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Turfgrass Industry Practitioners and the Pesticide Label

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Abstract: A seminar for green industry professionals was used to conduct a survey on the use and perception of the pesticide label. The audience was composed of those in lawn care/grounds maintenance, golf course turfgrass management, and other areas (e.g., sports turf, parks and recreation, etc.). Overall, turfgrass professionals among all three industry segments are well-informed of their responsibilities for the legal and safe use of pesticides, although industry personnel could improve their practice of keeping up with pesticide label changes and revisions.

Introduction

Pesticide products commonly applied to turfgrasses maintained as lawns, golf courses, athletic fields, and other segments of the green industry include fungicides, herbicides, insecticides, and plant growth regulators (Beard, 2002; Leslie, 1994; Watschke, Dernoeden, & Shetlar, 1995). Although farmers' perception and use of pesticide labels has been reported (Prochaska & Norland, 1998), little information is available about the perceptions and use of the pesticide label among turfgrass practitioners in the green industry (Leslie, 1994).

Additionally, there is a need to inform the public that the turf professional is well-educated and experienced with pesticide safety and use issues, which should be an overall benefit to the turfgrass management profession by fostering a positive and professional image (Dinelli, 1999; Fishel, 2006; Leslie, 1994; Norris, Caswell-Chen, & Kogan, 2003). The primary objective of the study reported here was to examine the perceived value of information contained on the pesticide label from the turfgrass industry practitioner perspective.

Materials and Methods

The annual Western Pennsylvania Turfgrass Conference and Trade Show (Monroeville, Pennsylvania) is an educational event for the turfgrass industry and is conducted by turfgrass science faculty of the Pennsylvania State University and the Pennsylvania Turfgrass Council. On February 26, 2008, a 30-minute seminar was presented, entitled "How to Read a Pesticide Label." Because continuing education credits for a pesticide applicator's license were available to all attendees for this seminar, it was anticipated that this event would be well attended. The majority of pesticide label information presented at the seminar was obtained from the Pesticide Education Program <<http://www.pested.psu.edu>>.

Prior to the start of the seminar, a one-page survey sheet was distributed to all in attendance. The audience was asked to complete the survey before the seminar began, and all surveys were collected at the conclusion of the seminar. The first question (Figure 1) was aimed at identifying the participants' turfgrass industry work segments or categories as either lawn care/grounds maintenance, golf, or other (e.g., sports turf, parks and recreation, etc.). The second question attempted to identify duration of work experience as grouped into five different ranges of 0 to 5, 6 to 10, 11 to 15, 16 to 20, or ≥ 21 years (Table 1).

The next three questions related to reading or using the pesticide label (Table 2). The responses were based on a five-point modified Likert-scale, where 1 = never, 3 = sometimes, and 5 = always (Likert, 1967). The final question attempted to gauge the participant's opinion on the 16 key components of a pesticide label (Table 3), and those responses were also based on a five-point modified Likert-scale (Likert, 1967). Survey data were subjected to analysis of variance and response means for each category (i.e., lawn care/grounds maintenance, golf, and other) were compared by Fisher's protected least significant difference test at $P < 0.05$ (Mead, Curnow and Hasted, 2003).

Results and Discussion

The seminar was attended by 117 individuals, with survey responses collected from 100 attendees for an 85.4% return rate. Fifty-nine percent of the audience work in lawn care/grounds maintenance, 23% in golf (e.g., golf course superintendents, assistants, spray technicians), and 18% other (e.g., athletic fields, school grounds, parks and recreation) (Figure 1). A variety in years of experience among all three industry segments was well-represented based on the survey responses. The majority of those who work in lawn care/grounds maintenance have less than 5 years of experience or ≥ 21 years of experience. For those working in golf course turfgrass management, the majority indicated ≥ 21 years of experience, whereas 16 to 20 years of experience was the most common response for those in "other" segment of the turfgrass industry (Table 1).

Figure 1.

The Proportion of Turfgrass Industry Practitioners Who Attended the How to Read a Pesticide Label Seminar at the 2008 Western Pennsylvania Turfgrass Conference and Trade Show, Categorized by Lawn Care/Grounds Maintenance, Golf, and Other (n = 100)

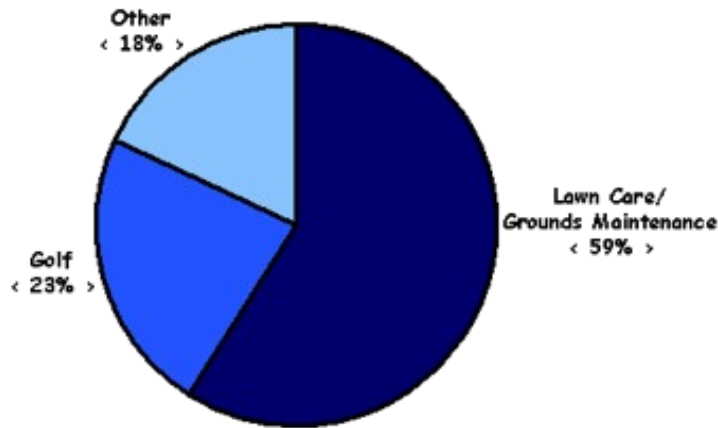


Table 1.

Work Experience of Turfgrass Industry Practitioners Who Attended the How to Read a Pesticide Label Seminar at the 2008 Western Pennsylvania Turfgrass Conference and Trade Show

Work Experience Category	0-5	6-10	11-15	16-20	≥21 Years
	%				
Lawn Care/Grounds Maintenance (<i>n</i> = 59)	39.0	6.8	16.9	13.6	23.7
Golf (<i>n</i> = 23)	17.4	13.0	21.7	17.4	30.5
Other* (<i>n</i> = 18)	5.6	11.1	22.2	38.9	22.2
*Sports turf, parks and recreation, etc.					

Nearly all survey respondents, regardless of industry segment, indicated they always (mean of 4.8 to 4.9 ratings range) read the pesticide label prior to using a product for the very first time (Table 2). Hence, reading the pesticide label prior to first-time use appears to be a well-adopted practice among these green industry professionals. However, among all three industry segments, the pesticide label is sometimes (mean of 3.4 to 3.6 ratings range) referred to or utilized when the product is used again or if there is prior experience with the product. Because slight or subtle changes are often made to pesticide labels, especially with application rates and target pests, a yearly review of label information should be considered by the practitioner (McCarty, Rodriguez, Bunnell, & Watzl, 2003). Many in the golf category (4.9) indicated they do copy information from the pesticide label for record keeping more often compared statistically to those in lawn care/grounds maintenance (3.6) or the "other" (3.7) categories (Table 2).

Table 2.

Survey Results of Turfgrass Industry Practitioners Who Attended the How to Read a Pesticide Label Seminar at the 2008 Western Pennsylvania Turfgrass Conference and Trade Show

Survey Questions	Lawn Care/Grounds Maintenance (n= 59)	Golf (n= 23)	Other* (n= 18)	Statistical Comparison***
	1 to 5 scale**			
When you use a pesticide product for the very FIRST TIME, do you typically read the pesticide label prior to using the product?	4.8 (0.4)	4.9 (0.3)	4.8 (0.5)	ns
When you use a pesticide product that you have used before, do you read the pesticide label prior to using the product?	3.4 (1.1)	3.6 (1.0)	3.4 (1.0)	ns
Do you copy information from the pesticide label to include in your pesticide application records and documentation?	3.6 (1.4)	4.4 (1.2)	3.7 (1.3)	0.3
*Sports turf, parks and recreation, etc. **Mean responses based on a 1 to 5 scale, where 1 = never, 3 = sometimes, and 5 = always (standard deviation in parentheses). ***Mean responses for each category per question were compared by Fisher's protected least significance difference (LSD) test at $P \leq 0.05$; where ns = not statistically significant and a LSD value indicates statistical significance among the means.				

Among the 16 components of the pesticide label, only responses from two items were statistically different among the three industry segments (Table 3). Participants in the "other" category indicated a greater importance (4.7) towards the signal word information than those in the golf (4.0) or lawn care/grounds maintenance (4.0) categories. Perhaps those in the "other" segment are concerned about the perceived need to be more cautious about restricted use pesticides in areas accessible to the public (Leslie, 1994), although those in the lawn care/grounds maintenance and golf also work with the public (Beard, 2002; Dinelli, 1999). Whereas those in golf (4.0) indicated a statistically greater importance towards the EPA registration number versus those in lawn care/grounds maintenance (3.4) or other (3.3). Those in golf may be required to keep better pesticide application records, and therefore seek that EPA number on the label to include in their log books (Leslie, 1994; McCarty et al., 2003).

Table 3.

Survey Results of Turfgrass Industry Practitioners Who Attended the How to Read a Pesticide Label Seminar at the 2008 Western Pennsylvania Turfgrass Conference and Trade Show, Part Two

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Survey Question: What information on the pesticide label is most important to you?	Lawn Care/Grounds Maintenance (n= 59)	Golf (n= 23)	Other* (n= 18)	Statistical Comparison***
	1 to 5 scale**			
Restricted-use pesticide identification.	4.5 (0.8)	4.5 (0.6)	4.3 (1.2)	ns
Statement of pesticide classification.	3.8 (1.1)	4.0 (0.8)	4.1 (1.2)	ns
Product trade name.	3.6 (1.2)	3.6 (1.0)	3.2 (1.0)	ns
Active (common/chemical) name.	4.0 (1.2)	4.4 (0.8)	4.1 (0.9)	ns
Inert ingredients.	2.7 (1.3)	2.7 (1.2)	2.6 (1.0)	ns
Signal word.	4.2 (0.9)	4.0 (1.0)	4.7 (0.6)	0.3
Statement for medical treatment.	4.0 (1.1)	4.3 (1.0)	4.4 (0.7)	ns
EPA pesticide registration number.	3.4 (1.3)	4.0 (1.4)	3.3 (1.4)	0.2
EPA manufacturer establishment number.	3.0 (1.3)	2.7 (1.4)	2.4 (1.1)	ns
Other precautionary statements.	3.9 (1.2)	3.8 (0.8)	4.0 (0.8)	ns
Hazards to humans and domestic animals.	4.5 (0.9)	4.4 (1.0)	4.7 (0.6)	ns
Hazards to the environment.	4.3 (1.0)	4.4 (0.90)	4.5 (0.7)	ns
Physical or chemical hazards.	4.4 (0.9)	4.4 (0.9)	4.6 (0.6)	ns
Directions for use and product application rates.	4.8 (0.4)	4.9 (0.3)	4.9 (0.2)	ns
Re-entry statement.	4.1 (1.0)	4.3 (0.90)	4.4 (0.8)	ns
Storage and disposal information.	3.9 (1.0)	4.2 (0.9)	4.2 (0.9)	ns

*Sports turf, parks and recreation, etc.
**Mean responses based on a 1 to 5 scale, where 1 = not important, 3 = sometimes important, and 5 = very important (standard deviation in parentheses).
***Mean responses for each category per question were compared by Fisher's protected least significance difference (LSD) test at $P \leq 0.05$; where ns = not statistically significant and a LSD value indicates statistical significance among the means.

Across all three industry segments, the items most frequently indicated as being very important (≥ 4.5) include restricted-use pesticide information, information on hazards to humans or domestic animals, and directions for use and product application rate information. Overall, that the knowledge reflected from the survey responses (Table 2) among all three industry segments is not statistically different indicates good and uniform knowledge about pesticide use among all turfgrass industry practitioners.

Summary

In conclusion, results from this survey indicate that turfgrass professionals appear to be well informed of their responsibilities for legal and safe use of pesticides. Also, those green industry practitioners have incorporated this information into their daily routine in order to use pesticides safely and also correctly to be environmentally responsive. Although Extension provides seminars, fact-sheets, and other information on pesticides and pesticide-related issues, future research should explore the impact or influence of Extension education programs on pesticide use in the green industry, especially with regard to how green industry practitioners review pesticide label information and keep up with changes to the pesticide label.

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