



**IOWA STATE UNIVERSITY**

Department of Horticulture

**Utilizing a Hydroponic Food Production Course to Increase Student Awareness and Understanding of Food Security**

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# Hydroponic food crop production

- Production of food crops in controlled environments is increasing
- Hydroponic systems are the most common method of producing food in controlled environments
- A new course was developed to include hydroponic food crop production in the Horticulture Curriculum at Iowa State University

# HORT 331- Hydroponic Food Crop Production



Can a hydroponic food crop production course be used to increase knowledge of food security?

# Partnership with Food at First



# Approach

- Three lecture periods with focused on food security-related content
  - Food at First introduction and discussion with Director
  - Lecture on
  - Post-course discussion on the lab activities
- Institutional Review Board-approved assessments
  - Pre- and post-course self-assessment characterizing perception of food security knowledge
  - Quiz with questions pertaining to food security

Did the students perceive their understanding of food security increase?

# Results- Self-assessment

<b>Question</b>	<b>Pre</b>	<b>Post</b>	<b>Sig.</b>
I can define the term “food security”.			
I can describe how food security impacts individuals, families, and communities.			
I can list the economic and societal factors that contribute to food security.			
I know what health issues are frequently related to food security			
I can list, and define, the four pillars of food security.			



# Results- Self-assessment

Question	Pre	Post	Sig.
I can define the term “food security”.	3.5 <sup>z</sup>		
I can describe how food security impacts individuals, families, and communities.	3.3		
I can list the economic and societal factors that contribute to food security.	3.1		
I know what health issues are frequently related to food security	3.4		
I can list, and define, the four pillars of food security.	2.2		

<sup>z</sup>1 = strongly disagree, 3 = not sure; and 5 = strongly agree

# Results- Self-assessment

Question	Pre	Post	Sig.
I can define the term “food security”.	3.5 <sup>z</sup>	4.6	
I can describe how food security impacts individuals, families, and communities.	3.3	4.4	
I can list the economic and societal factors that contribute to food security.	3.1	4.4	
I know what health issues are frequently related to food security	3.4	4.3	
I can list, and define, the four pillars of food security.	2.2	3.5	

<sup>z</sup>1 = strongly disagree, 3 = not sure; and 5 = strongly agree

# Results- Self-assessment

Question	Pre	Post	Sig.
I can define the term “food security”.	3.5 <sup>Z</sup>	4.6	*** <sup>Y</sup>
I can describe how food security impacts individuals, families, and communities.	3.3	4.4	***
I can list the economic and societal factors that contribute to food security.	3.1	4.4	***
I know what health issues are frequently related to food security	3.4	4.3	***
I can list, and define, the four pillars of food security.	2.2	3.5	***

<sup>Z</sup>1 = strongly disagree, 3 = not sure; and 5 = strongly agree

<sup>Y</sup>\*\*\* = significant at  $P \leq 0.001$

Did the students understanding of food security increase?

# Results- Quiz

<b>Percentage correct</b>		
<b>Pre</b>	<b>Post</b>	<b>Sig.</b>

# Results- Quiz

Percentage correct		
Pre	Post	Sig.
59 <sup>z</sup>		

<sup>z</sup>Analyses were performed on the arcsine of the square root of percentages. Non-transformed percentages are presented.

# Results- Quiz

Percentage correct		
Pre	Post	Sig.
59 <sup>z</sup>	75	

<sup>z</sup>Analyses were performed on the arcsine of the square root of percentages. Non-transformed percentages are presented.

# Results- Quiz

Percentage correct		
Pre	Post	Sig.
59 <sup>z</sup>	75	***

<sup>z</sup>Analyses were performed on the arcsine of the square root of percentages. Non-transformed percentages are presented.

Y\*\*\* = significant at  $P \leq 0.001$



# Conclusions and future directions

- Our hydroponic food production course was successful in increasing student understanding of food security
- This will be repeated this coming fall
- Based on student responses, an additional volunteer shift will be added
- An additional lecture period on food security may be included

# Acknowledgements

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**Questions?**