

# **GROWING THROUGH ASPHALT**

**'CAN A LITTLE PLANT GROW THROUGH CONCRETE OR ASPHALT?'**

# WHY A LITTLE PLANT CAN GROW THROUGH CONCRETE OR ASPHALT ?

## PLANT'S SUPPORTIVE CELLS



- supportive cells that are super **strong**
- the **driving force** that breaks into the concrete

Mainly consists of dead cells that have primary and secondary cell walls which provide support

# FACTORS

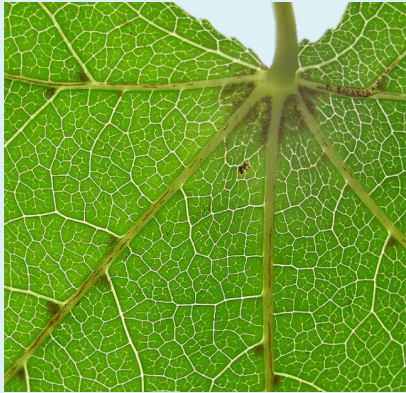
Influencing the plant growth through asphalt

1. **INTERNAL** → the factor that comes from within
2. **EXTERNAL** → the factor that come from outside

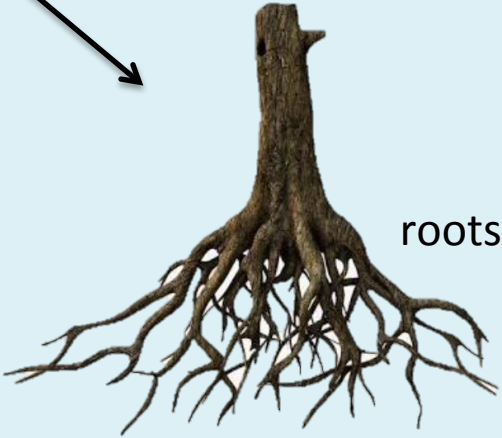
# INTERNAL



Can be found in :



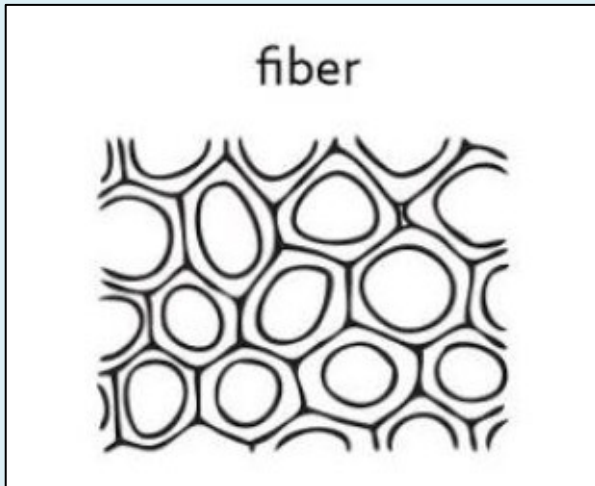
Blood vessels in the leaves



# INTERNAL

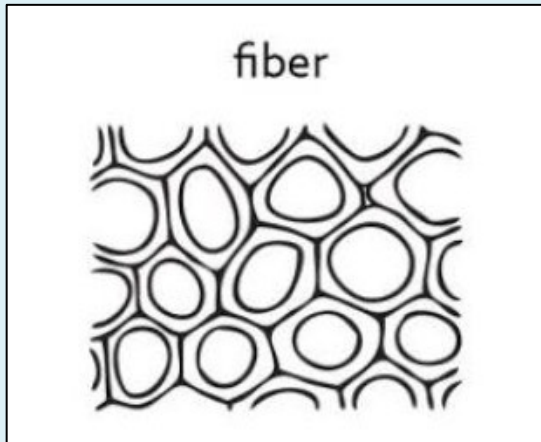
- There are 2 types of Sclerenchyma :

## 1. Fibers



## 2. Sclereids





→ Elongated cells whose long, pointed ends interlock = providing maximum support to a plant

———— Support in wood, bark, leaves, stems

- Longwise
- Have pointed end walls
- Usually unbranched
- Come from meristematic cells
  - Is the main network that supports the process of plant growth

## sclereid



→ A short, thickened plant cell of the sclerenchyma

—— Protection in fruits, seeds, other plant organs

→ Wide

→ End walls are dull

→ Rarely branched

→ Formed by the thickening of parenchyma cells

→ Unspecialized cells that carry out most of a plant's metabolism

# EXTERNAL



- **POROUS ASPHALT**
  - allows water to drain through the surface
  - long lasting

(the most suitable asphalt for plants to grow through)

## 1) ASPHALT

- Hypothesis :
  - The weaker the asphalt, the bigger the crack
  - The thinner the asphalt, the easier it is for the plant to break through



# WHY ASPHALT CRACKS



Growing

→ uneven pressure



to melt



→ speeds up the melting process of the snow



overheat

Excessive weight

Improper installation



## 2) WEATHER

- Hypothesis :
    - Weather with heavy rainfall gives the plants underneath more water
- Therefore, plants are able to grow through asphalt.

## Wild plants



Kemang Utara Street Number IV (4),  
South Jakarta, Jakarta, Indonesia.

# DISCUSSION

We found plants growing through asphalt in South Jakarta area, in Indonesia (as seen in the previous pictures). Our analysis is that these plants are able to grow through asphalt due to improper asphalt installation and heavy rainfall in the area.

Because heavy vehicles rarely passes this street, and we did not find any tree roots growing near the research location, therefore tree roots and excessive weight are not the reasons of why asphalt cracks in the location.

# CONCLUSION

Can a little plant grow through concrete or asphalt?

The answer is yes.

Plants can grow through concrete or asphalt if they meet the following requirements :

1. Cracked asphalt (due to improper installation, excessive weight, using salt to melt ice, sun overheat or growing tree roots).
2. Heavy rainfall

# SOURCES

## 1. Porous Asphalt

→ Wolf, Sean. "Choosing the Right Types of Asphalt." Wolf Paving. N.p., n.d. Web.

## 2. Sclerenchyma cell

→ "Ground Tissue." Wikipedia. Wikimedia Foundation, 17 June 2017. Web.

## 3. Difference between fibres and sclereid

→ "Plant Science 4 U." Difference between Fibres and Sclereids. N.p., n.d. Web.

## 4. Why asphalt cracks

→ "What Causes Concrete and Asphalt Driveway Cracks?" Angie's List | Join for FREE to See 10 Million Verified Reviews. N.p., 15 Feb. 2016. Web.

**THANK YOU 😊**