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Plant Responses Revision

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Plant Responses to Herbivory

Physical defences:

- Thorns, barbs, spikes, spiny leaves, fibrous and inedible tissue, hairy leaves and stings.



Chemical defences:

Tannins

- Part of a group of compounds called **phenols** produced by many plants.
- Tannins can make up **50% of the dry weight of the leaves**.
- Bitter taste puts animals off.
- Toxic to insects, bind to digestive enzyme produced in saliva and inactivate them.
- Bind to proteins in the gut of cattle and sheep making them hard to digest.
- Tea, oak and red wine rich in tannins.

Alkaloids:

- Large group of **bitter tasting nitrogenous compounds** found in many plants.
- Many act as **drugs**, affecting the metabolism of animals which take them in and sometimes poisoning them.
- Include **caffeine, nicotine, morphine and cocaine**.
- Caffeine is toxic to fungi and insects. Caffeine produced by coffee bush seedlings spreads through the soil and prevents germination of seeds of other plants.
- Nicotine is a toxin produced in the roots of tobacco plants, transported to leaves and stored in vacuoles to be released when the leaf is eaten.

Terpenoids:

- Large group of compounds.
- Often **form essential oils** but also act as toxins to insects and fungi that might attack the plant.
- **Pyrethrin**, produced by **chrysanthemums**, acts as an **insect neurotoxin** and interferes with the nervous system.
- Some terpenoids act as **insect repellents**. Citronella, produced by **lemongrass**, repels insects.