easily dispersed by air currents. Flowers are on tall, loose, nodding inflorescences. Wind pollinated plants avoid self-pollination by having flowers of one sex only so have a stamen or a carpel, having self-incompatibility genes, and having separate anthers and stigmas that ripen at different times.

Self vs cross pollination

Self-pollination is more reliable especially if species members are widely scattered. However, this leads to self-fertilisation- inbreeding- a genetic disadvantage. Genetic uniformity could be an advantage if well adapted to a constant environment. Self-fertilisation is advantageous in harsh environments where insects may be scarce. Cross pollination:

- ✓ Allows diversity in species enabling greater adaptability to environmental changes
- ✓ Spreads good genes through a plant population so plants increasing survival change
- ✓ Promotes evolution
- ✓ Creates genetic variation
- X Relies on pollinators travelling from plant to plant
- X Expends energy on attracting pollinators
- X Greater wastage of pollen
- X May introduce some undesirable characteristics
- X Pollination may fail due to distance barrier as another plant is needed
- X Fewer offspring may be produced

Self-pollination is very common and can occur in more than half of plant species. When it occurs, flowers are usually hermaphrodite. A simple self of plant on mechanism is for anthers and stigmas to occur at the same time and pollener bed directly onto the stigma.

Self-pollination is sexual as it involves two gametes as xuar reproduction doesn't involve gametes and offspring are genetically identital delf pollination could produce some variety.

The primose (primula) has adaptations to avoid self-pollination. There are two types; pin-eyed and thrum eyed primose, these flowers are produced on separate plants. Primose petals are joined together at the base, forming a tube. Inside the tube are anthers and the style and stigma. In pin eyed flowers, the stigma is at the top of the flower tube with anthers in a ring around the style halfway down the flower tube. In thrum-eyed flowers the style reaches half way up the tube so the stigma is halfway up the inside tube. Anthers are at the top of the flower tube.

Insects visit the flower for nectar which is at the bottom of the tube. This means only longtongued insects can reach the nectar in the base. An insect e.g. Brimstone butterfly, gets pollen stuck to the middle of its proboscis from the anthers half way down the tube. If it then goes to a thrum-eyed, the pollen can be wiped off the stigma, here half way down the flower tube. The reverse is also true. If the butterfly visits thrum-eyed, pollen is wiped off onto the top of its proboscis as it searches for nectar. This is ideally placed to be transferred to the stigma of the next pin-eyed flower it visits.

Primroses exhibit 'self-incompatibility' so if self-pollination occurs, self-fertilisation is not possible due to zero growth of the pollen tubes, this is genetically determined.