Understanding Phenology and Biomass Distribution in Faba Bean (*Vicia faba* L.)

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Outline

› Introduction

› Materials & methods

› Results & discussion

› Conclusion
Faba bean is an important grain legume.

- Human food [24-30% protein]
- Livestock feed
- Medicinal benefits: lowering cholesterol and blood pressure
- Cropping systems: N fixation, disease break, pests and weeds
Introduction

› Produces large biomass, but low harvest index

› Aim is to understand the mechanism of biomass partitioning into grain yield
Materials and methods

10 genotypes

1. Fiord
2. CAIRO
3. Doza
4. PBA Warda
5. PBA Nasma
6. IX474/4-3
7. IX474/4-12
8. IX477/17-15
9. 11NF014d-4
10. IX486/7-6
Materials and methods

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3 replications
## Materials and methods

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### 3 replications

### 3 sowing dates

1. 17\textsuperscript{th} April 2015  
2. 7\textsuperscript{th} May 2015  
3. 28\textsuperscript{th} May 2015
Materials and methods

› Measurements:
  - Phenological stages
  - Plant height
  - Seed filling duration
  - Total dry matter
  - Yield
  - Yield components
  - Harvest index (HI)
Materials and methods

› Measurements:
  - Biomass partitioning at flowering and physiological maturity stages
Results & Discussion

› Sowing dates and genotypes:
  ▪ High significant difference in plant height, pods/branch, pods/plant and seed filling duration

› Interaction:
  ▪ High significant difference in phenology, biomass partitioning and HI
Results & Discussion

› Biomass distribution at flowering
Results & Discussion

› Biomass distribution at flowering
Results & Discussion

› Biomass distribution at physiological maturity

First sowing

Second sowing

Third sowing

Genotypes

Stems | Leaves | Pods

Biomass distribution (%)

0 10 20 30 40 50 60 70

11NF0144-4 Ix477/17-15 IX486/7-6 PBA Nasma PBA Warda CAIRO Fiord Doza IX474/4-3 IX474/4-12

11NF0144-4 Ix486/7-6 PBA Nasma Fiord IX474/4-3 Doza IX474/4-12 PBA Warda IX477/17-15 CAIRO

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Results & Discussion

› Biomass distribution at physiological maturity

First sowing

Second sowing

Third sowing
Results & Discussion

Biomass production Vs. grain yield
Conclusion

› Variation exists among faba bean genotypes for biomass distribution to grain filling organs which can benefit grain yield.

› These preliminary results indicated that grain yield and harvest index can potentially be improved by selection.

› These findings will be verified in coming seasons.
Thank you for your attention