★ **HIGHER TIER ONLY** content is highlighted in blue. Foundation students — focus on the un-highlighted sections.

## Selective Breeding vs Genetic Engineering

| Feature | Selective Breeding | Genetic Engineering |
|---|---|---|
| Speed | Slow — many generations | Fast — one generation |
| How? | Choose and breed organisms with desired traits | Cut and insert specific genes using restriction enzymes |
| Examples | High-yield wheat, milking cows, racing dogs | Insulin from bacteria, herbicide-resistant crops |
| Risks | Narrows gene pool, inbreeding | Unknown ecological effects, ethical concerns |

**Conservation Methods**

- Nature reserves — protected habitats
- Breeding programmes — for endangered species
- Seed banks — preserve genetic diversity
- International agreements — CITES, Paris Agreement
- Reforestation — planting trees to restore forests

■ **Exam Tip:** Eutrophication chain: fertilisers → algal bloom → blocks light → plants die → decomposers use O2 → fish suffocate.