



# **IN-SERVICE TRAINING NEEDS OF AGRICULTURAL EXTENSION PERSONNEL ASSOCIATED WITH CLIMATE CHANGE ADAPTATION IN MALAYSIA**

**Sulaiman Umar<sup>1,3</sup>, Norsida Man<sup>1,2</sup>, Nolila Mohd Naw<sup>2</sup>, Hajara Shuaibu<sup>3</sup>, Abdussalam Adamu Jega<sup>2,4</sup>, and Jasim Mohammed Saleh<sup>1,5</sup>**

<sup>1</sup>Department of Agricultural Technology, Faculty of Agriculture, Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia.

<sup>2</sup>Department of Agribusiness and Bioresources Economics, UPM, Malaysia.

<sup>3</sup>Department of Agricultural Economics and Rural Sociology, Institute for Agricultural Research, Ahmadu Bello University, PMB 1044, Zaria, Nigeria.

<sup>4</sup>Department of Agricultural Economics and Extension, Kebbi State University of Science and Technology, Aliero

<sup>5</sup>Agricultural Training and Extension Centre, Al-Anbar, Agricultural Extension and Training Office, Ministry of Agriculture, Iraq

*All correspondence to: [sulaimanumar@hotmail.com](mailto:sulaimanumar@hotmail.com)*



# INTRODUCTION



- Global climate is getting warmer.
- Impact in lower latitudes: low agric productivity (Vaghefi et al., 2016).
- Simulation studies showed that less rainfall and higher  $T^0$  would decrease rice prod. & SSL.
- Variations in  $T^0$  would decrease rice prod. in the granaries
  - 18% in the main season and
  - 31.3% in the off-season (Vaghefi et al., 2016).



- CC resultant extreme events = more devastating effects. Drought and flooding could cause up to 80% decrease in yield (Siwar, et al., 2013).
- To adapt, need for competent extension workers performing their job effectively.
- There is an urgent need for training
- **Training needs = Standard or desired performance – Present or actual performance**

# STUDY OBJECTIVES



## **Main Objective:**

To identify and prioritize the training needs of agricultural extension personnel on competencies associated with climate change in Malaysia.

## **Specific Objectives:**

- Describe the demographic profile of extension workers;
- Describe the perceived importance of climate change-related competencies;
- Describe the perceived proficiencies in climate change related competencies; and
- Evaluate the training needs of EAs in climate change related competencies.

# METHODOLOGY



- **DESIGN:** Cross-sectional descriptive (Kumar, 2011). Quantitative and non-experimental in nature.
- **STUDY AREA:** Kelantan, Perak, Selangor, Kedah, Penang and Terengganu.
- **POPULATION:** Public extension workers
  - A list of 1,307 compiled



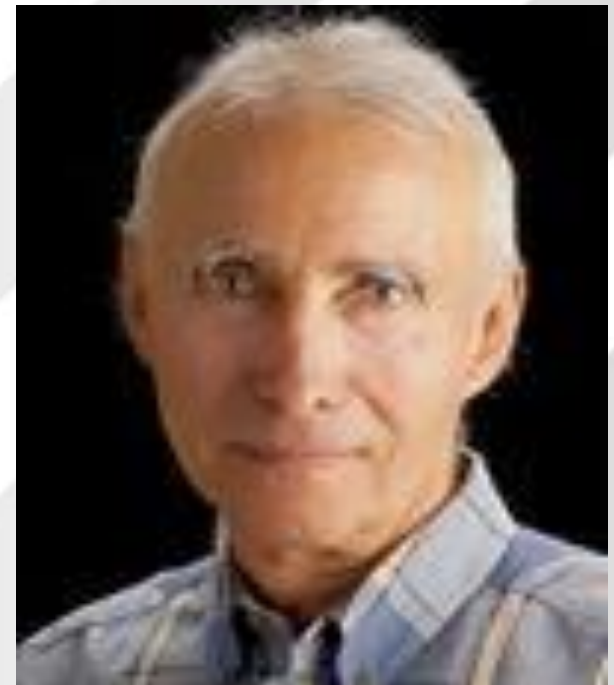
- **SAMPLING: Multi-stage.**
  - Raosoft employed, 298 recommended
  - 110% of 298 = 328 selected
  - States selected randomly
  - Subjects selected proportionately
- **DATA COLLECTION: Structured questionnaire: Drop-off and pick-up**
- **ANALYTICAL TOOLS: SPSS and Microsoft Excel**
- **ANALYTICAL TECHNIQUES: Descriptive & BNAM**

## Calculating MWDS

$$DS_{ij} = B_{ij} - A_{ij}$$

$$WDS_{ij} = DS_{ij} * \bar{A}_j$$

$$MWDS_j = \sum WDS_{ij} / N$$



[https://education.utexas.edu/faculty/gary\\_borich](https://education.utexas.edu/faculty/gary_borich)



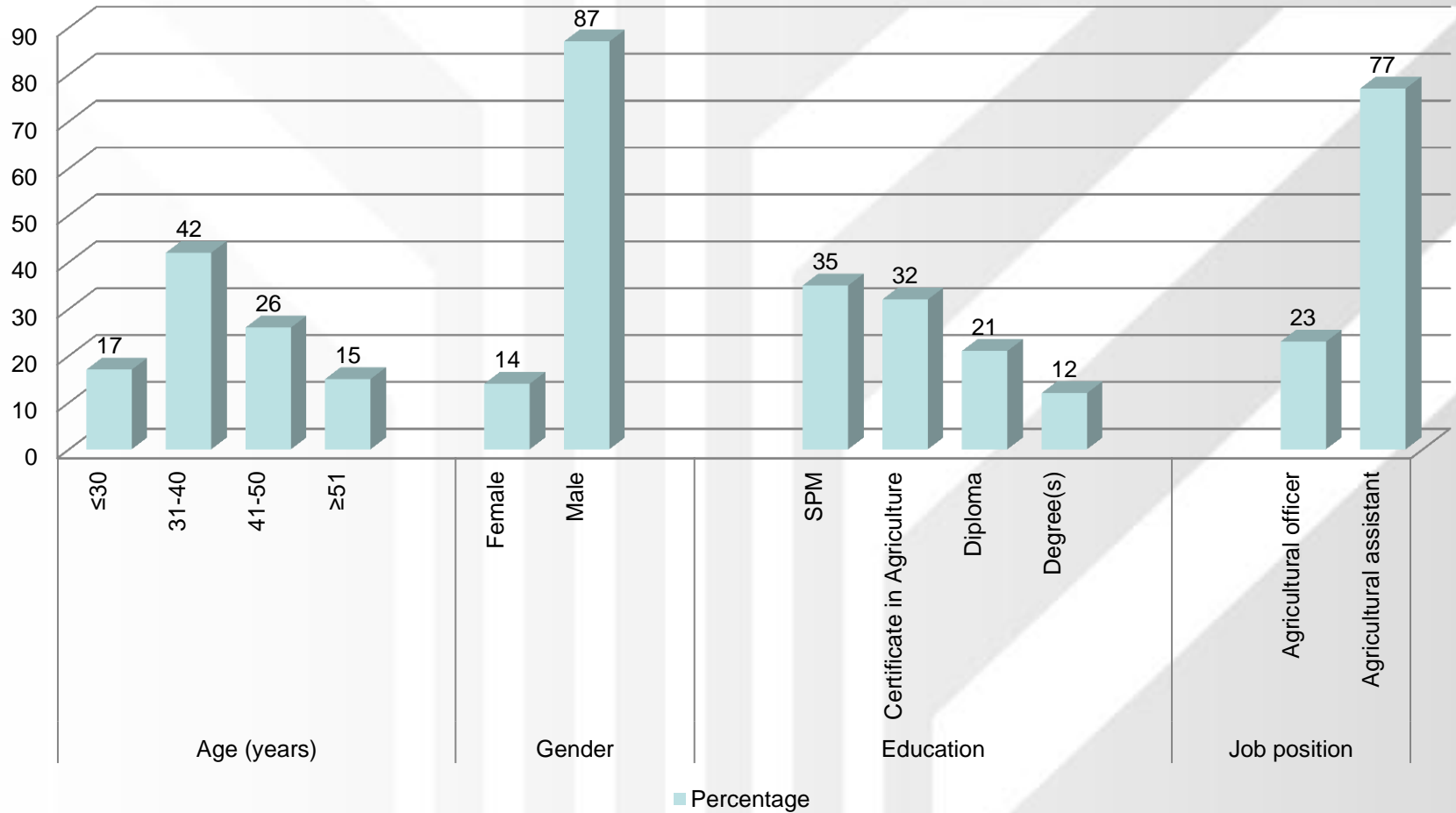


# RESULTS

# Figure 1: Socio-demeographic profile of EAs



## Demographic features





**Table 1:** Perceived level of importance of climate change related competencies among extension personnel

<b>Competency</b>	<b>M</b>	<b>SD</b>
Communicating climate information effectively	4.73	0.74
Using ICTs in climate change adaptation	4.70	0.53
Promoting eco-friendly agronomic practices and farming system	4.67	0.61
Impact of climate change on urban development	4.60	0.72
Pro-poor options for low carbon development	4.60	0.62
Promoting financial risk management/ agricultural insurance	4.50	0.63
Ability to translate climate information into practical guidance	4.47	0.63
Employing Disaster risk reduction (DRR) strategies	4.47	0.78
Understanding and communicating weather forecast	4.47	0.73
Conducting vulnerability risk assessments	4.00	0.87
Evaluating adaptation options	4.00	0.87



**Table 2:** Perceived level of proficiency of climate change related competencies among extension personnel

<b>Competency</b>	<b>M</b>	<b>SD</b>
Promoting cultivation of improved crop varieties	2.43	0.77
Planning climate resilient development	2.33	0.80
Capacity to build linkages among stakeholders	2.33	0.76
Biodiversity, ecosystems and resilience to climate change	2.30	0.79
Pro-poor options for low carbon development	2.27	0.74
Environmental, social and economic factors for improved livelihood and effective land use	2.27	0.74
Soil and water conservation	2.27	0.74
Promoting rearing of improved livestock breeds	2.27	0.69
Ability to translate climate information into practical guidance	1.97	0.32
Employing Disaster risk reduction (DRR) strategies	1.97	0.41
Understanding basic agro-meteorological parameters	1.97	0.81

**Table 3:** In-service training needs of extension personnel associated with climate change

Competency	MWDS	Level*	Rank
Communicating climate information effectively	12.94	1	1
Using ICTs in climate change adaptation	12.22	1	2
Promoting eco-friendly farming practices and systems	11.67	1	3
Impact of climate change on urban development	11.19	1	4
Pro-poor options for low carbon development	10.73	2	8
Promoting financial risk management/ agricultural insurance	10.65	2	9
Mobilizing resources for adaptation	10.64	2	10
Extreme events monitoring and reporting	10.42	2	11
Utilizing agricultural marketing and prices information	10.42	2	12
Understanding basic agro-meteorological parameters	10.03	2	13
Carbon emission reduction strategies in agriculture	9.75	2	14
Promoting cultivation of improved crop varieties	8.87	3	20
Carbon sequestration strategies in agriculture	8.82	3	21
Capacity to build linkages among stakeholders	7.84	3	28
Conducting risk assessments for farmers and communities	7.73	3	29

*\*Note: Pressing levels of needs: 1 = high level; 2 = moderate level; and 3 = low level*

# CONCLUSION & RECOMMENDATION



- The BNAM is effective in TNA.
- High scores for importance, +
- Low proficiency scores
- → gap in competency
- → The need for in-service training of the personnel, update .
- This was confirmed from evaluation of the training needs using the MWDS.
- It is recommended that any training programme in the area should prioritize these competencies in the order in which they are ranked and grouped by this study to effectively enhance the capacity of the personnel as they tackle climate change in collaboration with the farmers.

# REFERENCES



- Adisa, R. S., & Balogun, K. S. (2012). Analysis of Training Needs of Extension Agents on Climate Change Issues in Ekiti State Agricultural Development Project ( EKSADP ), Nigeria. *Journal of Agricultural Extension*, 16(December), 24–33. Retrieved from <http://dx.doi.org/10.4314/jae.v16i2.3>
- Alam, M. M., Siwar, C., Talib, B., & Toriman, M. E. (2014). Impacts of Climatic Changes on Paddy Production in Malaysia : Micro Study on IADA at North West Selangor. *Research Journal of Environmental and Earth Sciences*, 6(5), 251–258.
- Alibaygi, A., & Zarafshani, K. (2008). Training needs of Iranian extension agents about sustainability : The use of Borich's need assessment model. *African Journal of Agricultural Research*, 3(October), 681–687. Retrieved from <http://www.academicjournals.org/AJAR>
- Ary, D., Jacobs, L. C., Sorensen, C. K., & Walker, D. A. (2014). *Introduction to Research in Education*.
- Awang, A. R. (1992). *An assessment of field-level extension agent inservice training needs related to the educational process as perceived by extension personnel in the Sabah State Department of Agriculture , Malaysia*. Iowa State University.
- Bernard, H. R. (2006). *Research Methods in Anthropology* (4th ed.). Oxford: AltaMira Press.
- Borich, G. D. (1980a). A needs assessment model for conducting follow-up studies. *The Journal of Teacher Education*, 31(3), 39–42.
- Borich, G. D. (1980b). *Three Models for Conducting Follow-Up Studies of Teacher Education and Training*.
- Cannon, J. G., Kitchel, A., & Duncan, D. W. (2013). Perceived professional development need of idaho secondary career and technical education teachers: Program management. *Online Journal for Workforce Education and Development*, VI(1).
- Chizari, M., Baygi, A. H. A., & Breazeale, D. (2006). Analysis of the Training Needs of Multi-Functional Extension Agents Associated with Sustainability. *Journal of International Agricultural and Extension Education*, 13(1). <http://doi.org/10.5191/jiaee.2006.13105>
- Christoplos, I. (2010). *Mobilizing the potential of rural and agricultural extension*. Rome: FAO.



**THANK YOU • TERIMA KASIH**