High School Teachers' Beliefs of Sustainable Agriculture and the Extent Teachers Teach Sustainable Agriculture in the North Central Region

Matthew Muma
e-mail**:** mumax003@umn.edu
Tel. 832-576-3406

Robert Martin
Professor & Head of Department
Department of Agricultural Education and Studies
Iowa State University
217A Curtiss Hall
Ames, IA 50010
e-mail: drmartin@iastate.edu
Tel: 515-294-5872

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Abstract

Conner and Kolodinsky (1997) suggested that extension educator beliefs about sustainable agriculture (SA) may influence the teaching of SA to farmers and the design of professional training on SA. The purpose of this study was to determine agriculture teacher beliefs about SA practice and examine the extent to which teachers teach SA topics in high school agriculture curriculum in the North Central Region. A self-administered questionnaire sent to 844 teachers found teachers had beliefs supporting SA and taught SA topics moderately. Because teachers agree to SA concepts, teachers require access to curriculum materials and teaching innovations about SA to increase conceptual understanding and awareness of SA (Agbaje, Martin & Williams, 2001; Udoto & Flowers, 2001).

Literature Review

SA can provide a foundation for integrated instruction and application of science in agricultural education and address challenges in the agricultural sector (Williams & Dolliso, 1998). Beliefs about an object can influence cognition, affect and behaviors of individuals towards the object (Fishbein & Ajzen, 2003). However, information regarding teacher beliefs and extent to which teachers teach selected topics in SA is not available.

Methods and Procedures

The questionnaire instrument had 4 subscales and demographics: (1) SA beliefs, (2) selected practices in SA, (3) extent of teaching selected SA topics, and (4) extent of use of different teaching methods. The beliefs subscale was based on Alternative-Conventional Agricultural Paradigm (ACAP) scale (Beus & Dunlap, 1991). Cronbach's coefficients alpha from a pilot study on teachers ranged between .82 and .95. 844 teachers were selected from a population of 2,904 teachers in 12 North Central Region States by stratified random sampling. Dillman's (2000) Tailored Design method was used for data collection. Questionnaire return rate was 28%. No statistical significant difference was found between early and late respondents on the main research variables. Results are generalized to the population of study (Tables. 1, 2).

Results

1. Teachers, overall, agreed with statements supporting concepts about SA, emphasizing its ecological and social dimensions.
2. Teachers relatively positively perceive selected SA practices
3. Overall, teachers only teach about SA moderately, rating topics they teach similarly
4. Teachers mainly used traditional teaching methods; used experiential teaching methods only to a low to moderate extent
5. There is a substantial positive linear relationship between SA concepts and selected practices only, but a negligible to low relationships with other variables

Table 1. Top rated concepts about SA and rankings

SA Belief Statement	Mean	Rank	SD
Healthy soil is important for SA	4.24	1	0.90
SA conserves natural resources for the future	4.14	1/2	0.88
Crop rotation is important to SA	4.14	1/2	0.98
SA promotes recycling of renewable resources	3.93	2/3	0.82
SA values nature for its own sake	3.93	2/3	0.92
Extension knowledge is important for success of SA	3.93	2/3	0.80
Exchange of local knowledge promotes SA	3.88	2/3	0.77
Integrating crops with livestock promotes SA	3.86	3/4	0.74
Local farming practice impacts success of SA	3.85	3/4	0.89

Note: SA = Sustainable Agriculture; SD = Standard Deviation

Table 2. Top rated means, and standard deviations for individual items regarding the extent to which teachers taught selected SA topics

SA Belief Statement	Mean	Rank	SD
Soil test	4.10	1	0.93
Wildlife conservation	3.77	2	1.00
Crop rotation	3.70	2/3	1.02
Food safety	3.64	2/3	1.05
Water quality	3.57	2/3	1.01
Use of animal manure	3.51	2/3	1.06
Reduced tillage	3.46	3	1.13
Integrated pest management	3.45	3	1.08
Renewable sources of energy	3.43	3	1.03

Note: SA = Sustainable Agriculture; SD = Standard Deviation

Conclusions and Recommendations

1. Teachers' beliefs about SA do not influence the extent to which teachers teach SA topics
2. Perceptions about selected SA practices can influence the extent to which teachers teach selected topics in SA
3. The extent to which agriculture teacher is likely to teach SA may be better determined from perceptions of selected practices than from beliefs about SA
4. Because teachers agree to SA concepts, teachers require access to curriculum materials and teaching innovations about SA to increase conceptual understanding and awareness of SA

References

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