

MB GREEN BIN COMPOST AGRICULTURAL TRIALS: RESULTS TO-DATE

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OVERVIEW

- Background information
- Project objectives
- The trial
- Preliminary results
- Future plans
- Acknowledgement



BACKGROUND

- **Chemical fertilizers** **High cost**
Chemical residues
Water contamination
Soil microbial death
- **Organic amendments** **Low cost and user friendly**



✓ **Benefits**

- Soil: Source of organic matter and soil structure improvement
- Nutrients supply
- Improved soil enzymes
- Colonization by useful bacterial
- Produce: Favorable comparison with chemical fertilizers
- Improved nutrients content

✓ **Concerns**

- Soluble salts
- Heavy metals

(Crecchio et al., 2004; Ros et al., 2006; Weber et al., 2007)

CQA-TESTED COMPOST

Key Elements of the Program

- Standardized product sampling
- Uniform laboratory testing
- Appropriate product attributes and usage guideline

PROJECT OBJECTIVES

- To support the advancement of green bin compost markets and utilization in Manitoba
- **Specific objectives:**
 - To determine the effect of frequency of CQA-tested green bin compost on soil health, plant growth and health, and economic benefit of some selected horticultural crops

EXPERIMENTAL DESIGN

- 5-year research
- Market garden system in Brandon
- Organic farm
- DoE
- Second location in Winkler



FIELD PLAN

YEAR I			
R_1	Control	Biennial	Annual
R_2	Annual	Control	Biennial
R_3	Biennial	Annual	Control
R_4	Annual	Biennial	Control
YEAR II			
R_1	Control	No application	Annual
R_2	Annual	Control	No application
R_3	No application	Annual	Control
R_4	Annual	No application	Control

RESULTS

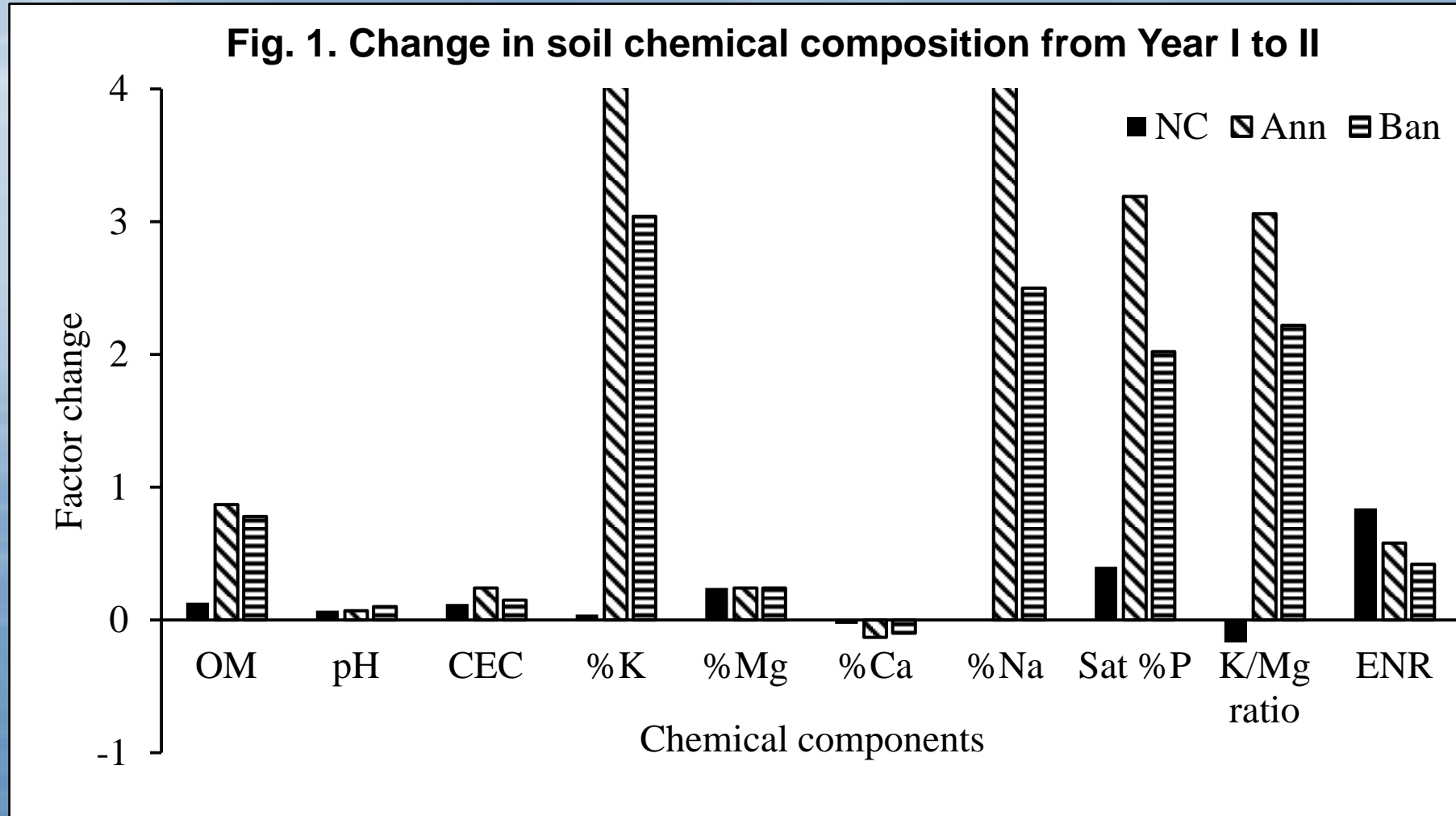


Fig. 2. Change in soil chemical composition from Year I to II

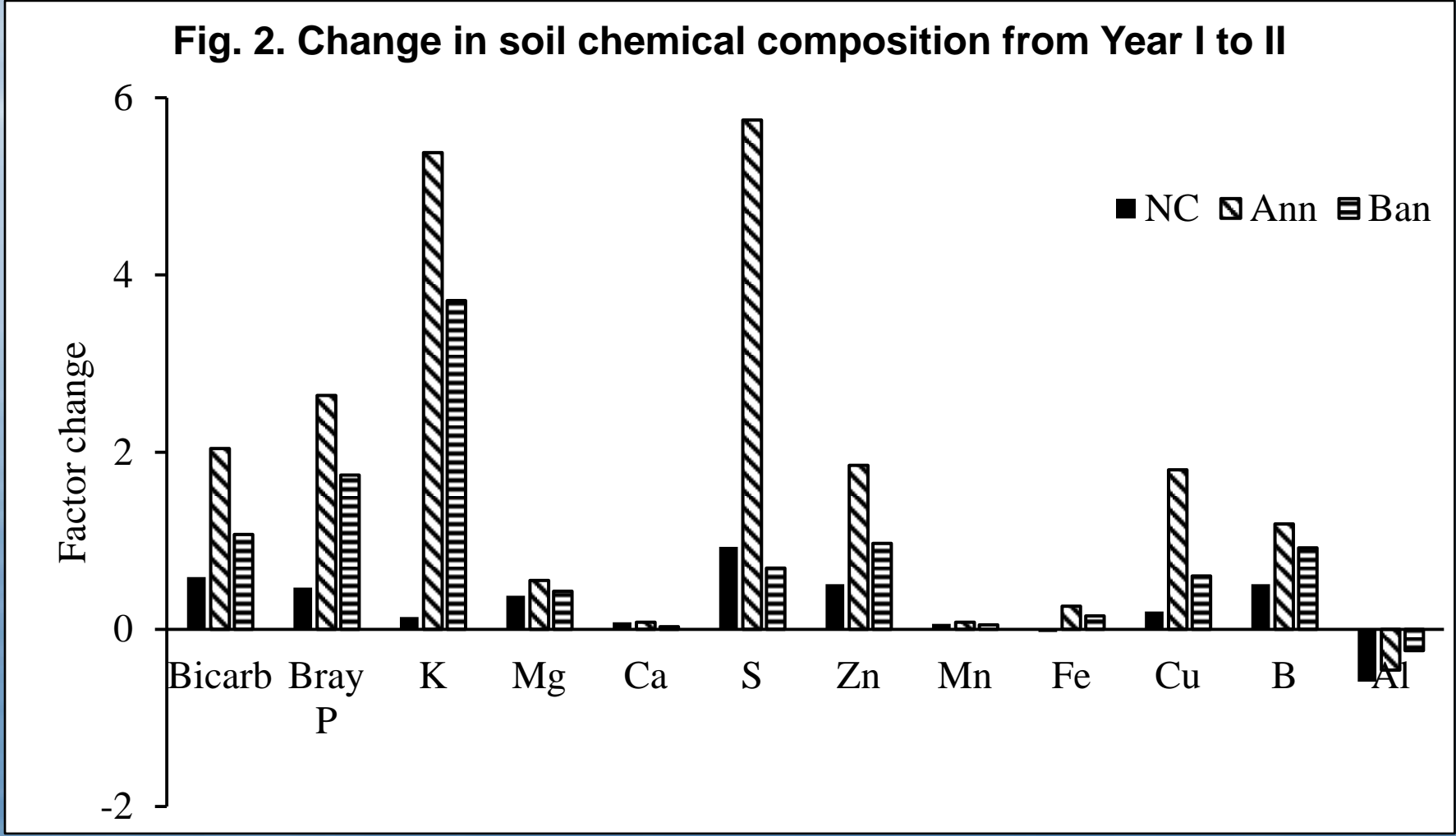




Fig. 3. Selected plants from the control (left), the annual (middle) and the biennial (right) applications.

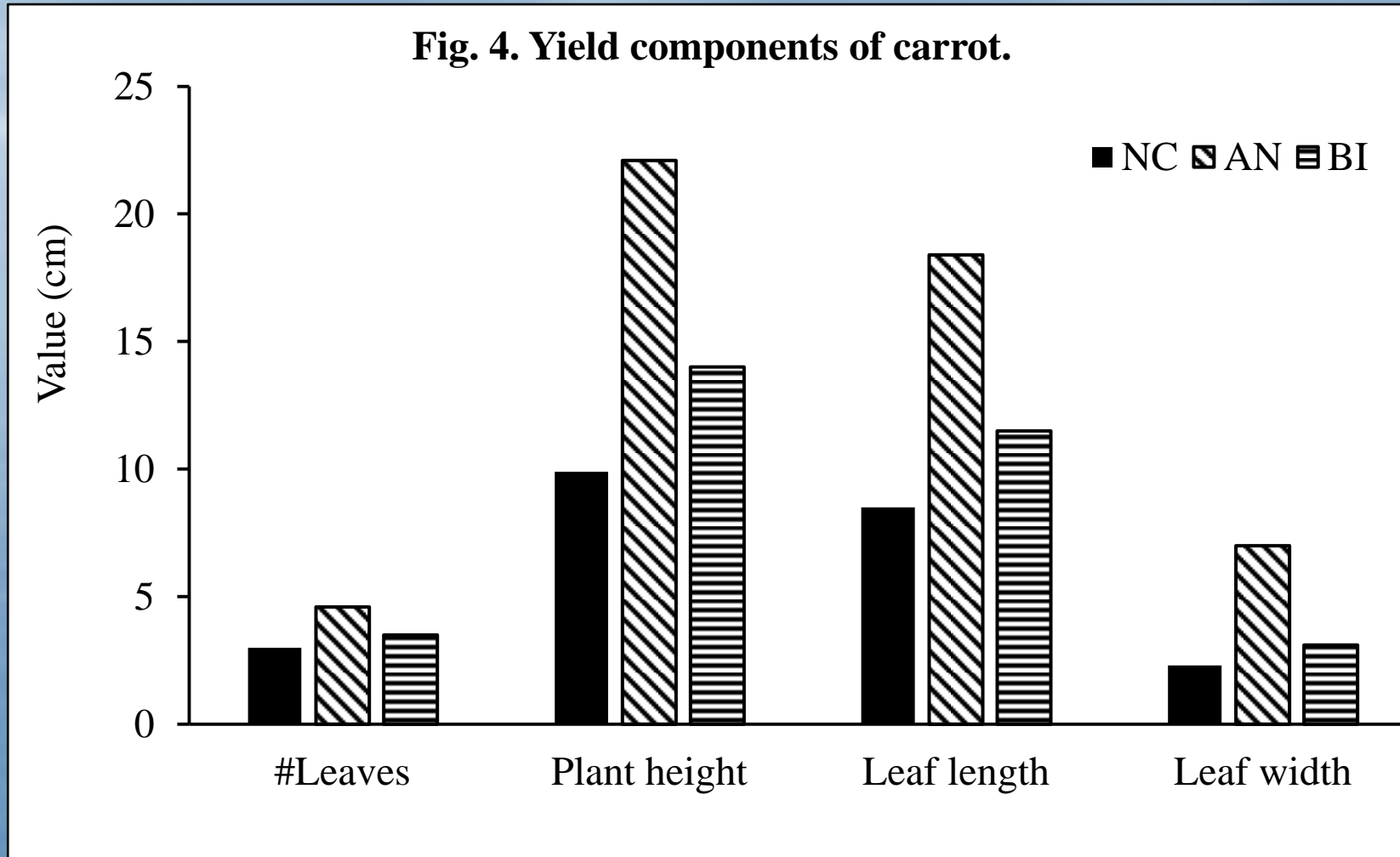


Fig. 5. Yield components of beans.

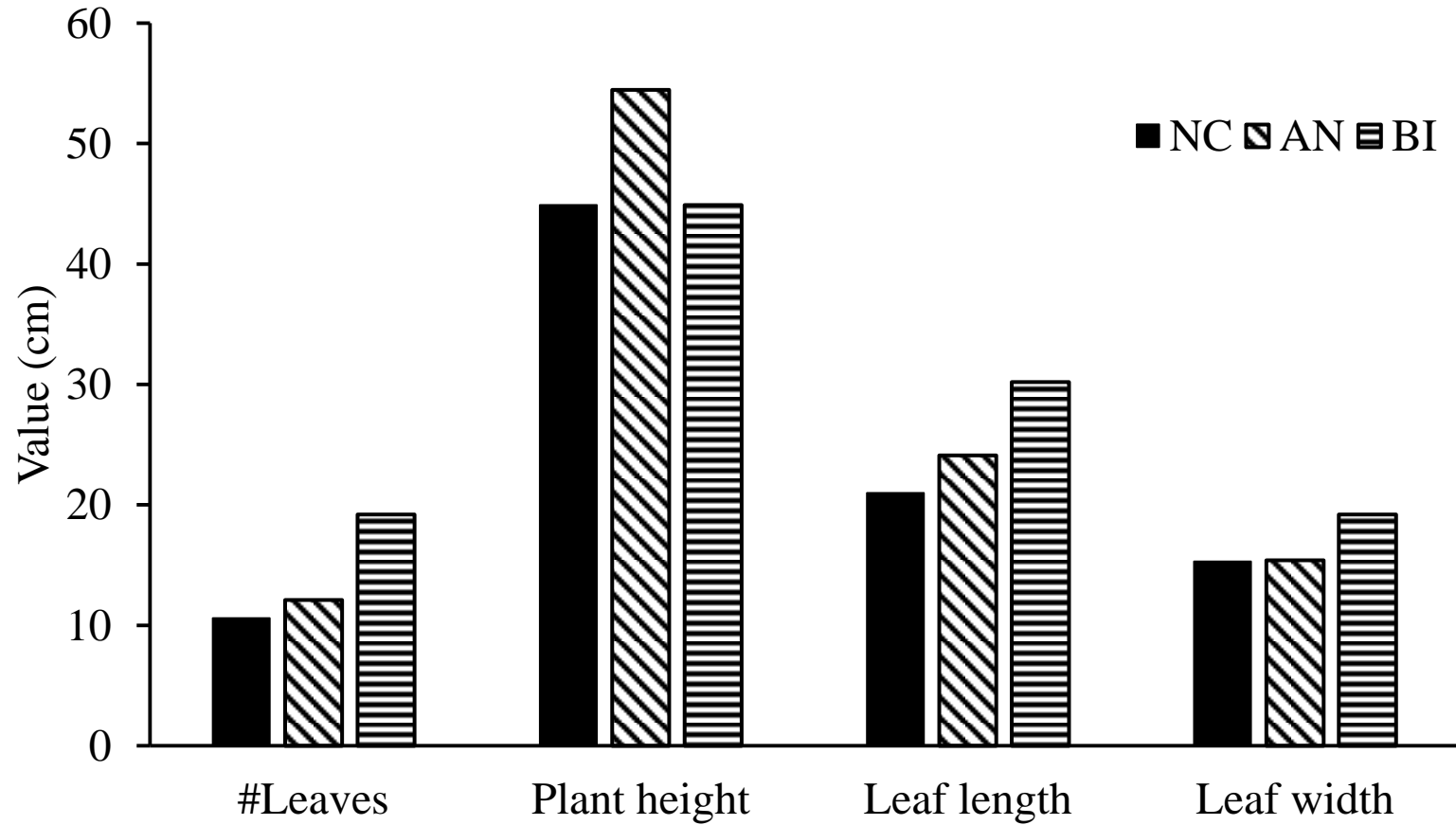
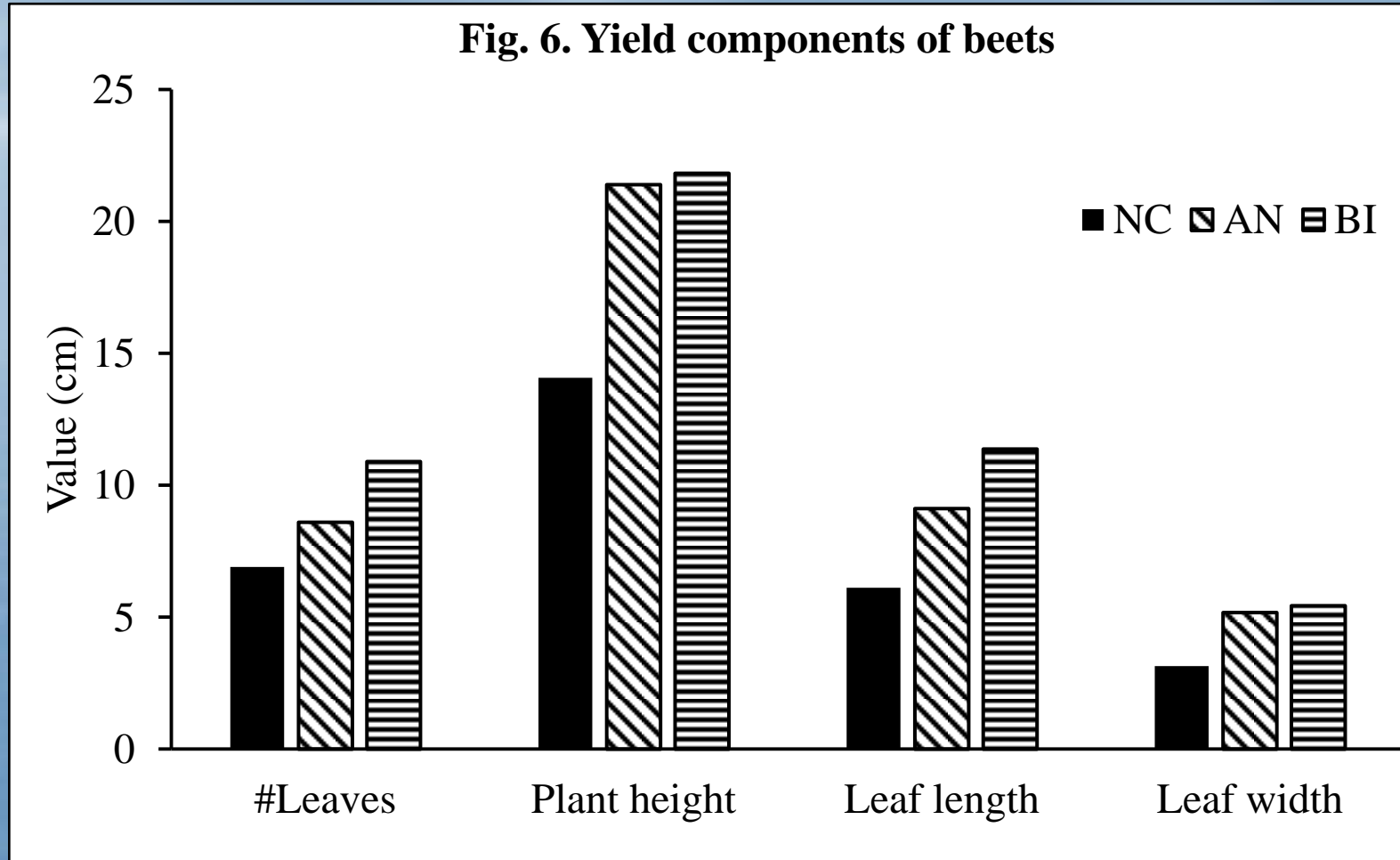
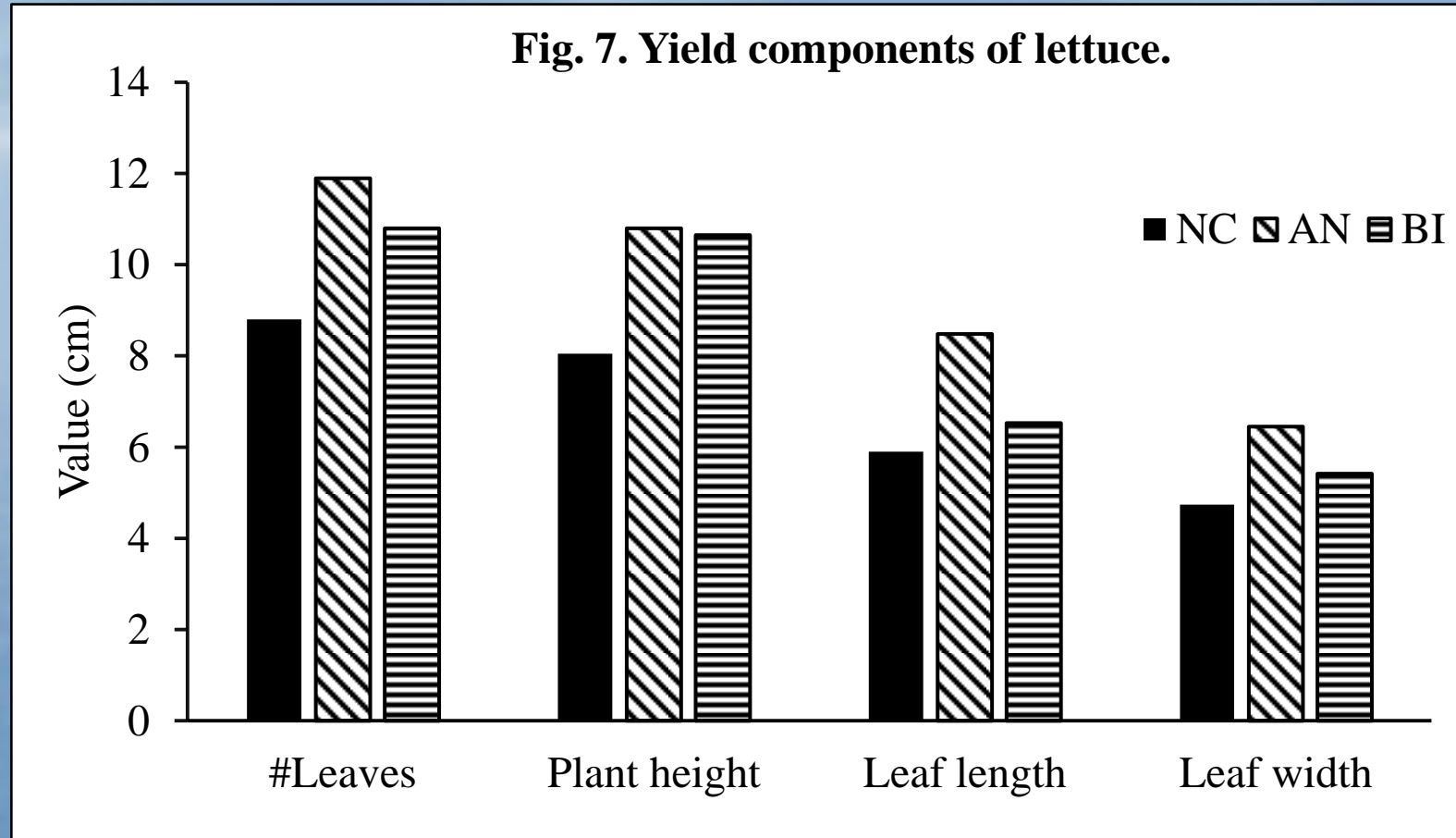


Fig. 6. Yield components of beets





CONCLUSION

- Compost increased OM, and micro- and macro-nutrient contents
- Plant growth and marketable yield were increased
- There were differential responses in plant growth and yield
- Differences between treatments can't be confirmed now
- Detailed soil health analysis in 2017
- Quality analysis of harvested produce in 2017

FUTURE PLANS & ACTIVITIES

- MSc student has been recruited to work on the project for his thesis
- Collaboration with *Peak of the Market* to duplicate the study on a larger commercial field at Winkler, MB
- Fresh produce quality will be analyzed and compared
- Soil microbial dynamics, mineral nutrients and organic matter contents
- Planning to fence or find ways to deter wild animals

CURRENT MSC STUDENTS (7) RESEARCH

- CQA-tested compost
- Value-added products
- Plastics in compost
- Compost vinegar - pyroligneous acid
- Microwave technology
- Compost and functional foods

ACKNOWLEDGEMENT



Agriculture and
Agri-Food Canada

Agriculture et
Agroalimentaire Canada

