

GREENBIN COMPOST AGRICULTURAL TRIALS IN MB: AN UPDATE

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OVERVIEW

- Background information
- Project objectives
- The trial
- Results
- Future plans



BACKGROUND

- It is well established that compost is a ...
 - Low biotechnology product
 - Nutrient-rich
 - Microbiologically-active
 - Improves soil bio-physicochemical properties
 - Improves plant growth & defense mechanisms
 - Enhances plant secondary metabolisms
- However, agroeconomic & environmental benefits from long-term application of composts particularly, CQA-tested greenbin composts, are not widely studied
- Also, growers perception of greenbin compost is generally not encouraging



PROJECT OBJECTIVE

- Support the advancement of greenbin compost markets and utilization in Manitoba and elsewhere

Specific objectives

- Assessment of the effects of frequency of CQA-tested greenbin compost application on soil health, crop productivity, nutritional quality and economic benefits

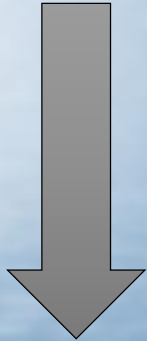
EXPERIMENTAL DESIGN

- Proposed 5-year research
- Aagaard Farms, an organic market garden setting in Brandon
- RCBD with four replications
- Based on grower's choice: lettuce, beans, carrots & beets



FIELD PLAN

Slope



YEARS I - 3			
B1	Control	Biennial	Annual
B2	Annual	Control	Biennial
B3	Biennial	Annual	Control
B4	Annual	Biennial	Control

RESULTS

Fig. 1. Effect of CQA-Tested Greenbin Compost on Soil Mineral Nutrients (Yr 1-2)

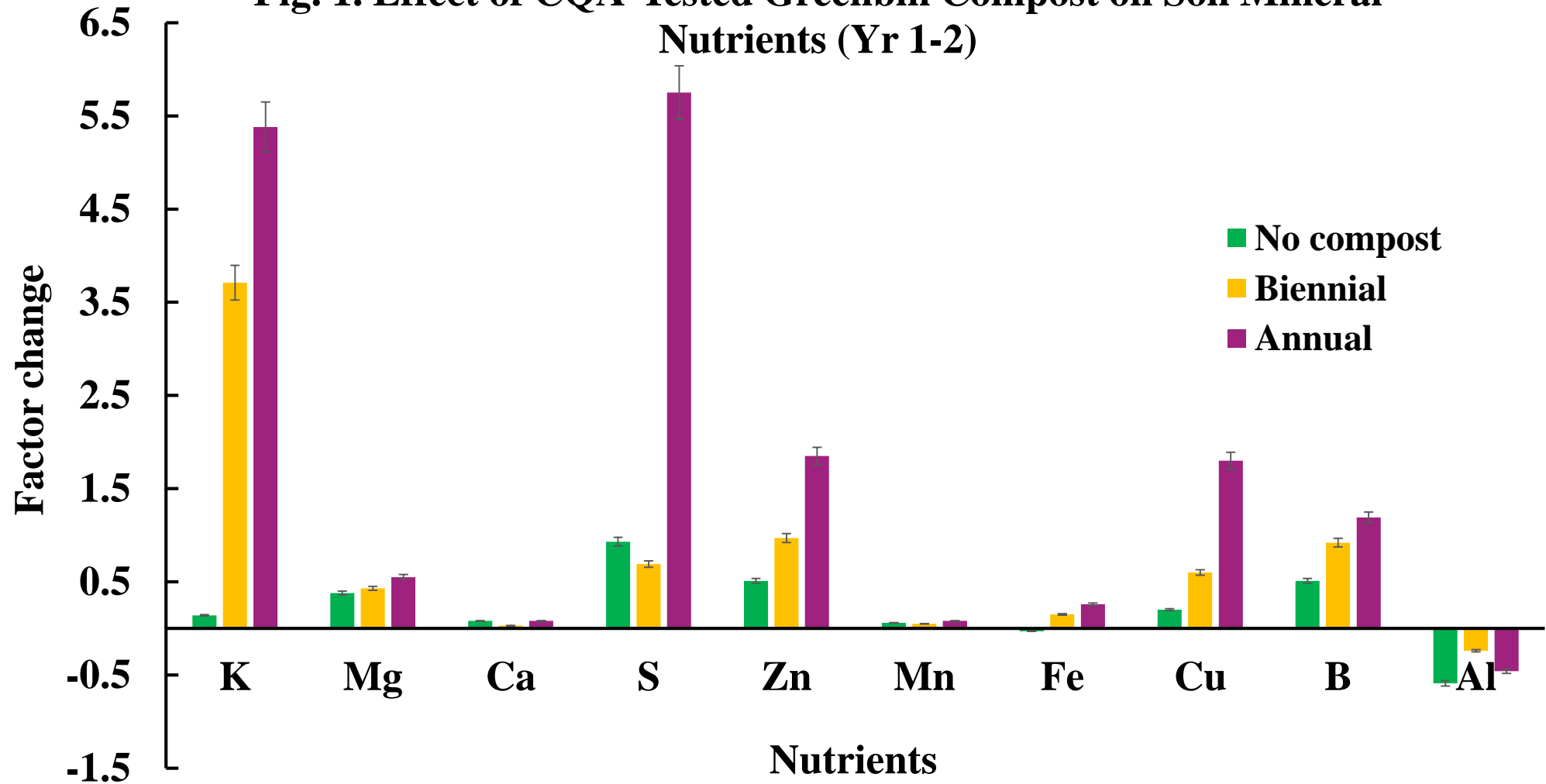
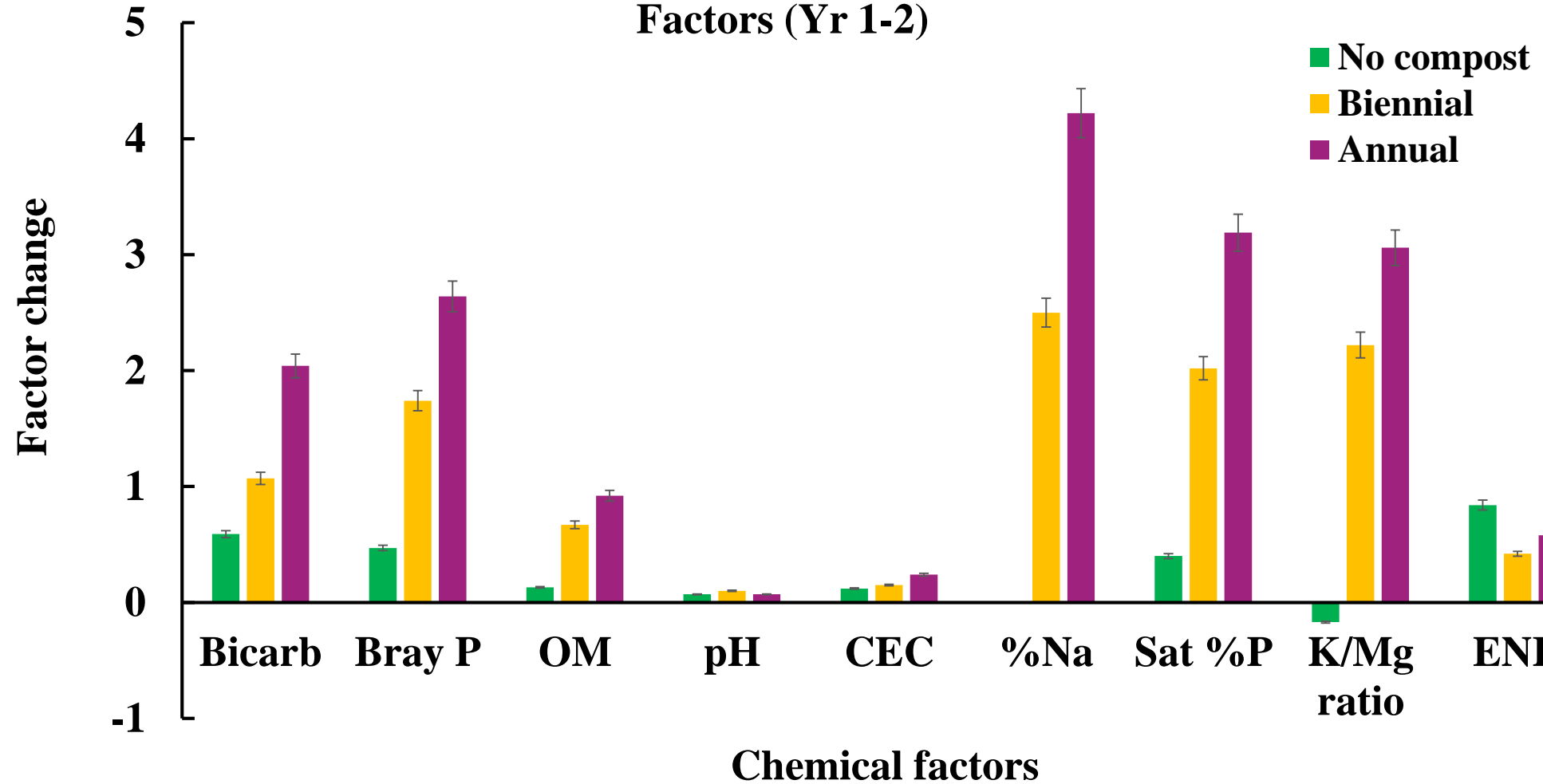


Fig. 2. Effect of CQA-Tested Green Compost on Selected Chemical Factors (Yr 1-2)



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Reported Date: 2017-05-25 Printed Date: May 26, 2017

SOIL TEST REPORT

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Sample Number	Lab Number	Organic Matter	Phosphorus - P ppm Bicarb	Phosphorus - P ppm Bray-P1	Potassium K ppm	Magnesium Mg ppm	Calcium Ca ppm	Sodium Na ppm	pH	CEC meq/100g	Percent Base Saturations				
									pH	Buffer	% K	% Mg	% Ca	% H	% Na
001	88909	2.4	40 H	65 H	114 M	400 M	4840 VH	11 VL	8.5	27.8	1.1	12.0	87.0		0.2
002	88910	3.9	72 H	180 H	700 VH	435 M	4280 H	31 L	8.4	26.9	6.7	13.5	79.5		0.5
003	88911	4.8	86 H	233 H	1222 VH	425 M	4150 M	102 H	8.7	27.8	11.3	12.7	74.6		1.6

Sample Number	Sulfur S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Soluble Salts ms/cm	Saturation %P	Aluminum Al ppm	Saturation %Al	Nitrate Nitrogen NO3-N ppm	K/Mg Ratio	ENR	Field ID
001	7 VL	4.2 M	85 VH	31 H	0.6 M	1.0 M		5 M	23	0.0 G		0.09	36	
002	10 VL	9.3 H	101 VH	40 H	1.2 H	1.7 H		15 H	37	0.0 G		0.50	51	
003	15 VL	11.0 VH	100 VH	44 H	0.9 M	2.0 H		20 H	40	0.0 G		0.89	61	

OE VL - VERY LOW, L - LOW, M - MEDIUM, H - HIGH, VH - VERY HIGH, G - GOOD, MA - MARGINAL, MT - MODERATE PHYTO-TOXIC, T - PHYTO-TOXIC, ST - SEVERE PHYTO-TOXIC

SOIL FERTILITY GUIDELINES (lbs/ac)

Sample Number	Crop	Yield Goal	Lime Tons/Acre	N	P2O5	K2O	Mg	Ca	S	Zn	Mn	Fe	Cu	B
001	Market Garden		0.0	150	80	395	10	0	40	4.5	0	0	2	1.0
002	Market Garden		0.0	140	80	0	10	0	35	2.0	0	0	0	0.0
003	Market Garden		0.0	135	80	0	10	0	30	1.0	0	0	1	0.0

The results of this report relate to the sample submitted and analyzed.

* Crop yield is influenced by a number of factors in addition to soil fertility.

No guarantee or warranty concerning crop performance is made by A & L.

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Additional information available upon request

Results Authorized By:

Ian McLachlin, Vice President

Fig. 3. Effect CQA-Tested Greenbin Compost on Lettuce (left) and Carrot (right) Plants

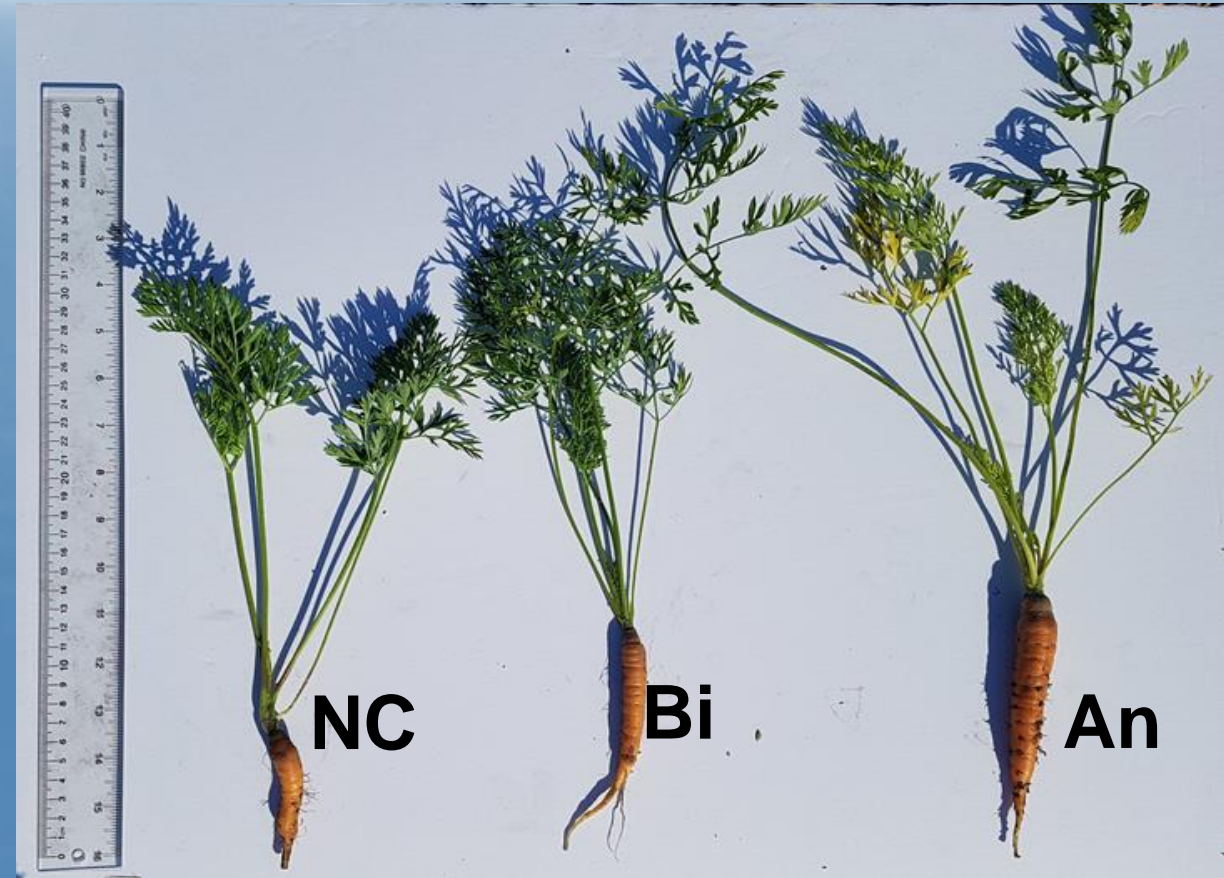


Fig. 4. Effect CQA-Tested Greenbin Compost on Bean Plants

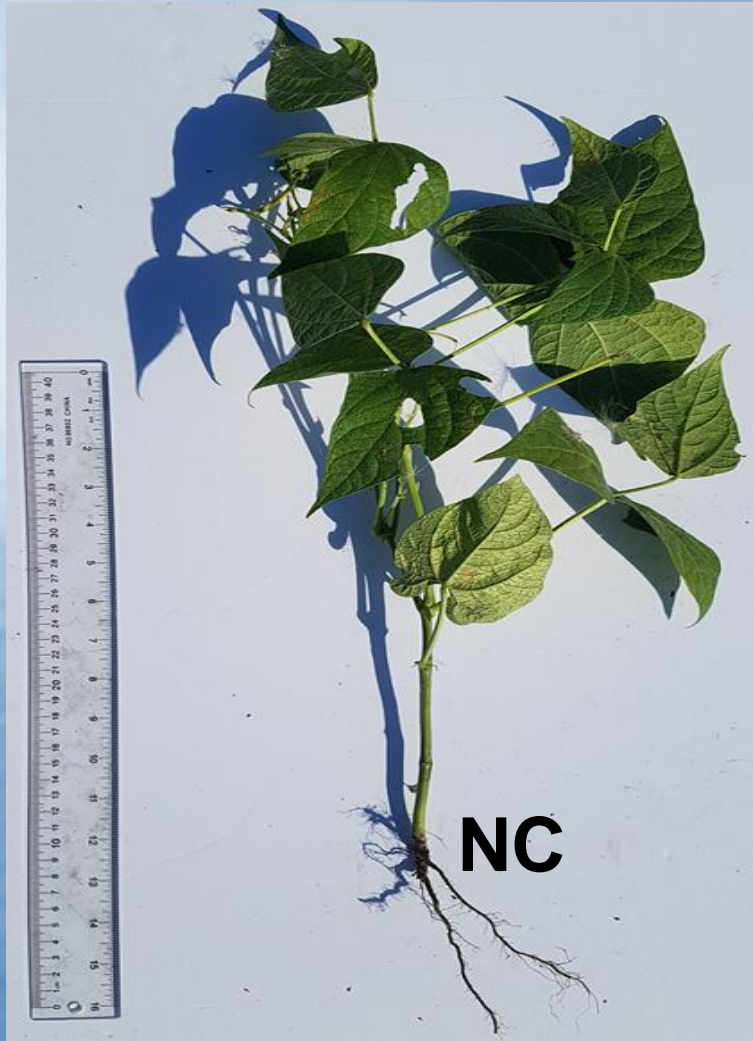
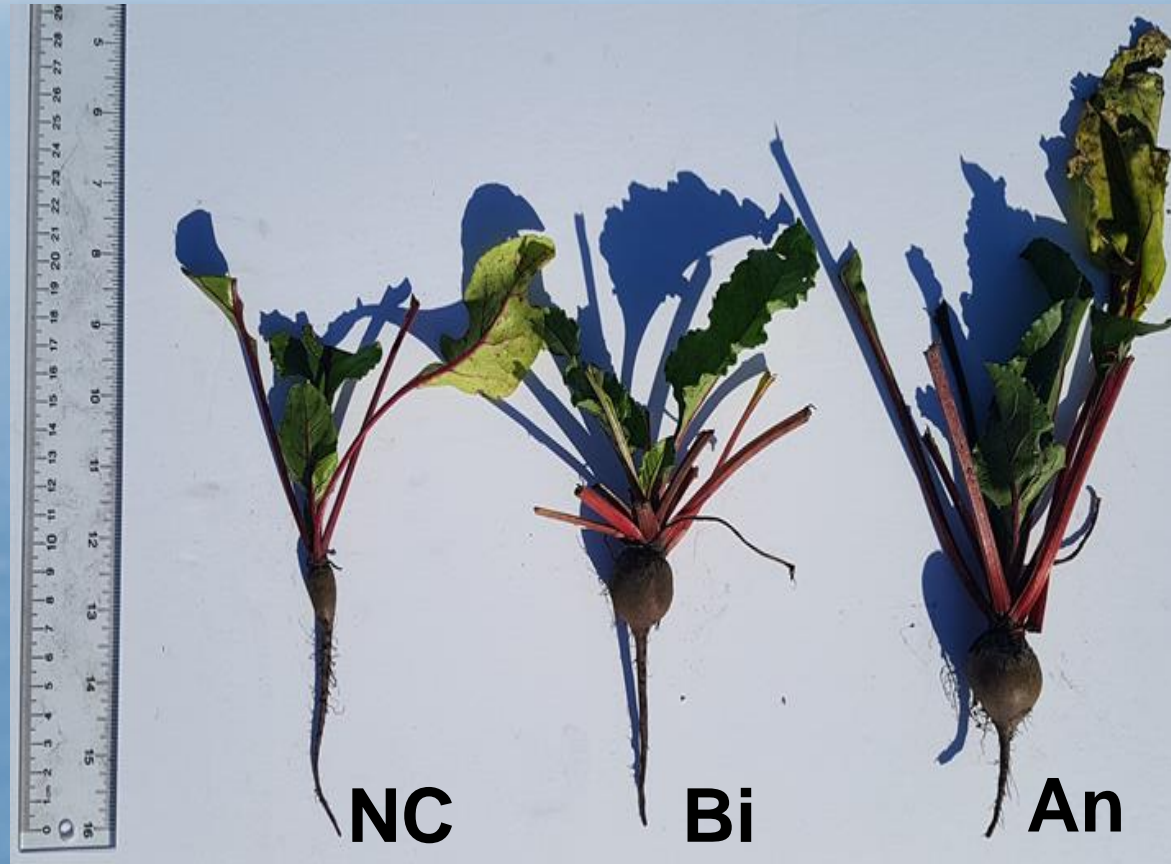
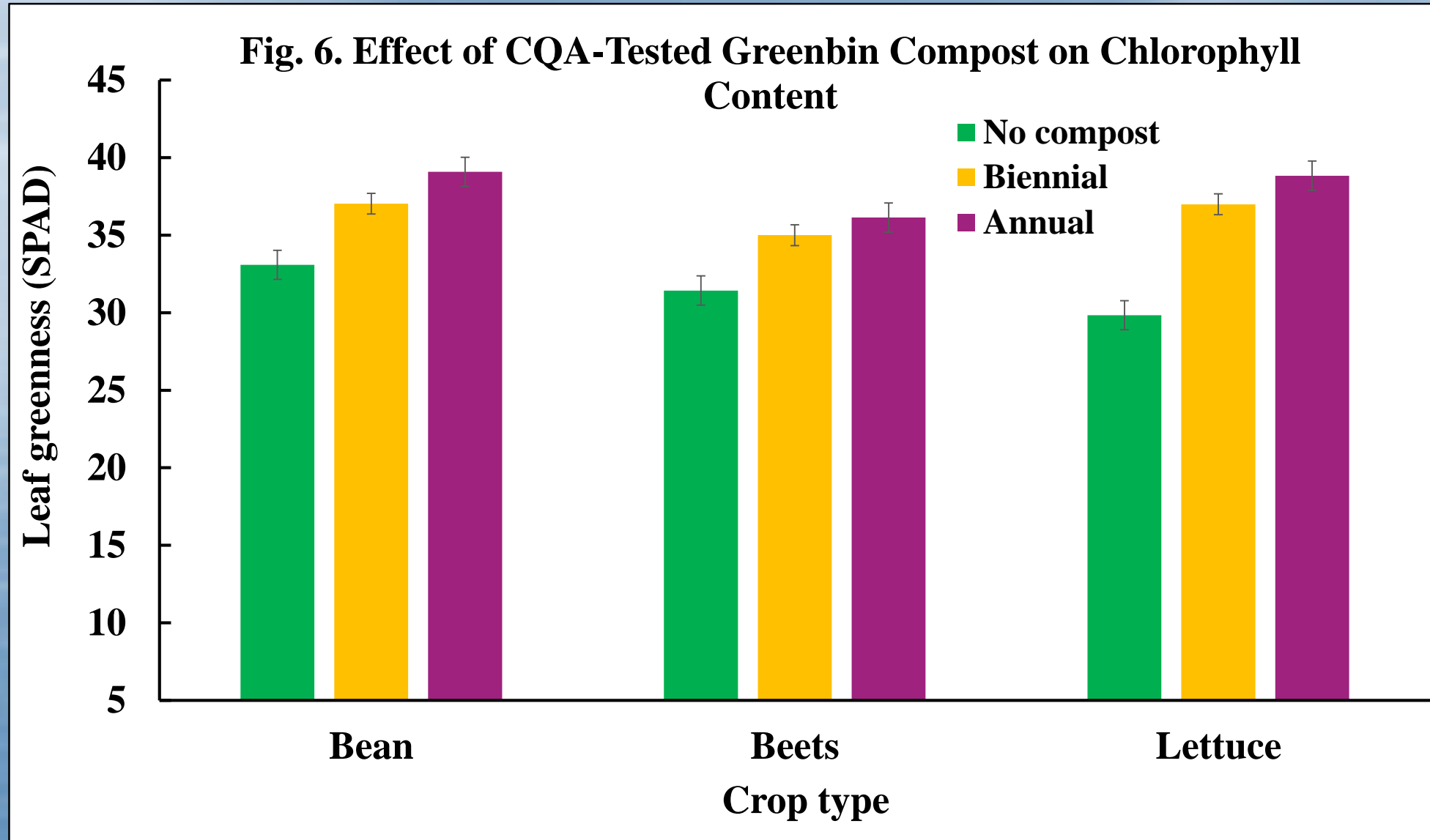


Fig. 5. Effect of CQA-Tested Greenbin Compost on Beets





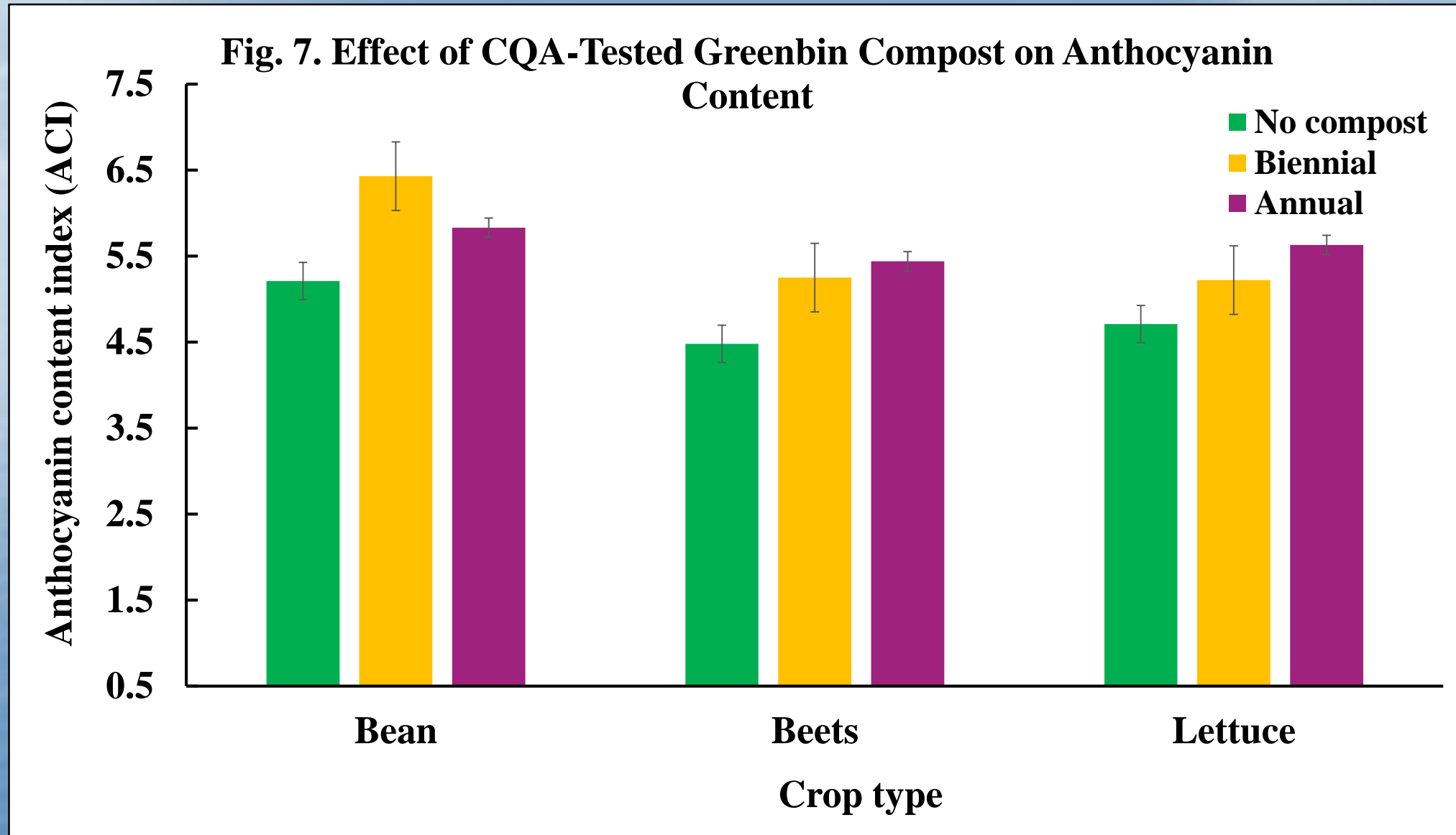
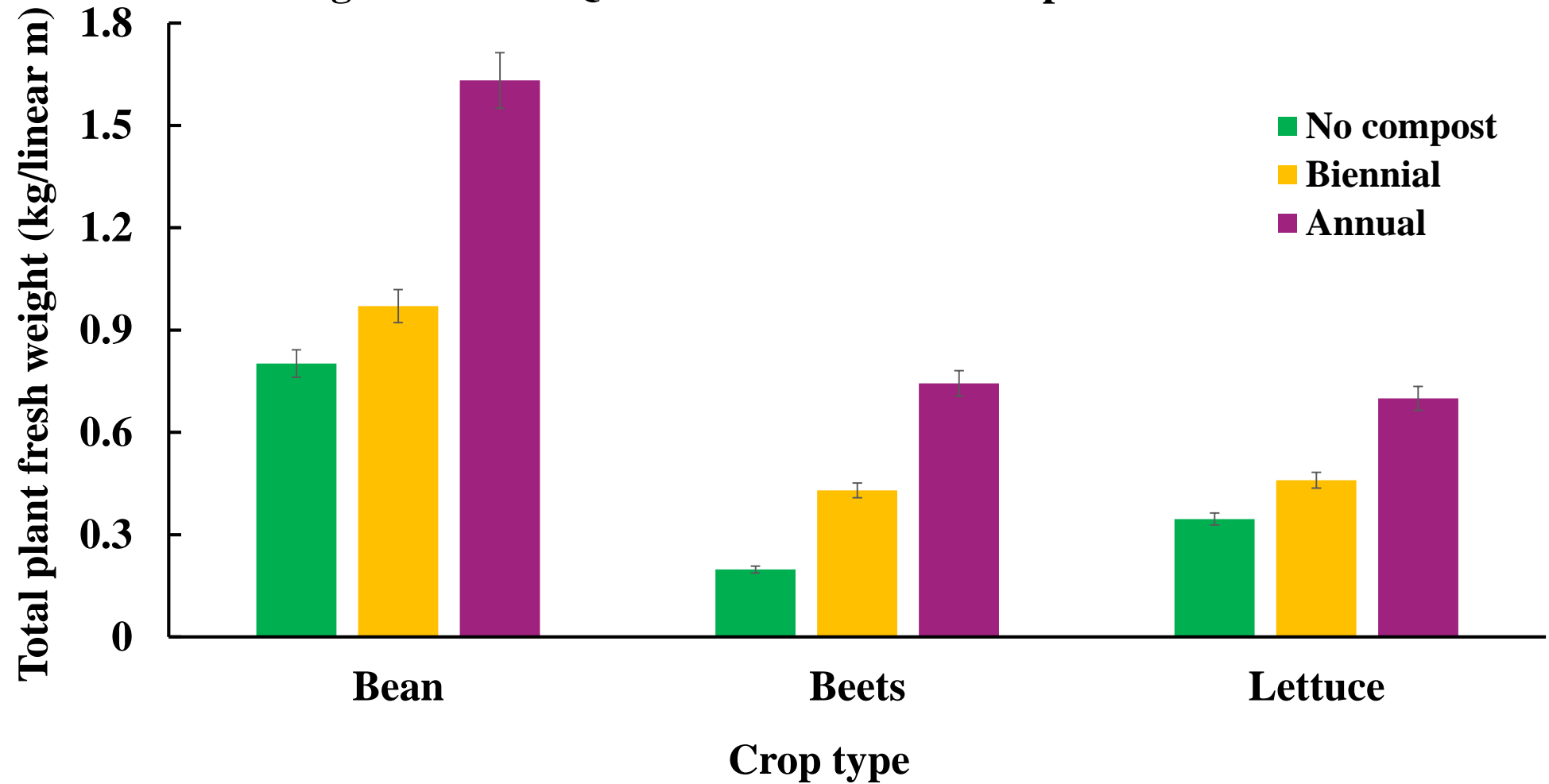
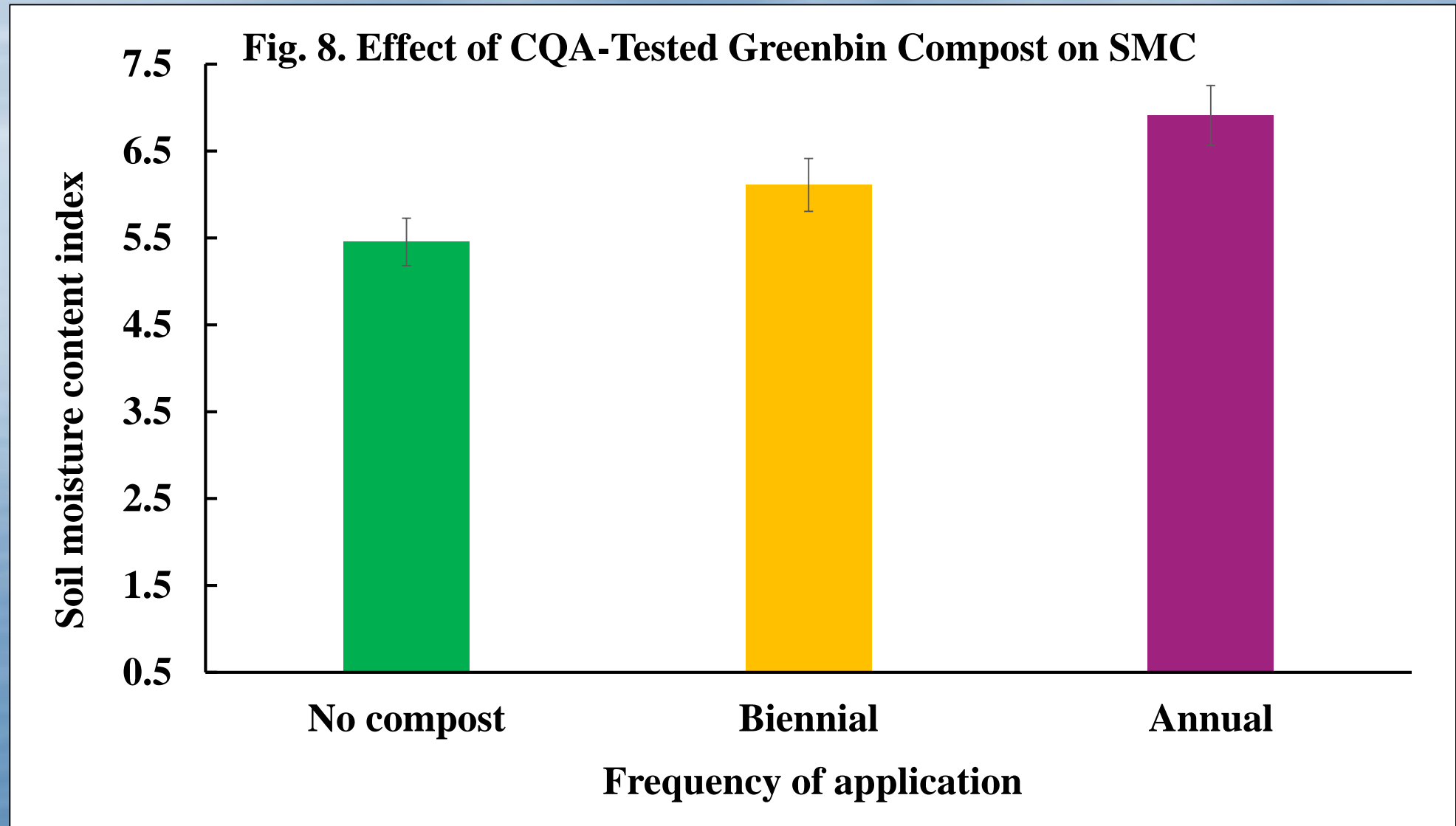


Fig. Effect of CQA-Tested Greenbin Compost on Plant Growth





SUMMARY

- Differences between treatments were obvious
- SOM & nutrients: annual>biennial>no compost
- Plant growth & health: annual>biennial>no compost
- Soil MC: annual>biennial>no compost

FUTURE PLANS & ACTIVITIES

- Yield data will be compiled
- Proximate analysis (& bioactive compounds) will be performed
- Metagenomics studies in progress
- Nutrient residue assessment
- Economic analysis will be carried out

ACKNOWLEDGEMENT



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