Plant Competition

BIOL 372

Introduction issues

- Needs to explain what seed removal is
- Explain HOW seed removal can affect plant community composition not just factors that affect seed removal
  - This will show the reader why we bother to study seed removal

Discussion issues

- Repeating the SAME experiment with more reps/at a different time of year does not count as a further investigation.
- If your statistical results aren't significant, DO NOT discuss results as if they are!
  - Instead, what does finding effectively no difference in seed removal treatments mean for what processes you think are operating to influence plant community composition in your studied community?

Plant competition

Competition: process and consequences of organisms seeking limited resources in the presence of each other

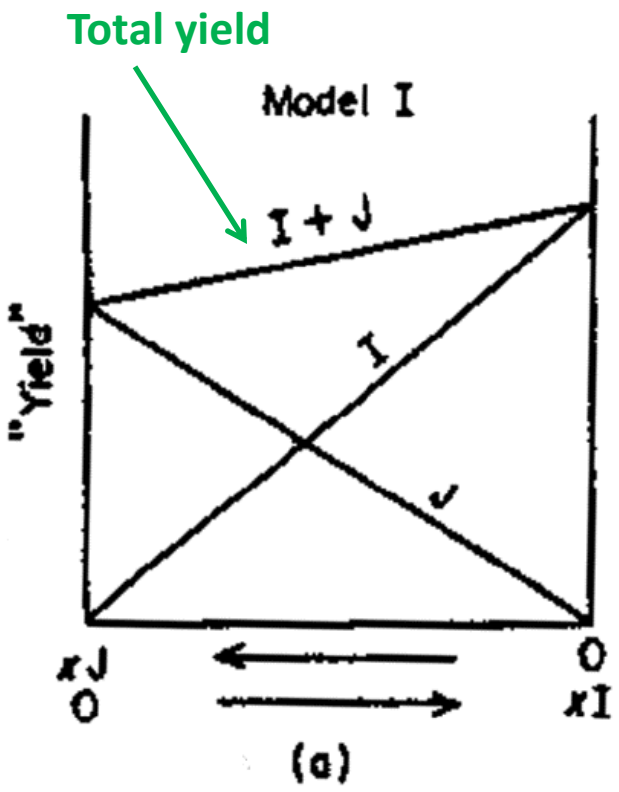
Plants may experience this to a higher degree due to their lack of mobility.

Two Types of Competition

Interspecific competition- competition between species

Intraspecific competition- competition within a species

Competition model I



Linear relationship between a species' yield and the proportion of seeds sown in the polyculture.

The yield of the mixture is predictable from the yield of each species in monoculture.
e.g. if there are 100 plants: 50 oats and 50 lentils, the total yield of that mixture would be the same as if each were grown separately.

Monoculture **Polyculture**

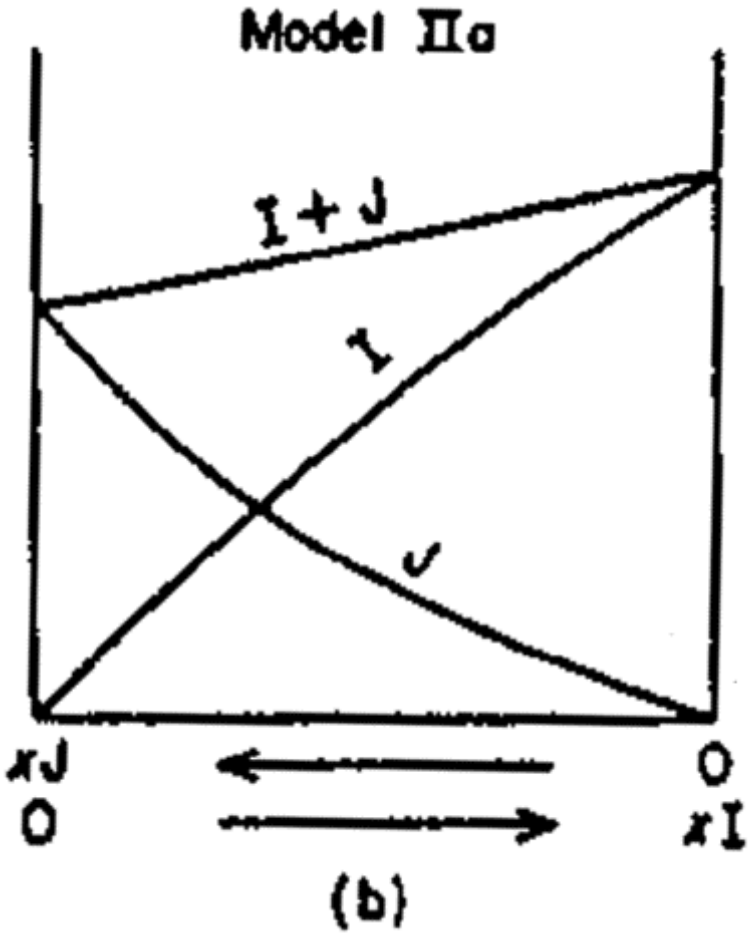
50 lentils **50 oats** **50 oats + 50 lentils**

Model I cont'd

Two scenarios can give rise to these results:

1. The total density of plants is too low to evoke competition (i.e. resources are plentiful)
2. Each species has the same effect on resources.

Competition Model II



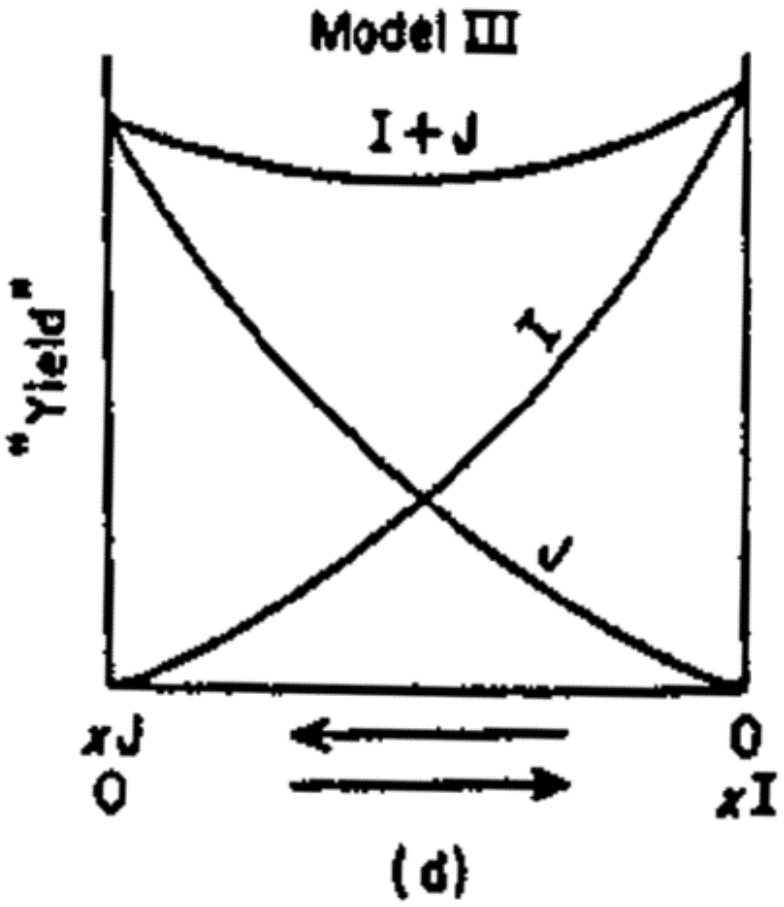
One species has a greater effect on the other than the reverse case i.e. one species is more affected by intraspecific competition and the other is more affected by interspecific competition.

Here, I is capturing proportionally more resources (concave flexure) than J.

Monoculture **Polyculture**

50 lentils **50 oats** **50 oats + 50 lentils**

Competition Model III



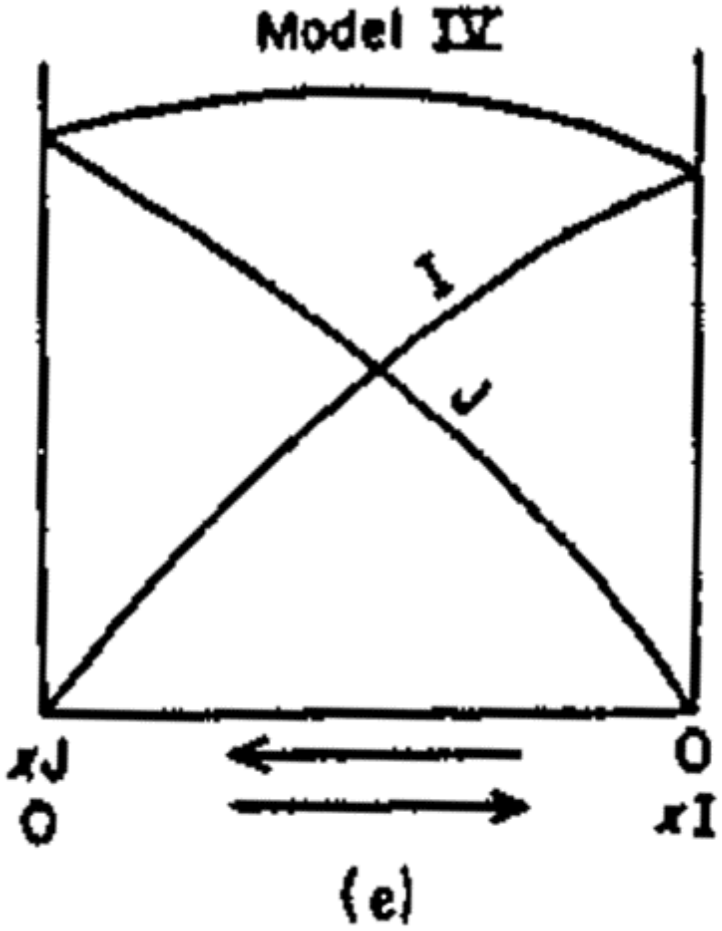
-Interspecific competition is affecting BOTH species more than intraspecific competition (concave lines).

-Neither species contributes the amount predicted from monoculture to the total polyculture yield.

Monoculture **Polyculture**

50 lentils **50 oats** **50 oats + 50 lentils**

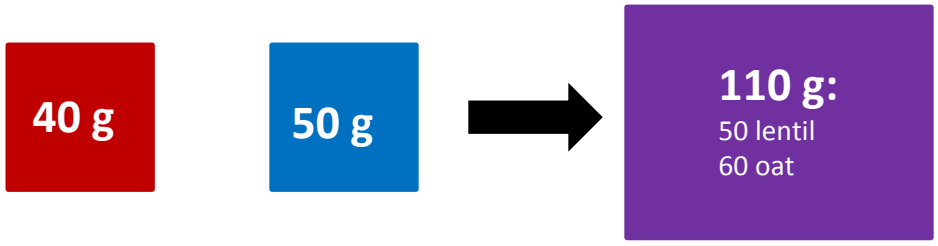
Model IV



- Intraspecific competition affects BOTH species more than interspecific competition (both lines have convex curve)

-The total yield curve is also convex, indicating a symbiosis (i.e. one or both species do better in polyculture than monoculture)

Monoculture **Polyculture**



50 lentils **50 oats** **50 oats + 50 lentils**