25SCHOOLS
FREE LEARNING NOTES FOR ZAMBIA

FORM 2

Biology

Reproduction in plants

Lesson notes for learners · Competence-Based Curriculum

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When rain falls on the soil, tiny seeds wake up and new plants begin to grow. Plants reproduce to continue their species. In your community you see this when a banana plant sends up new shoots, when a mango tree drops fruit full of seeds, or when a farmer plants pieces of cassava stem. In this note you learn the two ways plants reproduce and the parts of a flower.

AFTER THESE NOTES YOU SHOULD BE ABLE TO

- Say what sexual and asexual reproduction are in plants
- Name the parts of a flower and what each part does
- Describe pollination, fertilisation and seed dispersal
- Name ways of propagating plants without seeds and give examples

KEY WORDS

pollination	the transfer of pollen grains from the anther to the stigma of a flower
fertilisation	the fusion of a male gamete (pollen) and a female gamete (ovule) to form a zygote
gamete	a sex cell, male or female, that fuses during fertilisation
zygote	the cell formed after fertilisation, which grows into a new plant
vegetative propagation	asexual reproduction where new plants grow from roots, stems or leaves of the parent
seed dispersal	the spreading of seeds to new places

1 Sexual and asexual reproduction

Reproduction in plants is the process by which plants produce new individuals to continue their species. It can be sexual or asexual.

Sexual reproduction involves the fusion of male and female gametes, usually in flowers, and produces seeds. Asexual reproduction does not use gametes. New plants grow from parts of the parent, such as stems, roots or leaves, so the offspring are genetically identical to the parent.

2 The flower and sexual reproduction

The flower is the reproductive organ of the plant. The stamen is the male part. It has an anther, which makes pollen grains, held up by a filament. The carpel, or pistil, is the female part. It has a stigma, a style and an ovary. The stigma is the sticky tip that receives pollen, the style is the tube joining the stigma to the ovary, and the ovary holds the ovules.

Pollination is the transfer of pollen grains from the anther to the stigma. Fertilisation follows when the male gamete from the pollen fuses with the ovule to form a zygote. The fertilised ovule develops into a seed, and the ovary becomes the fruit that protects the seeds. Seeds are then spread by wind, water, animals or mechanical means. This is called seed dispersal, and it lets plants grow in different places.

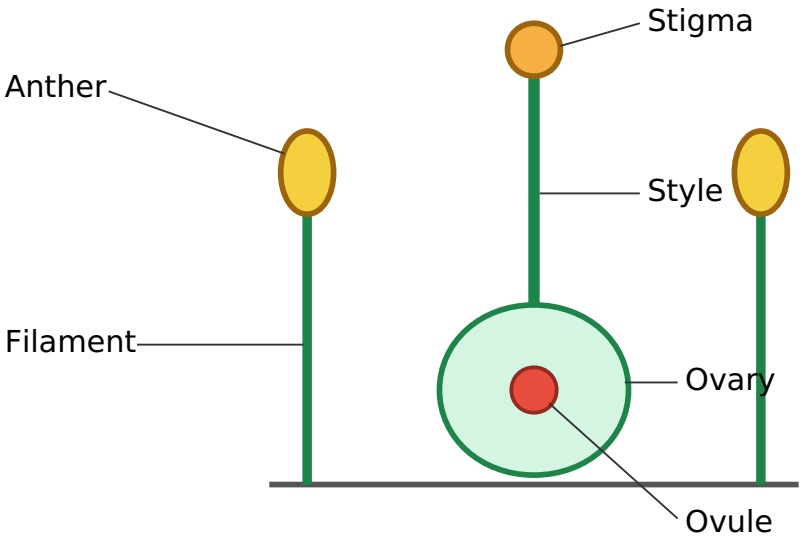

Figure 1. Main parts of a flower

3 Propagating plants without seeds

Vegetative propagation produces new plants from parts of a parent plant. There are special techniques, such as grafting (joining the stem of one plant onto the rootstock of another), budding and layering. There are also natural vegetative structures: runners, suckers (shoots from the roots, as in banana), stems, corms, stem tubers, root tubers, bulbs and rhizomes. Several of these store food that helps the new plant to grow.

Gardeners use these methods to grow plants quickly, and the new plants are identical to the parent. Learners can try them in a school garden project using materials around the school.

Type	Gametes	Offspring
Sexual	Male and female gametes fuse	Seeds, genetically different
Asexual	No gametes	From stems, roots or leaves, identical to the parent

Figure 2. Two ways plants reproduce

TRY THIS

Look at real plants around your school or home. Find a banana sucker, a sweet potato, an onion bulb or a flower. Touch and describe each one, and say whether it is used for sexual or asexual reproduction and which part makes the new plant. Plan a small school garden project that uses two of these methods.

REMEMBER

- Plants reproduce sexually (gametes, seeds) or asexually (parts of the parent)
- The anther makes pollen, and the stigma receives it
- Fertilisation forms a zygote, and the ovule becomes a seed
- The ovary becomes the fruit, and seeds are dispersed by wind, water, animals or mechanical means
- Vegetative propagation gives offspring identical to the parent

? Check yourself

1. What is pollination?
2. Name the male part of a flower and the part that makes pollen.
3. What does the ovary become after fertilisation?
4. Give two ways seeds can be dispersed.
5. Name two natural vegetative structures used to propagate plants.
6. A farmer near Feira finds new banana shoots growing from the roots of her old banana plant. (a) Which type of reproduction is this? (b) What name is given to these shoots? (c) Say how the new plants compare with the parent and explain why.
7. A school garden group wants to grow a new plant from seed and another plant from a stem cutting. (a) Which method is sexual and which is asexual? (b) Name the process that must happen to the flower before seeds form. (c) Explain which method gives plants identical to the parent.

ANSWERS

1. The transfer of pollen grains from the anther to the stigma.
2. The stamen; the anther makes the pollen.
3. The fruit, which protects the seeds.
4. Any two of wind, water, animals, mechanical means.
5. Any two of runners, suckers, stems, corms, stem tubers, root tubers, bulbs, rhizomes.
6. (a) Asexual reproduction (vegetative propagation). (b) Suckers. (c) They are genetically identical to the parent because no gametes are involved.
7. (a) Seed is sexual; the cutting is asexual. (b) Pollination followed by fertilisation. (c) The cutting, because the new plant grows from part of the parent with no gametes.

Written by 25Schools to follow the Form 2 Biology syllabus of the Zambian competence-based curriculum. Free for learners to read, download and share. More notes and quizzes at 25schools.com.