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LANGUAGE OF INSTRUCTION OF AGRICULTURAL INPUTS LITERATURE AND FARM APPLICATION FOR HIGHER YIELDS

JIRGBA, AONDOHEMBA GODWIN [1*] & ABON ISAAC [2]

[1, 2] Department of General Studies, Federal Polytechnic Wannune, Benue State, Nigeria.

***Corresponding Author**: JIRGBA, AONDOHEMBA GODWIN

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Abstract

For farmers to apply agricultural inputs effectively and safely, they must clearly understand the instructions provided in product literature. Proper comprehension enables them to maximize yield and quality while safeguarding the environment. However, the language used in these instructional materials is frequently scientific and technical. This study investigated whether fifty (50) farmers from Yandev clan in Gboko LGA understood the directions printed on labels and manuals of fertilizers, herbicides, and pesticides used on their farms. Findings revealed that although many farmers use agricultural chemicals, several struggle to interpret the instructions because of their technical nature. A number of respondents also indicated that they do not understand English. Half of the participants supported the translation of instructions into the vernacular. Based on these findings, it is recommended that agricultural input instructions be translated into indigenous languages, particularly Tiv in this context, to enhance comprehension. Additionally, agricultural extension workers should strengthen their efforts in educating farmers on the appropriate and efficient use of agricultural chemicals.

Key Words: *Agricultural Chemicals, Comprehension, Indigenous Language, Instruction.*

Introduction

The United Nations projects that the global population will reach nine billion by 2050 (Fertilizer Manual, June 2010). This rapid population growth places immense pressure on the agricultural sector to increase food production while minimizing environmental degradation. Consequently, science-driven and technology-oriented agriculture is widely regarded as essential for boosting productivity. Globally, attention has shifted toward integrating innovative technologies into farming systems. Modern agriculture now depends heavily on inputs such as improved seedlings, fertilizers, pesticides, and technical information. Farmers are guided in the use of these inputs either by agricultural extension personnel or by manuals and label instructions attached to the products.

Traditional farming practices are increasingly being replaced by modern approaches. Hatzios (1994), cited in Kuma et al. (2008), observes that modern agricultural practices, including herbicide application and the use of improved seedlings and fertilizers, are widely accepted because they provide cost-effective weed control and enhance productivity and crop quality. Nigeria is part of this global transition. In response to growing food demand and export opportunities, Nigerian farmers have increasingly adopted chemical inputs that were previously unfamiliar to them.

Farmers now apply chemical fertilizers to crops such as yam, cassava, and maize to improve yield and plant health. Nitrogen enhances vegetative growth, often indicated by lush green coloration, while phosphorus promotes root and seed development. Yousaf et al. (2017) emphasize that balanced fertilizer use is vital not only for high yields and quality production but also for environmental sustainability. Without fertilizers, a decline in food supply would be inevitable.

Pesticides are substances used to control pests and weeds (US Environmental, 2007) or “any chemical compound used to destroy harmful plants and animals” (Encyclopedia Americana, International Edition, 2006). The term encompasses herbicides, insecticides, nematicides, fungicides, rodenticides, disinfectants, repellents, and several others (Randal et al., 2013). Generally referred to as crop protection products, pesticides help safeguard plants

from insects, fungi, and weeds, thereby increasing yields (Encyclopedia Americana, International Edition, 2006).

Herbicides specifically eliminate unwanted plants or weeds, defined as plants growing where they are not desired (Agricultural Chemical User's manual, 2005). Their use reduces the labor required for manual weeding. Nevertheless, herbicides are toxic chemicals and must be applied strictly according to manufacturers' instructions. This underscores the necessity for farmers to clearly understand label directions before application.

Agricultural chemicals carry labels containing essential information such as trade name, common name, chemical composition, and dosage, mode of action, expiry date, and regulatory approval (e.g., NAFDAC registration number in Nigeria). Large-scale farms may also rely on detailed manuals.

Most of these instructions are written in English, Nigeria's official second language. However, many local Tiv farmers are literate only in the Tiv language. As Kuma et al. (2010) note, even individuals with good general English proficiency may struggle with scientific texts written in technical language. Nagy and Scott (2000) similarly observe that unfamiliar terminology and specialized concepts often impede comprehension.

This study therefore examines the language most suitable for farmers to understand agricultural input instructions, particularly chemical products, since proper understanding ensures effective application and improved productivity.

Language of Instruction of Agricultural Inputs Literature

Each professional discipline employs a specialized register. Agriculture, as a scientific field, uses technical language characterized by specialized terminology (Nagy & Scott, 2000). Many such terms are derived from Greek or Latin roots.

Consequently, the language used in agricultural input instructions is often highly specialized, limiting comprehension among non-professionals. For example:

Weeds Controlled: Annual, biennial and perennial grasses, broad leaves and sedges including *Imperata, Cynodon, Eupatorium, Cyperus, Pennistum,* and *Echinoclea spp* (Anhui Zhongshan Chemical Industry Co. Ltd).

Such condensed technical language creates reading difficulties (Kuma et al., 2010), especially for readers with limited vocabulary or background knowledge. Farmers would likely prefer simplified explanations suited to their context.

Objective

As Nigeria faces economic challenges due to declining oil revenue and the limitations of traditional farming, more individuals are embracing modern agricultural technologies. Non-professional farmers depend heavily on extension agents and written instructions for guidance. Since these instructions are provided in English, comprehension becomes crucial. Farmers who understand and follow label directions benefit from modern agriculture, while those who do not may experience losses. This study therefore investigated the language of instruction on fertilizers, pesticides, and herbicides to determine which language would best facilitate farmer comprehension.

Methodology

Fifty farmers from Yandev in Gboko LGA, Benue State, participated in the study. Data were collected through questionnaires addressing their use of agricultural inputs and their level of understanding of manufacturers' instructions. Responses were analyzed and presented as percentages.

Results and Discussion

Findings indicated that 24% had primary education, 16% secondary education, and 60% tertiary education. While 74% used seed-dressing chemicals, 98% used herbicides, and all respondents used fertilizers. Additionally, 76% used storage chemicals.

Although 80% reported understanding English well, 20% indicated limited or no proficiency. However, even some English-literate farmers struggled with technical terminology. For example:

> ***BEST: Cypermethrin 10% EC*** *(Pesticide)*
>
> ***Drug Therapy:*** *Administer intravenously phenobartital or*
>
> *Diphenyl Hydantion or their combinations, anti-convulsant drugs*
>
> *of DIAZEPAM group of drugs. Attention should be given to maintain*
>
> *respiratory ,cardiovascular and renal functions (Meghmani Organics Ltd)*

Such terminology is difficult for non-professionals to interpret.

Regarding alternative language preference, 50% of respondents supported the use of Tiv for better comprehension. Professionals such as trained agronomists showed less need for translation. However, since most farmers lack formal training, alternative language support is necessary. Okunnga (1979 cited by Kuma, 2007) notes that many Nigerian languages lack equivalents for scientific

concepts. Misinterpretation can have serious consequences, such as applying herbicides instead of insecticides and destroying crops (UIAA Minutes, July 2017).

Recommendations

Given that farmers widely use agricultural chemicals yet struggle with technical English instructions, manufacturers should translate label information into indigenous languages such as Tiv. Extension workers should also intensify farmer education on safe and effective chemical usage. Clear communication is essential for technology adoption and operational efficiency.

Conclusion

While local farmers increasingly adopt modern agricultural inputs, many cannot fully comprehend the technical language used on product labels. Incorrect application of these chemicals can harm both farmers and the environment. Translating instructions into indigenous languages and strengthening extension support will promote safer and more effective use of agricultural chemicals.

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Appendix

Table 1: Farmers Use of Agricultural Chemicals / Understanding of Instructions

S/No	Farming experience	Literacy level	Seed dressing	Herbicide application	Fertilizer	Storage chemical	Understanding level	Reason	Need alternative language	Language
1	< 10	1°	Y	Y	Y	Y	Not very well	I don't und. Eng.	Y	Tiv
2	21-30	3°	Y	Y	Y	Y	Very well	Agron	N	
3	21-30	2°	Y	Y	Y	Y	Very well	Und.Eng very well	N	
4	31-40	2°	Y	Y	Y	Y	Very well	Fairy Und.Eng.	Y	Tiv
5	10-20	1°	Y	Y	Y	Y	Very well	Fairy Und. Eng	Y	Tiv
6	10-20	1°	Y	Y	Y	Y	Not very well	Und.Eng very well	Y	Tiv
7	21-30	1°	Y	Y	Y	Y	Very well	Und. Eng very well	Y	Tiv
8	10-20	1°	Y	Y	Y	Y	Not very well	Fairy Und. Eng	Y	Tiv
9	21-30	1°	Y	Y	Y	Y	Very well	Fairy Und. Eng	Y	Tiv
10	21-30	1°	Y	Y	Y	Y	Very well	Und.Eng very well	Y	Tiv
11	21-30	2°	Y	Y	Y	Y	Very well	Und.Eng very well	N	
12	21-30	1°	Y	Y	Y	Y	Very well	I don't Und.Eng	Y	Tiv
13	21-30	3°	N	Y	Y	Y	Very well	Fairy Und. Eng	Y	Tiv
14	<10	3°	N	Y	Y	Y	Very well	Fairy Und. Eng	Y	Tiv
15	<10	3°	Y	Y	Y	N	Very well	Und Eng very well	N	
16	21-30	3°	Y	Y	Y	Y	Very well	Und. Eng Very well	N	
17	10-20	1°	Y	Y	Y	N	Not very well	Fairy Und. Eng	Y	Tiv
18	<10	3°	N	Y	Y	Y	Very well		N	
19	10-20	1°	Y	Y	Y	N	Not at all	I don't Und. Eng	Y	Tiv
20	31-40	3°	Y	Y	Y	Y	Very well	Fairy	Y	Tiv
21	21-30	3°	Y	Y	Y	N	Very well	Agron	N	
22	10-20	3°		N	Y	Y	Not very well	Fairy	Y	Tiv
23	10-20	3°	N	Y	Y	N	Very well	Fairy Und Eng	Y	Tiv
24	10-20	3°	N	Y	Y	N	Very well	Agron	N	
25	<10	3°	Y	Y	Y	Y	Very well	Und Eng very well	N	
26	<10	3°	N	Y	Y	Y	Very well	Und. Eng very well	N	
27	31-40	3°	N	Y	Y	Y	Very well	Und. Eng very well	N	

28	31-40	3°	N	Y	Y	Y	Very well	Und. Eng very well	N	
29	>40	3°	N	Y	Y	Y	Very well	Und. Eng very well	N	
30	>40	3°	N	Y	Y	Y	Very well	Und.Eng very well	N	
31	21-30	3°	Y	Y	Y	N	Very well	Und.Eng very well	N	
32	21-30	3°	Y	Y	Y	Y	Very well	Und. Eng very well	N	
33	21-30	1°	N	Y	Y	N	Not very well	I don't und Eng	Y	Tiv
34	10-20	3°	Y	Y	Y	N	Not very well	fairy und Eng	Y	Tiv
35	21-30	3°	Y	Y	Y	Y	Very well	Und Eng very well	N	
36	<10	1°	Y	Y	Y	Y	Not very well	I don't Und. Eng	Y	Tiv
37	21-30	3°	Y	Y	Y	N	Very well	Und. Eng very well	N	
38	<10	2°	Y	Y	Y	Y	Very well	Fairy Und Eng	Y	
39	10-20	3°	Y	Y	Y	Y	Very well	Fairy Und Eng	Y	Tiv
40	21-30	2°	Y	Y	Y	Y	Very well	Fairy Und Eng	Y	Tiv
41	21-30	2°	Y	Y	Y	Y	Very well	Und. Eng very	N	
42	21-30	2°	Y	Y	Y	Y	Very well	Und Eng very well	N	
43	<10.	3°	Y	Y	Y	Y	Very well	Und Eng very well	N	
44	<10	3°	Y	Y	Y	N	Very well	Agron	N	
45	21-30	3°	Y	Y	Y	N	Very well	Agron	N	
46	10-20	3°	Y	Y	Y	Y	Very well	Agron	N	
47	<10	1°	Y	Y	Y	Y	Very well	Fairy Und Eng	Y	Tiv
48	<10	1°	Y	Y	Y	Y	Very well	Fairy Und Eng	Y	Tiv
49	<10	2°	Y	Y	Y	Y	Very well	Fairy Und Eng	Y	Tiv
50	21-30	3°	Y	Y	Y	N	Very well	Und. Eng very well	N	

Note: 1° =Primary 2° = Secondary 3° = Tertiary Y=Yes N=No Agron = Agronomy

Table 2: Number of Farmers and their Percentages for Various Variables

	Literacy level			Seed dressing		Herbicides		Fertilizer		Storage chemical		Understanding level		Reason for understanding level			Need for alternative language		What language
	1°	2°	3°	Y	N	Y	N	Y	N	Y	N	Very well	Not well	Very well	Not well	Agron	Y	N	Tiv
No.	12	8	30	37	13	49	1	50	0	38	12	40	10	16	28	6	25	25	25
%	24	16	60	74	26	98	2	100	0	76	24	80	20	32	12	56	50	50	50

1° =Primary 2° = Secondary 3° = Tertiary Agron = Agronomy Y=Yes N=No