Non-English Language Needs for Pesticide Safety Education

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Abstract

Changes in the demographics of the United States agricultural workforce, specifically occupations requiring employees to handle pesticides, or work in areas where pesticides have been applied, have led to increased needs for non-English language training materials. A study was performed to assess the linguistic needs of these agricultural employees. Results of this study indicate a need for development of pesticide safety materials in many of the over 50 non-English languages spoken or read by agricultural workers.

Keywords: pesticide, workers, non-English, language, safety, education, employees

Introduction

Over the past 20 years, the United States (U.S.) has become a more ethnically and linguistically diverse nation with minority populations growing at a rate 13 times that of the English-speaking Caucasian population (U.S. Census Bureau, 2003). In many states, this diverse pattern is also reflected in the agricultural workforce, including occupations that require employees to handle pesticides or to work in areas where pesticides have been applied.

Several members of the American Association of Pesticide Safety Educators (AAPSE), a group of national leaders in pesticide safety education, training, and certification, observed these changes in the agricultural workforce and recognized a need for pesticide safety information provided in non-English languages. As a result, AAPSE formed a committee on Non-English Language Materials for Pesticide Safety Education (NELM-PSE), and charged the committee with studying the language needs throughout the U.S., the U.S.-affiliated islands, and Native American communities. The NELM-PSE committee initiated a study designed to quantify the languages spoken by agricultural groups working with and around pesticides. Concurrently, the committee is also cataloging pesticide safety educational resources available in non-English languages, developing a bilingual English and Spanish pesticide terminology lexicon, and exploring funding sources and services for the translation of pesticide safety information into multiple languages.

The NELM-PSE committee is comprised of the following pesticide safety educators and regulatory officials: Jennifer Weber (chair), Arizona Department of Agriculture; Peyam Barghassa, North Carolina Department of Agriculture and Consumer Services; Jeffrey Jenkins, Oregon State University; Pablo A. Kálnay, University of Illinois - Springfield Extension Center; Gerald Kinro, Hawaii Department of Agriculture; Bruce E. Paulsrud, University of Illinois; Myron Shenk,

Oregon State University; Hugh Smith, Hawaii Agricultural Research Center; Suzanne M. Snedeker, Cornell University; Sabina F. Swift, University of Hawaii at Manoa; Flor Tovar, Washington State Department of Agriculture; and, Wade Trevathan, Oregon State University.

Background

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), passed in 1972 and since amended, made the pesticide label the law. It also created a Restricted-Use-Pesticide (RUP) category for those pesticides posing an elevated risk to humans and the environment. In order to use RUPs, pesticide applicators must become certified by demonstrating competency in the following areas: pest identification, pesticide regulations, pesticide labels, pesticide safety, and environmental protection. FIFRA also allows individual states to establish their own pesticide programs under the supervision of the U.S. Environmental Protection Agency (USEPA). The agency within a cooperating state's government assuming responsibility for pesticide programs is known as the 'state lead agency' (SLA).

A major part of any state's pesticide program is the applicator certification portion in which SLAs certify pesticide applicators in the use of RUPs. Since it is vital to train applicators how to safely use RUPs, Pesticide Safety Education Programs (PSEPs) have been created throughout the nation; these programs are carried out by state Land-Grant Universities under an agreement with the SLA. PSEPs have become an important part of states' overall certification and training efforts, contributing a large portion of the resources and instruction base necessary to provide training to current and prospective certified pesticide applicators.

In 1992, USEPA promulgated the Worker Protection Standard (WPS) to protect agricultural employees from the hazards of pesticides. A large component of WPS is the training of employees in pesticide safety practices. This has created another dimension beyond providing instruction for certified applicators; it includes providing training for non-certified employees who apply pesticides and those who work in areas where pesticides have been applied. Therefore, many states also include the mandated WPS farmworker training in their pesticide safety programs.

In addition to the above requirements, USEPA's Certification and Training Assessment Group (CTAG) recently proposed a multi-tiered classification system for pesticides that requires all persons who apply pesticides professionally to receive pesticide safety training (CTAG, 2003). CTAG members recognized this as an important step in assuring that all professional pesticide handlers receive information on the safe and effective use of pesticides.

Two issues are brought to the forefront by these requirements. The first is whether appropriate educational materials are available in languages the learners understand. Currently, the majority of pesticide safety information provided through SLAs and PSEPs is presented in English and Spanish. To date, this has served the needs of the majority of persons working in agriculture. The second issue is whether demand for pesticide safety education materials in certain languages

will shift locally or nationally in light of current and future migration and immigration patterns. NELM-PSE members theorize an increase in steady migration into and within the U.S., which in turn will create a larger demand for pesticide information in languages other than English and Spanish. An example of locally significant numbers is provided by Robert Boesch of the Hawaii Department of Agriculture (personal communication, 1995). Mr. Boesch estimates that recent immigrants operate 20% of the smaller family farms in Hawaii. Many of these farmers lack proficient English skills and are therefore at risk of misinterpreting English-based pesticide use and safety information provided on pesticide product labels.

The AAPSE NELM-PSE committee members set about identifying gaps in pesticide safety resources and information for our diverse multilingual nation by researching the language needs of people who work with pesticides, or in areas where pesticides have been applied, throughout the U.S., U.S.-affiliated islands, and Native American communities.

Methodology

The committee developed a questionnaire to capture information on the languages spoken or read by people who work with pesticides. AAPSE members were asked to respond to the questionnaire for their geographical area. The survey, which was initially distributed by means of an AAPSE electronic mailing list, consisted of the following questions:

1) What is the name of the state, community, or island that your responses represent?
2) What languages are spoken and read by people who handle pesticides or work in areas where pesticides have been applied?
3) Do you see a need for the development of pesticide safety education materials in any of the languages that you have listed above?
4) If so, which languages are needed?

AAPSE members representing nearly 80 percent of states responded to the survey. To collect additional data within non-reporting states, or to address data gaps, committee members interviewed colleagues individually by telephone or in person during regional meetings. NELM-PSE committee members gathered language information from several U.S.-affiliated islands and Native American communities.

Results

The survey revealed that over 50 non-English languages are spoken or read by people who work with pesticides, or work in areas where pesticides have been applied in the U.S. (Table 1), the U.S.-affiliated islands (Table 2), and several Native American communities (Table 3). Responses from 46 states and U.S.-affiliated islands indicate that the non-English language spoken and read most often is Spanish. Hmong (8 states), Vietnamese (8 states), Chinese (7 states and U.S.-affiliated islands), Cambodian (6 states), and Korean (5 states and U.S.-affiliated islands) languages followed in frequency. Russian and Haitian-Creole were languages mentioned by respondents in four states. Figure 1 illustrates the distribution of six of these languages in the U.S. states.

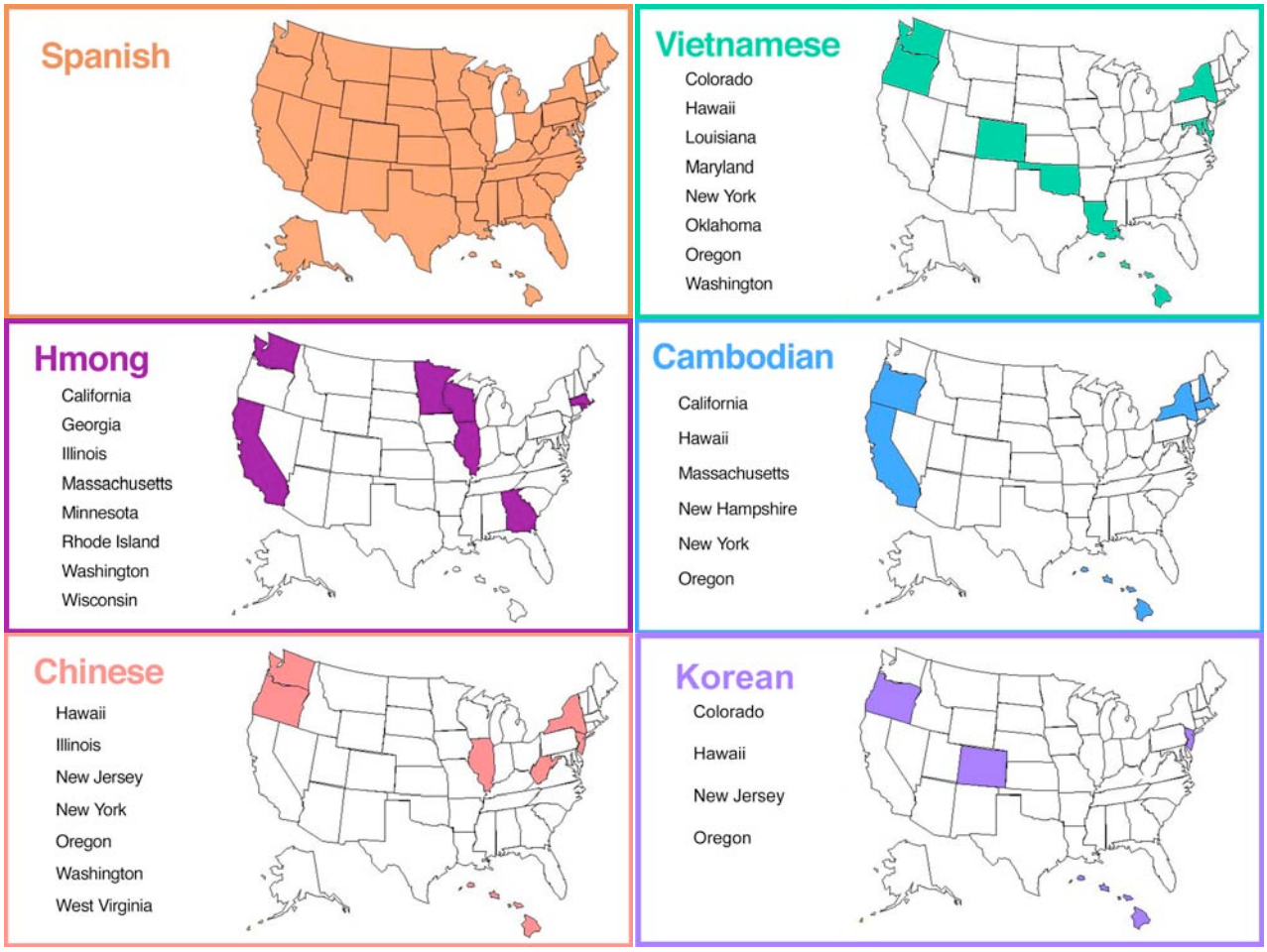

Figure 1. Distribution of Six Non-English Languages Read and Spoken in the Most Number of U.S. States.

Table 1. Non-English Languages Spoken and Read as Reported by State

STATE	LANGUAGE(S)
Alabama	Spanish
Alaska	Spanish
Arizona	Spanish
Arkansas	Spanish
California	Cambodian, Filipino, Hmong, Lao, Mien, Punjabi, Spanish
Colorado	Korean, Spanish, Vietnamese
Connecticut	Spanish
Delaware	No non-English languages were reported through the survey
Florida	Haitian-Creole, Spanish
Georgia	Hmong, Spanish
Hawaii	Cambodian, Chinese, Ilocano, Korean, Lao, Spanish, Tagalog, Thai, Tongan, Vietnamese, Visayan
Idaho	Spanish, Romanian
Illinois	Chinese, Czech, Hmong, Spanish
Indiana	No non-English languages were reported through the survey
Iowa	Spanish
Kansas	Spanish
Kentucky	Spanish
Louisiana	Spanish, Vietnamese
Maine	Filipino, French, Norwegian, Somali, Spanish, Swedish
Maryland	French, Russian, Spanish, Vietnamese
Massachusetts	Cambodian, Hmong, Portuguese
Michigan	Spanish
Minnesota	Hmong, Somali, Spanish
Mississippi	Spanish
Missouri	Spanish
Montana	Spanish
Nebraska	Spanish
Nevada	Spanish
New Hampshire	Cambodian, Spanish
New Jersey	Chinese, Czech, Hungarian, Japanese, Korean, Portuguese, Romanian, Russian, Spanish, Thai, Ukrainian
New Mexico	Spanish
New York	Bosnian, Cambodian, Chinese, French, Italian, Polish, Spanish, Vietnamese
North Carolina	Haitian-Creole, Spanish
North Dakota	Scandinavian, Spanish
Ohio	Spanish
Oklahoma	Spanish, Vietnamese
Oregon	Cambodian, Chinese, Japanese, Korean, Lao, Russian, Spanish, Thai, Vietnamese
Pennsylvania	Polish, Russian, Spanish
Rhode Island	French, Hmong, Portuguese, Spanish
South Carolina	Spanish
South Dakota	Spanish
Tennessee	Spanish
Texas	Spanish
Utah	Spanish
Vermont	Bosnian, French
Virginia	Haitian-Creole, Spanish
Washington	Chinese, Hmong, Punjabi, Spanish, Vietnamese
West Virginia	Haitian-Creole, Spanish
Wisconsin	Hmong, Spanish
Wyoming	Spanish

Table 2. Non-English Languages Spoken and Read as Reported by U.S.-affiliated Islands

U.S.-AFFILIATED ISLAND	LANGUAGE(S)
American Samoa	Samoan
Guam	Chamorro, Chinese, Chuukese, Filipino, Korean
Federated States of Micronesia, The Marshall Islands and Palau	Chuukese, Kosraean, Marshallese, Palauan, Pohnpeian, Yapese
Commonwealth of the Northern Mariana Islands (including Saipan)	Bangladeshi, Carolinian, Chamorro, Chinese (Cantonese and Mandarin were reported), Fijian, Tagalog
Puerto Rico	Spanish

Table 3. Non-English Languages Spoken and Read as Reported by Native American Communities

NATIVE AMERICAN COMMUNITY	LANGUAGE(S)
Communities in Northern Arizona	Navajo, Hopi, Tewa, Apache
Shoshone-Paiute Tribes of the Duck Valley Indian Reservation, Nevada	Paiute, Shoshone (but all speak English fluently)
Communities in Imperial County, California and Yuma County, Arizona	Spanish (farmworker crews with limited literacy skills)
Communities in Maine	Micmac (Mi'kmaq), Maliseet, Passamaquoddy
Communities in Oklahoma	Cherokee, Choctaw, Seminole, Creek, Chickasaw, Apache, Ponca, Oto (Otoe), Iowa (Ioway), Delaware, Arapaho, Cheyenne

While the number of non-English languages spoken and read does not necessarily indicate a need for materials in all languages, responses to the third survey question (*"Do you see a need for the development of pesticide safety education materials in any of the languages that you have listed above?")* were affirmative in many of the languages listed in Tables 1 through 3. Figure 2 illustrates the pesticide safety education material needs in non-English languages reported by three or more survey respondents.

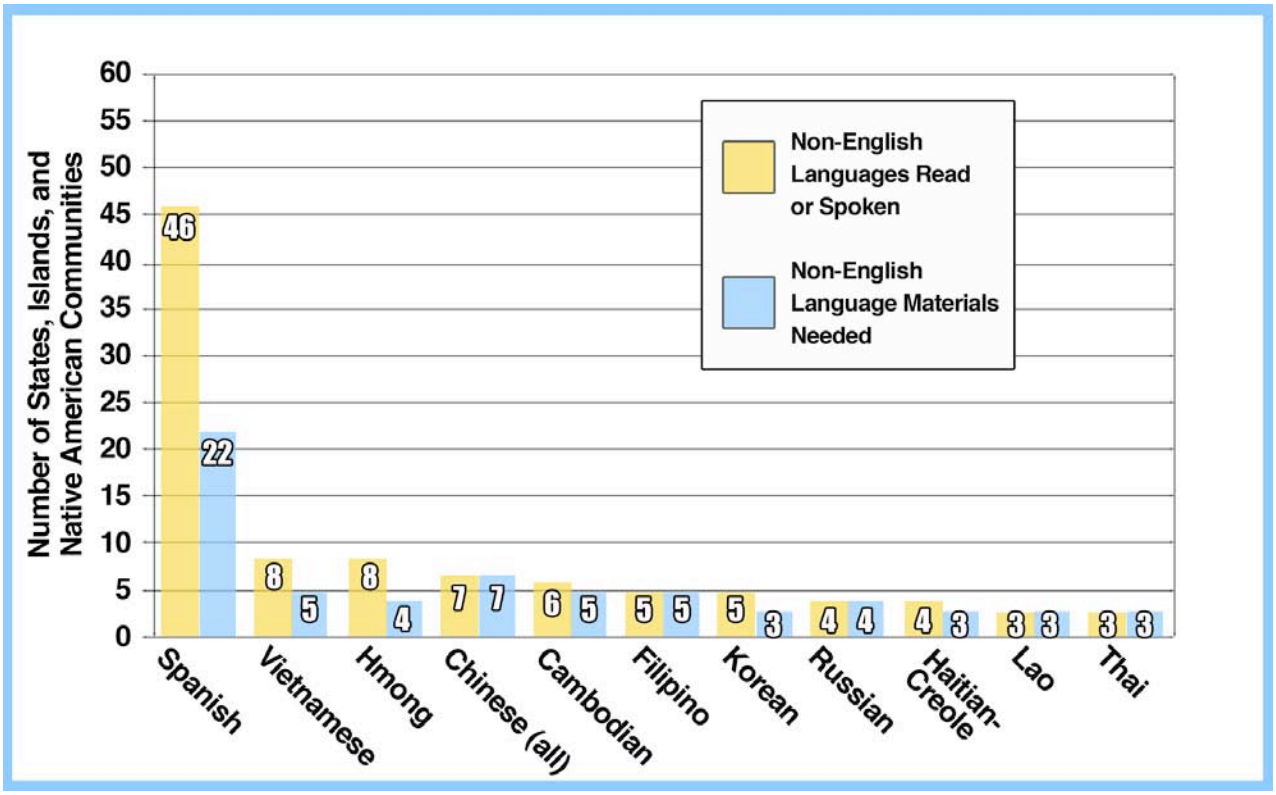

Figure 2. Pesticide safety education material needs in non-English languages reported by three or more survey respondents.

The survey results clearly identify gaps in pesticide safety and training materials available in non-English languages. A tremendous variation exists in the number and type of non-English language materials needed. For example, Texas reported a single need - Spanish-language materials - in order to serve their large pesticide handler and migrant fieldworker population. The much smaller state of New Jersey reported a need for pesticide safety resources in eleven languages. These demographics will have an impact on the priority placed on developing pesticide safety information within each state, U.S. affiliated-island, or Native American community.

The distribution of Spanish-speaking workers appears fairly uniform across the contiguous United States, as evidenced by the common need among most states for Spanish-language training materials. Other ethnic communities are not uniformly distributed so that individual states may have a wide range of language barriers. For example, while Illinois reported a need for pesticide training resources in Chinese, Czech, Hmong, and Spanish, there was no need for resources in non-English languages reported by its neighboring state, Indiana. Interestingly, very similar non-English language material needs were mentioned by non-abutting states Hawaii and Oregon. Each included Cambodian, Chinese, Korean, Lao, Spanish, Thai, and Vietnamese on their list of languages.

Due to variations in the way respondents identified the various Filipino languages, this data subset is presented separately in Table 4. The broader language category 'Filipino' may have been used to describe any of the 110 languages spoken on the islands. Similarly, 'Tagalog' may have been used since it was once proclaimed as the national language of the Philippines. The term 'Visayan' could reflect one of several languages (e.g. Cebuano, Waray, Hiligaynon) spoken in the Visayas, a group of Central Philippine islands (Ramos, 2002). Ilocano is a language spoken in Northern Luzon, the main island of the Philippines. Respondents from three states, Guam and the Commonwealth of the Northern Mariana Islands reported needs for pesticide training resources in various Filipino languages.

Discussion

The NELM-PSE study is the first national effort to assess the linguistic needs of people who work with pesticides or in areas where pesticides have been applied. The committee will continue gathering additional language and literacy information and will keep abreast of changes in pesticide resource needs by studying migration and immigration patterns of agricultural workers throughout the nation.

Table 4. Filipino Languages as Reported by States and U.S.-Affiliated Islands

RESPONSE	STATE OR U.S.-AFFILIATED ISLAND
Filipino	California, Guam, Maine
Ilocano	Hawaii
Tagalog	Commonwealth of the Northern Mariana Islands, Hawaii
Visayan	Hawaii

Language Data

While most states reported a general need for Spanish-language pesticide safety resources, survey-respondents from Florida expressed a desire for resources in specific Spanish dialects, indicating that Spanish-speakers in their state are immigrant families from the Dominican Republic, Puerto Rico, Mexico, various Caribbean islands, and South America. While other respondents reported needs within the larger category "Spanish", such dialect-specific needs are likely more widespread. Research on the differences between the pesticide-related terminology used by Spanish-speakers from various Latin American countries would be helpful in identifying potential resource gaps for those populations.

In a like manner, some respondents may have used broad categories for reporting "Chinese" and "Filipino" language needs, when more specific information would be useful in identifying resource gaps. Further research in this area would be helpful.

Data from this survey represents tribal communities in the Western region, Maine, and Oklahoma, which are only a small segment of all Native American communities. Information about the

languages spoken and read by a larger sample of persons working with pesticides on tribal lands would provide a more thorough representation of the pesticide safety resource needs in Native American communities.

Migration and Immigration Patterns

It is important AAPSE keeps abreast of immigration and migration patterns that could directly impact language trends and the need for new pesticide safety resources. A pertinent example is Hawaii's recent need for Spanish-language pesticide resources. When the 1992 Federal Worker Protection Standard was implemented in 1994 Hawaii was one of few states without the need for Spanish-language materials. At that time most of Hawaii's pesticide applicators and agricultural fieldworkers were Filipino (Ilocano-speakers) and Laotian. A sudden demand for Spanish-language resources occurred in Hawaii in the late 1990s when laborers from Spanish-speaking countries were contracted to assist with the coffee crop harvest.

In a similar example, over the last several years, California PSEP staff and SLA officials have been developing training programs and resources in Spanish to serve the needs of a large Mexican migrant fieldworker population. In the course of this project, California PSEP staff learned that some migrant fieldworkers and their families were immigrants from the Mexican state of Oaxaca, speak several indigenous languages, but very little Spanish.

Literacy Issues

Pathana Rattanasamay, Executive Director of Mutual Assistance Associations Center in Honolulu, Hawaii, found a wide range of language abilities within the Laotian farming community in Hawaii in 1999. She reported that some of the farmers with whom she worked were illiterate in their own language, while others had graduated from American high schools and colleges and were fluent in English. However, even with strong English language skills, many were unable to read and comprehend the more complex information found on pesticide labels.

Additional research on literacy issues is needed; a better understanding of the diverse language skills and educational backgrounds of people who work with or around pesticides can assist pesticide safety educators in designing effective methods and tools for extending pesticide safety information to pesticide handlers and fieldworkers.

Conclusion

The NELM-PSE committee members identified over 50 languages spoken or read by people who work directly with pesticides or in areas where pesticides have been applied throughout the U.S., U.S.-affiliated islands, and several Native American communities. This study reveals a strong need for the development of pesticide safety resources in Latin American, European, Asian, Southeast Asian, African, Pacific Island, and Native American languages. Results from this nationwide language survey can provide a basis for the acquisition of appropriate funding, expertise, and services to develop non-English language materials that can be used throughout the nation.

Acknowledgments

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