2025 Bi H2 Q12

Section: Sustainability and Interdependence
Topic: Plant and Animal Breeding

Question Summary:
This question compares milk yield in two parent goat breeds and their F1 hybrid, explores inheritance patterns in F2 generations, and considers intensive farming, parasite spread, and welfare indicators.

Worked Solution

(a)(i) Lowest yield: parent breed 2 at about 520 litres per year. Highest yield: F1 hybrid at about 690 litres per year. Difference = **170 litres per year**.

(a)(ii) The graph shows **range bars** for each group, meaning multiple goats were measured for each breed.

(b) F2 goats show lower yields because **genetic variation** reappears when F1 hybrids breed together. The advantages of hybrid vigour are lost and a wider range of phenotypes returns.

(c)(i) An advantage to the farmer is **high productivity**, for example increased milk output or reduced labour costs.

(c)(ii) Parasites spread rapidly because **overcrowding** increases direct contact between animals.

(c)(iii) Very high levels of activity are described as **hysteria**.

Final Answer:
170 litres difference. Range bars show multiple goats measured. Loss

of hybrid vigour explains lower F2 yields. Intensive farming benefits productivity. Parasites spread through close contact. High activity is hysteria.

Revision Tips

- Hybrid vigour increases yield in F1 but not in F2. - Range bars show variation within a group. - Intensive farming increases productivity but raises welfare issues. - Parasites spread more easily in overcrowded conditions.