

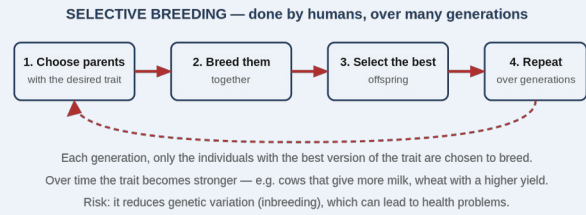
5.2 Selective Breeding

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1. KEY VOCABULARY

TERM	MEANING
Selective breeding	Humans choosing which organisms breed, to develop a trait.
Desired trait	A useful characteristic, e.g. high milk yield.
Generation	One round of breeding.
Inbreeding	Breeding closely related individuals; reduces variation.
Variation	The differences between individuals of a species.

2. THE PROCESS



3. HOW IT WORKS

1. Choose the parents that best show the desired trait.
2. Breed them together.
3. From the offspring, select those that best show the trait.
4. Repeat over many generations — the trait gets stronger each time.

4. EXAMPLES

- cows that produce more milk
- wheat with a higher grain yield, or resistance to disease
- dogs bred for particular shapes or temperaments
- chickens that lay more eggs

5. ADVANTAGES & DISADVANTAGES

Advantage: produces organisms with useful traits — more food, better resistance.
Disadvantage: it reduces genetic variation. With less variation, a whole population can be wiped out by one disease, and inbreeding can cause health problems.

6. THE WHY

Why it takes many generations: each generation only shifts the trait a little — the change builds up gradually as the best are repeatedly selected.
Why reduced variation is a risk: if all individuals are genetically similar, none may have the alleles needed to survive a new disease or change.

7. COMMON EXAM MISTAKES

- ✗ "Selective breeding changes an organism's genes directly."
- ✓ It just chooses which organisms breed — the genes are not altered.
- ✗ "Selective breeding and natural selection are the same."
- ✓ Humans do the selecting in selective breeding; the environment does it in natural selection.
- ✗ "It works in a single generation."
- ✓ It takes many generations to build up the trait.

8. SELF-CHECK · cover & quiz

Can you...

1. Describe the four steps of selective breeding?
2. Give three examples of selectively bred organisms?
3. State one advantage and one disadvantage?
4. Explain why it reduces genetic variation, and why that is risky?
5. Explain the difference between selective breeding and natural selection?