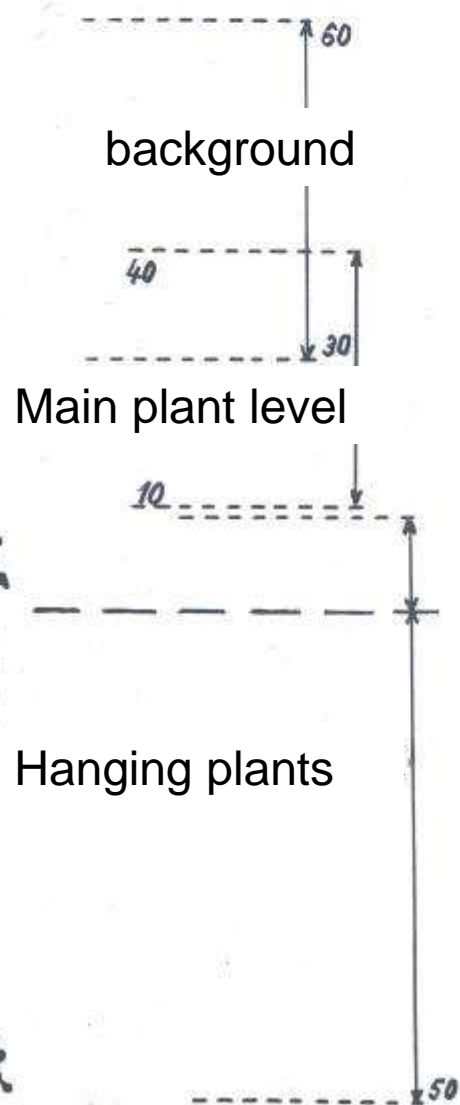
- don't tolerate drought (except *Ipomoea batatas*)

- they can only be planted by themselves

- Protection 1 week after planting

- 100x20x20 cm box: 5-10 plant







# Placement

- Avoid drafty, windy places or protection
- Protection against heavy rain
- Min 20 cm between the boxes near by each other
- Min 60 cm above each other





Place dividing „hedge”





Protection against viewing inside





Layout that does not obstruct the view





Isolation – hedge-like arrangement





Isolation – hedge-like arrangement



Köszönöm a figyelmet!