

Transpiration

To find out how the leaf surface area affects the transpiration rate of seedlings

An investigative practical work

Assessment areas:

■ Area A: Practical skills

□ Investigation

□ With full instruction

■ Area B: Report writing

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Preparation – 4 weeks before

- Growing period: 3-4 weeks to obtain 5 leaves per seedling



Preparation – 4 weeks before

■ Best condition:

- Grow in wet soil / water
- near window side with 3 hours sunlight each day
- best growing rate is in warm weather (e.g. May, September)
- transparent plastic cylinder to provide support



Growing of seedlings

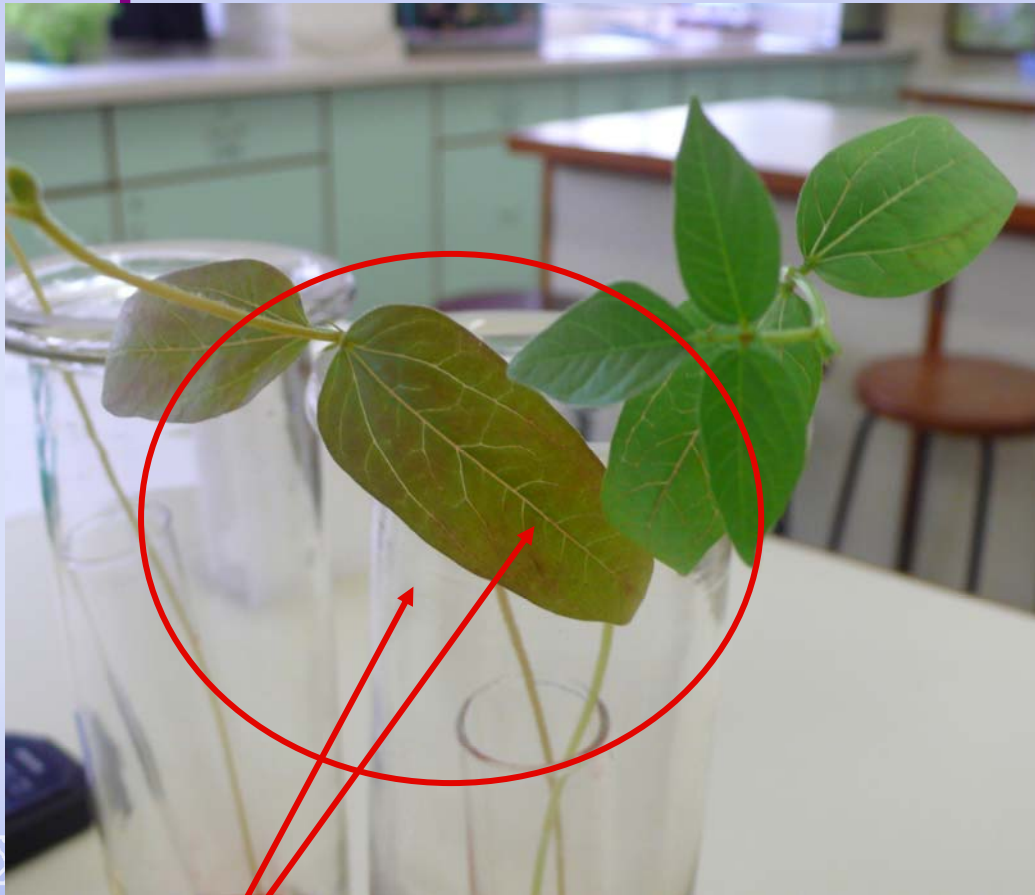


Preparation – 4 weeks before



Proposed Schedule

Full instruction given – assessing Area A



veins stained red

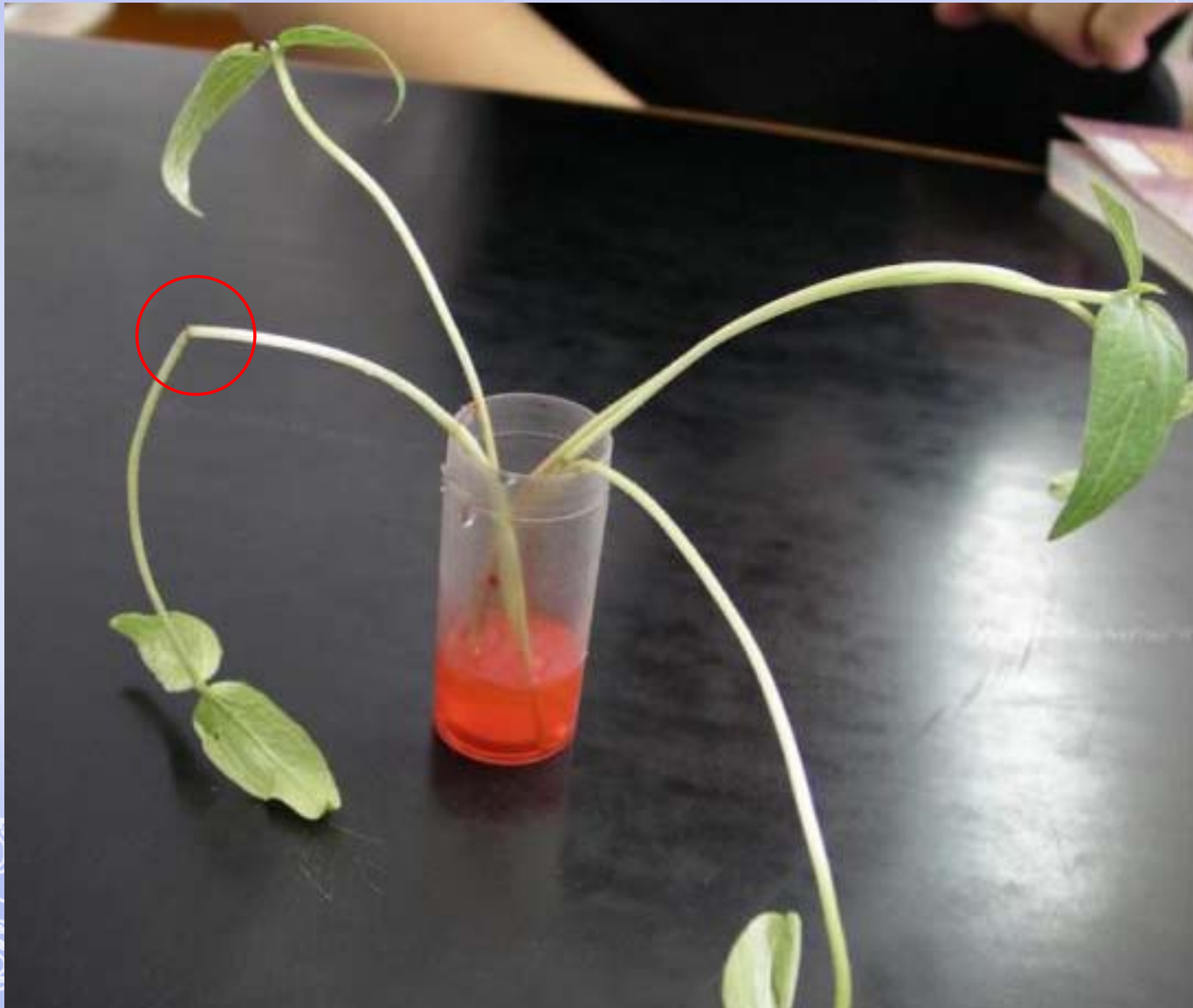
Cut the roots under water



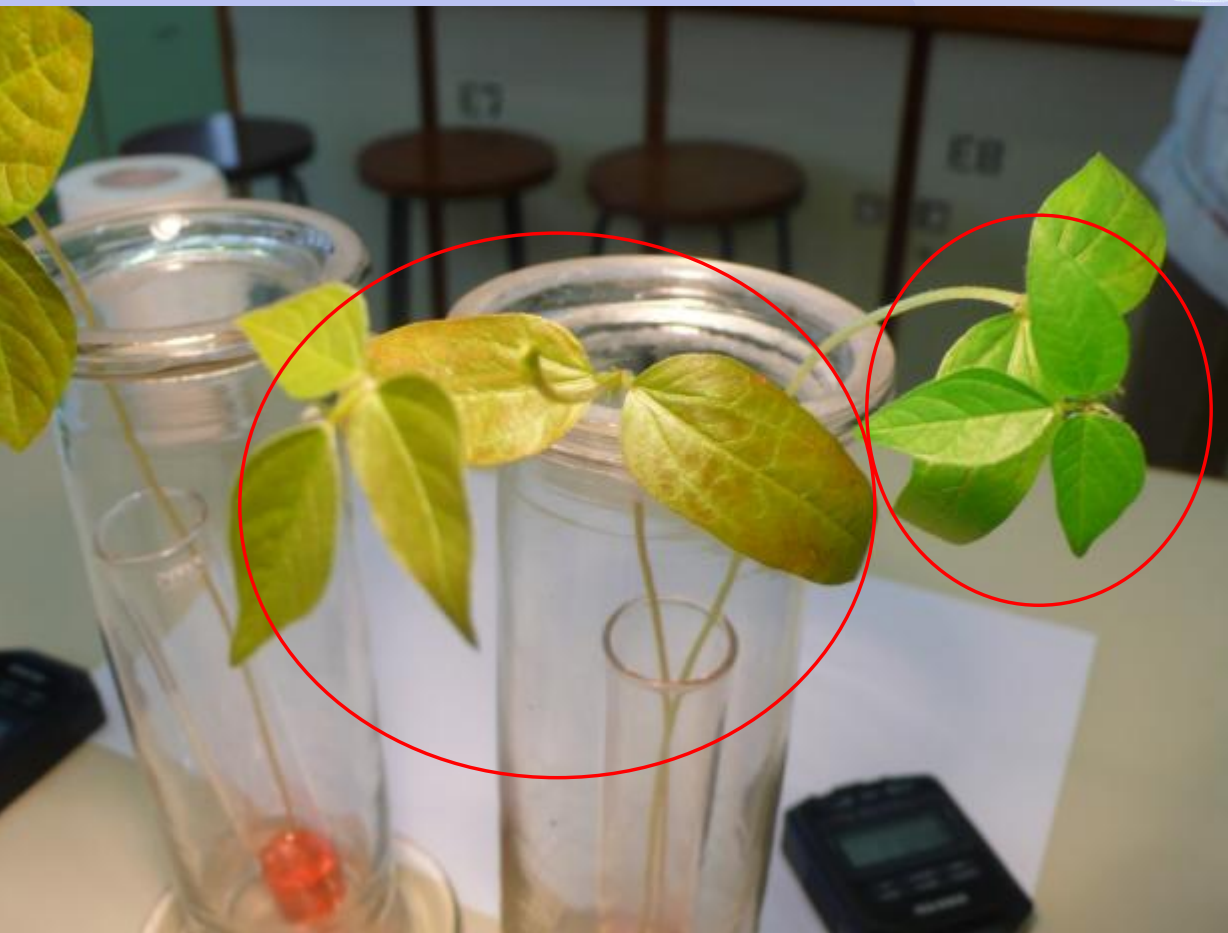
Smear the leaves with vaseline



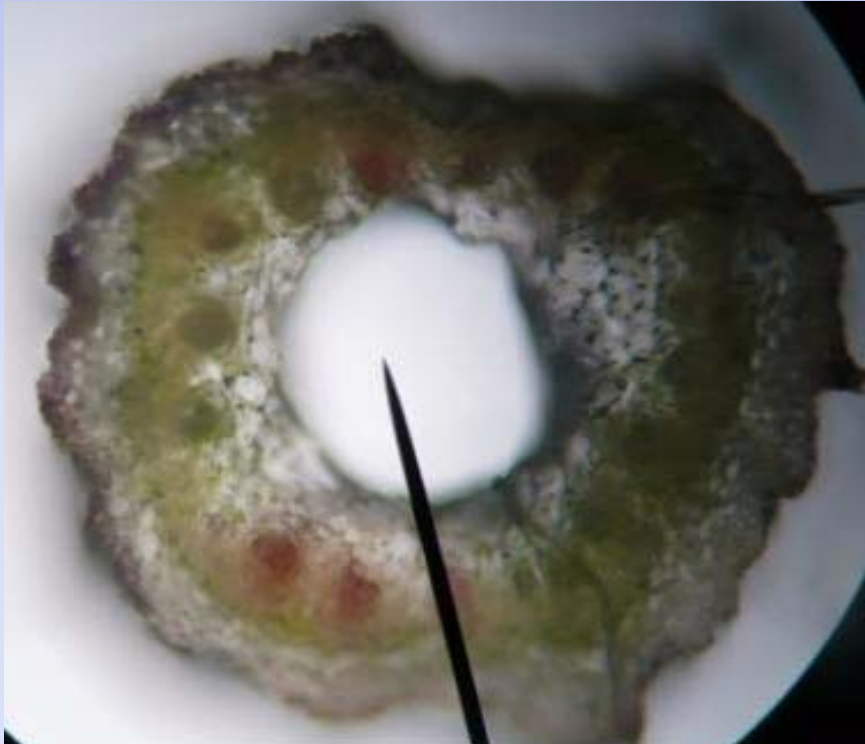
Wait !







back



back



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Sharing

- ❑ The assistance of the laboratory technician in preparing and helping students to perform the practical is necessary
- ❑ Training for sectioning skill is needed
- ❑ Time consuming for finding the unstained section
- ❑ Performing practical work is essential for students – both in learning practical skills and promoting interest
- ❑ Collaborative learning among students

Difficulties encountered

- ❑ Teaching & Assessing at the same time
- ❑ Sharing of work among group members should be by independent variables (i.e. no. of leaves) not by different steps (smearing vaseline, cutting sections etc.)
- ❑ Insufficient provision of apparatus affects the division of work among group members
- ❑ Acquisition of skills prior to performing the practical – arrange the steps, sectioning technique, use of microscope, finding the unstained section.
- ❑ Dominant student Vs student unwilling to participate
- ❑ Difficulty in assessing performance of individual student

Solving the problems

- ❑ Assessing half of the class and the technician help in taking care the other half
- ❑ Training the skills first
- ❑ Time for teacher to assess individual practical skill is short, assessing by questioning, observing the products (e.g. the cut sections) , asking the student to repeat a particular step
- ❑ Assessing the skills other than those suggested in the checklist
- ❑ Assessing the whole group, fine tune the mark for individual (if necessary)
- ❑ Showing students' slides to the whole class to motivate other students
- ❑ Setting of benches to ensure that the students can be seen without obstruction
- ❑ Increasing the amount of practical work