BMP's for Soybean Aphid Vectored Viruses in Snap Bean

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Goal

- Develop integrated approach that would optimize yield and quality impacts and maximize returns
  - Cost of management
    - Direct cost related to pesticide use
    - Indirect cost – non adapted varieties
      - Lower yielding
      - Lower quality
  - Integrate cultural practices
    - Avoidance

Objectives

- Determine effect of planting date, varietal differences in susceptibility to virus, and aphid management strategy on yield and quality

- Evaluate the impact of management system on aphid pressure and development of virus symptoms.

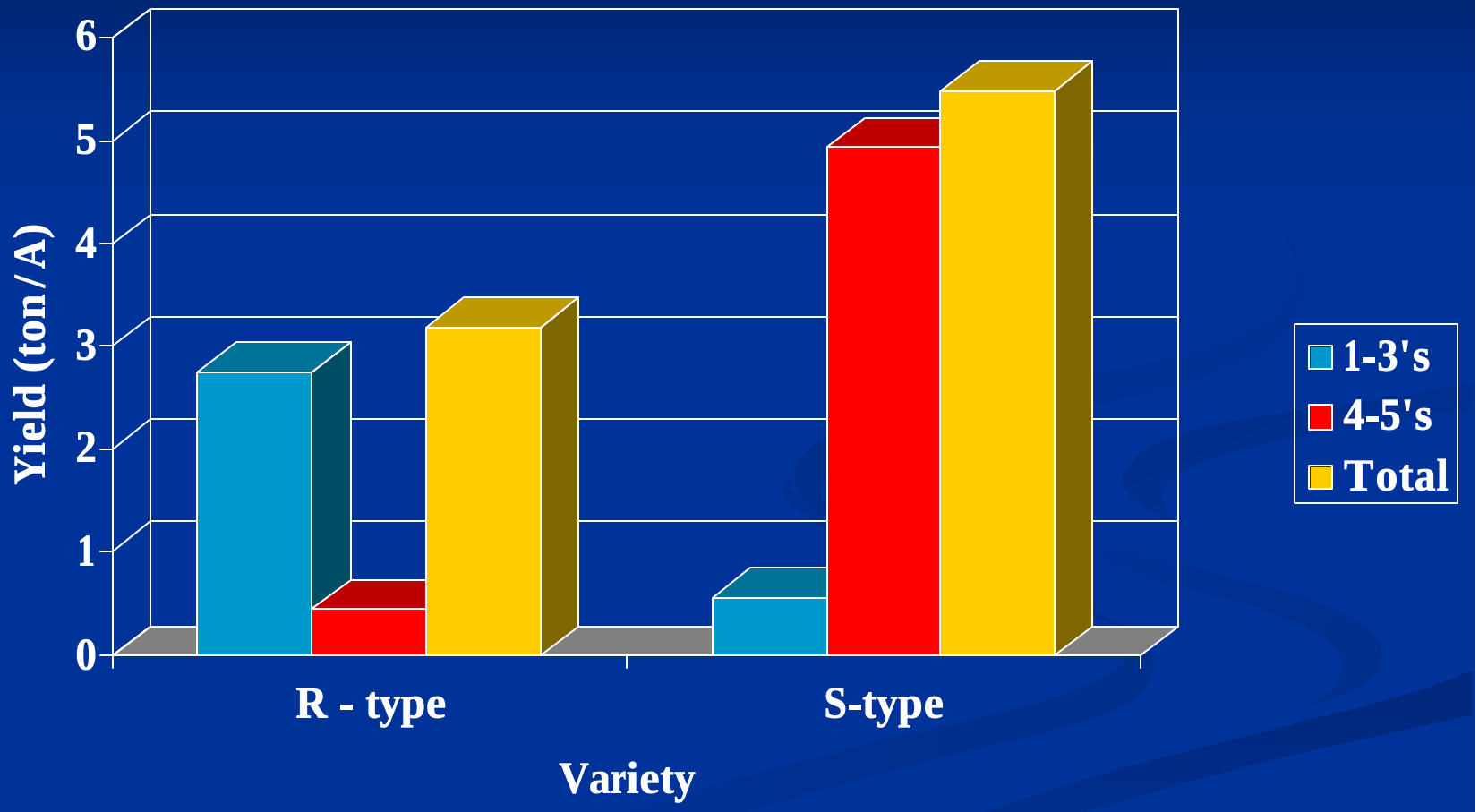
Material and Methods

- Arlington Horticulture Farm
- RCB with 4 reps and 3 level factorial
  - Planting date
    - 5/22, 6/19, 7/15
  - Variety
    - MV185 (R), Hystyle (S)
  - Insect management strategy
    - +/- Gaucho seed treatment
    - +/- Stylet oil

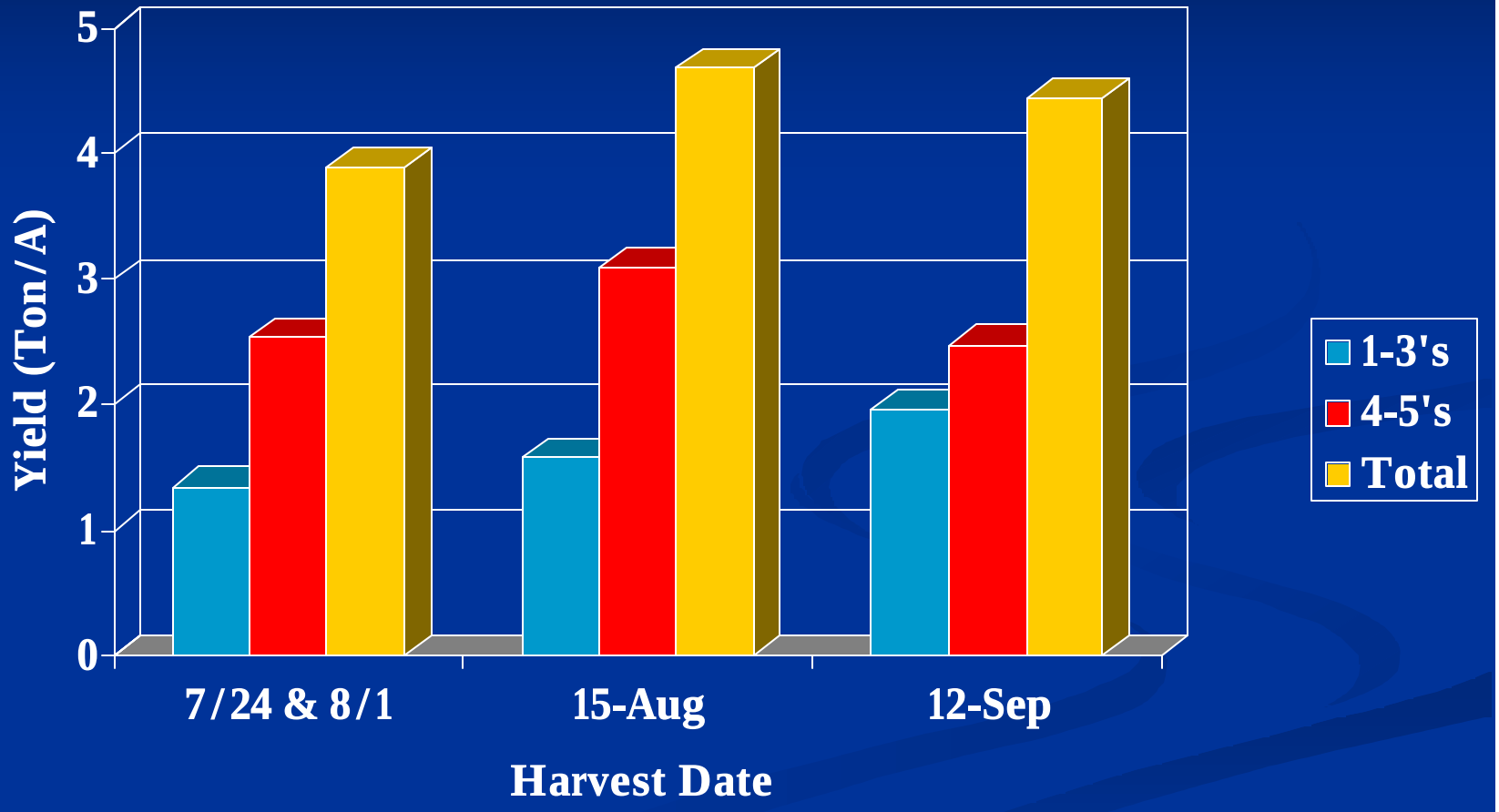
Materials and Methods (Cont.)

- Managed snap bean according to current production recommendations
  - Leaf hopper management
    - Sevin until pin bean stage
  - Leafhopper and European Corn Borer management
    - Capture from pin bean stage until harvest
- Data collection
  - Yield, size grade
  - Phenological development
  - Soybean aphid per plant
  - Virus symptoms
    - ELISA

Snap Bean Yield by Variety



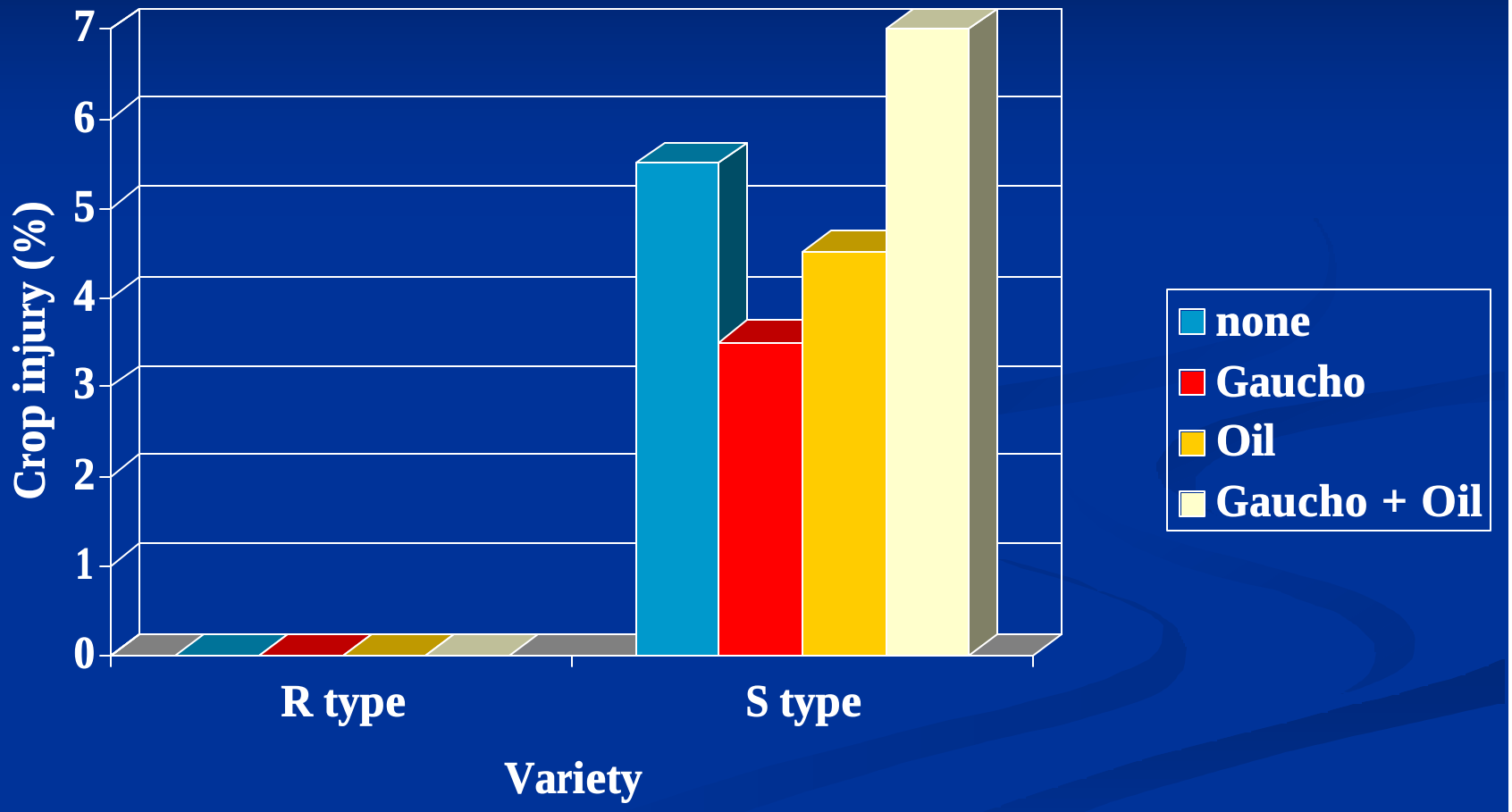
Snap Bean Yield by Planting Date



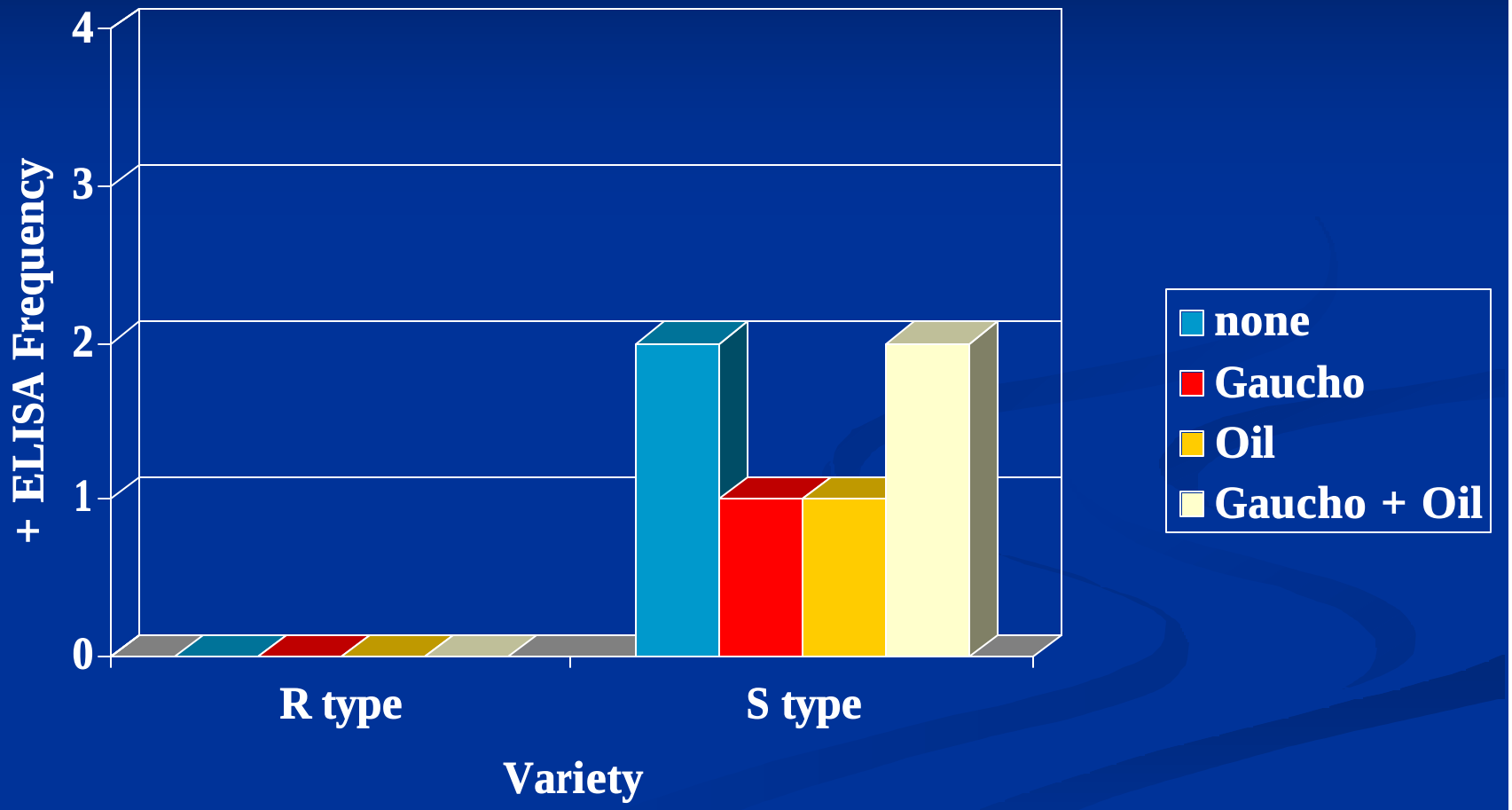
Pest Pressure

- Little aphid pressure during 2002
  - First found on 7/29
    - 1-5 aphids per leaf
      - 3rd planting only (1-2 trifoliate)
      - 2nd planting flowered on 7/24
      - 3rd planting flowered on 8/20
  - Few if any aphids after 8/7
- Insect management had no effect on yield or disease severity

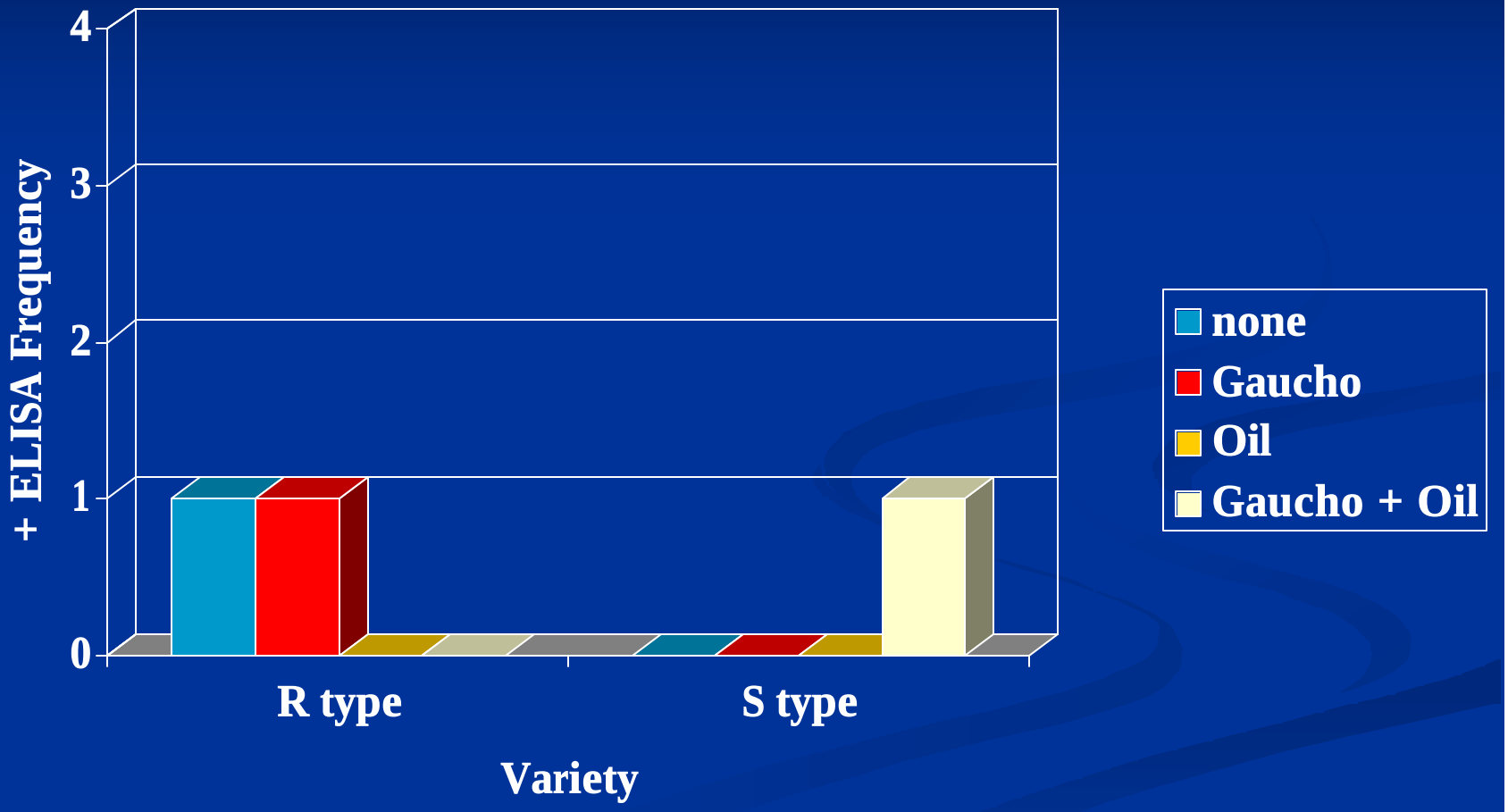
Disease Severity 9/1



Elisa Results 9/1 - AMV



Elisa Results 9/1 - CMV



Summary

- No yield effect by aphid transmitted virus
  - Aphids preferred youngest snap bean
- Yield reduction by variety
  - S out yielded R
  - S better size
- S-type showed injury
  - Last planting only
  - AMV only found in S
  - CMV found in both R and S
    - Incomplete resistance
    - Susceptible under high disease and aphid pressure
  - Unable to determine management impacts on ELISA

Conclusions

- When is it economical to use virus resistant varieties
- 2002 saw little impact by aphid transmitted virus
  - Losses on very late planted snap bean in EC WI
- Predict severity of soybean aphid and virus