

The 5th International Young Naturalists' Tournament
Municipal Autonomous Institution of General Education of the city of Novosibirsk
«Gymnasium №12»

Problems № 7

«Growing through asphalt»



Team «12FM»,
Novosibirsk
chnmk@mail.ru
Diana Ignatovich

Condition of the problem

Can a little plant grow straight up through concrete or asphalt?



Hypothesis

For germination the plants through the asphalt needed crack and the energy that is contained in the endosperm of the seed.

Objective

To find out if a plant have enough energy for sprouting through the asphalt.

Objectives of the study

- Collect photographic material on the topic and determine the frequency of occurrence of this phenomenon.
- To study theoretical sources on the research topic.
- Carry out a classification of plants sprouted through asphalt.
- Explain the resulting patterns.
- Create an educational presentation on the research topic.

Germination of seeds



The conditions necessary for the germination of plants:

- Moisture;
- The presence of air;
- Certain temperature;
- Light.

Turgor – is an internal hydrostatic pressure in the living cell, causing the cell membrane voltage.

Plants that often occur sprouted through asphalt



Dandelion officinalis



Plantain large



knot-grass

Experimental part

Instruments and materials: soil, seeds (tulip, zucchini, radish, turnips, carrots), containers for planting, water, clay.



Planting material selected for experiment



Containers for planting

Sprouting a seed in the fertile soil

Objective: To germinate the seed in the fertile soil, regularly watering.



Conclusion: for the germination of the seeds should have favorable conditions: fertile, rich with oxygen soil, moisture and heat.

Experiment 2. Seed Germination through the cm layer of clay.

Objective: To germinate the seed in fertile ground covered with centimeter layer of clay.



Conclusion: seeds with an average (radish and turnip), and large (pumpkin and tulip) supply of nutrients germinate through 1cm layer of clay only in places with the cracks.



Experiment 3. The germination of the seed through the five-centimeter layer of clay

Objective: To find out if the seeds germinate through the five-centimeter layer of clay.



Conclusion: through the 5-centimeter layer of clay, none of the studied plants had germinated.



Conclusion of the work:

1) It is necessary to have a favorable conditions for germination, such as: fertile, rich with oxygen, moisture and heat soil.

2) Under the pressure of germinating seeds with an average and large supply of nutrients, a centimeter layer of clay can be cracked, and sprouts could germinate.

3) Through a five-centimeter layer of dense clay, there are no seedlings of any of the tested plants could break through.

Therefore, our hypothesis that cracks are necessary for germination of plants through the asphalt, has been confirmed.

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