

Identifying Training Needs of Farmers and Rural Youth of Nagaland State

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ABSTRACT

Krishi Vigyan Kendras (KVKs) conduct a variety of trainings for the benefit of farmers and rural youth in each district of the country and it starts with identification of training needs, the most important step in organization of any training programme. The present study on training needs analysis of the farmers and rural youth was conducted by the ICAR-Agricultural Technology Application Research Institute, Umiam in collaboration with the KVKs in Nagaland State. Lists of 11 major components/ thematic areas were prepared. Under each major component, specific and relevant training need items were collected and systematically incorporated in the interview schedule and administered. The results revealed that even in the most popular areas of training, there was an inadequacy. Farmers sought maximum trainings on weed management in field crops followed by training on cropping system and integrated farming system. In area of soil health and fertility management, training on technologies for management of soil fertility followed by soil and water conservation techniques were in much demand. Cultivation of off season vegetables and canopy management topped the list under horticulture while training with respect to rearing of piggery was the most important one under animal sciences. The KVKs have to re-orient their trainings based on these findings to reduce the existing technological and adoption gap among the farmers in Nagaland.

Keywords: Nagaland, Farmers, KVKs, Rural Youth, Training needs

INTRODUCTION

Training is a process of acquisition of new skills, attitude and knowledge in the context of preparing for entry into or improving ones productivity in a vocation. Lynton and Pareek (1990) stated that training consists largely of well-organized opportunities for participants to acquire necessary understanding and skill. In conventional education the student is required to adjust himself to an established curriculum; in adult education the curriculum is built around the students' needs and interests. While the field of adult learning was pioneered by Knowles (Knowles *et al.*, 2005), Stephen (2000),

noted that, an effective training effort involves understanding how adults learn best. Farmer training is directed towards improving their job efficiency in farming and often takes place outside formal learning institutions. It differs from education in schools because it is geared towards adult learning. Training needs assessment of grass root workers has been stressed by several Indian studies as one of the crucial steps towards identifying the area of farmers' interest, design and development of curriculum that can best suit to the existing real conditions of farmers (Kumari *et al.*, 2017; Jaiswal *et al.*, 2019). Barbazett (2006), noted that before any actual training is conducted, the training institution

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must determine the “who, what, when, where, why and how” of training. Training needs assessment process helps determine the priority of changes in knowledge, skill, attitude and behavior that will provide the greatest impact on achieving organizational or individual goals. Caffarella (2002) noted that a systematic process of farmers’ training must include; needs assessment, goal and objectives setting, organizing instructional methods and techniques, monitoring and evaluation.

In India, KVKs conduct trainings at various levels for which the programmes are designed based on the clientele problems and their needs and interests. Normally KVKs have the following five types of trainings conducted by them (Venkatasubramanian *et al.*, 2009a): Training for farmers (On and Off Campus), Training for rural youth (On and Off Campus), Training for extension personnel (On and Off Campus), Sponsored training programmes (On and Off Campus) for farmers, rural youth and extension personnel and Vocational training programmes (On and Off Campus) for farmers and rural youth. Also based on duration, the KVK trainings can be classified (Venkatasubramanian *et al.*, 2009a) to Short duration trainings (1-7 days), Medium duration trainings (8-14 days) and Long duration trainings (3-4 weeks). As systematic procedure for planning and implementation of training programme, KVKs in general starts with identification of training needs of farmers/rural youth/extension personnel, and hence becomes the most important step in any training programme by KVKs. KVK scientists, as mandatory have to communicate the research findings, new innovations and technologies to the farmers and needy people (Venkatasubramanian *et al.*, 2009b). It involves conducting On Farm Trials (OFTs) and Front Line Demonstrations (FLDs) of the new technologies as well as imparting training to the technology users for acquiring knowledge and skills on recommended technologies. KVK training is an essential component for the successful dissemination and large scale adoption of latest agricultural technologies in a social system particularly among farming communities. Few studies have examined the types of educational delivery methods preferred by farmers (Eckert and Bell, 2005; Eckert and Bell, 2006) and also the type of methodologies that could

be used for assessing the training needs to farming community. Thus there is a growing need to assess the training needs of the farmers and to decide the need based training strategy to be followed for the benefit of farming community.

METHODOLOGY

The study was conducted by the ICAR-ATARI, Umiam in collaboration with the KVKs in Nagaland. The study covered 8 rural districts of Nagaland which were purposively selected considering the identified districts could represent all the agro-climatic zones. Thus, the districts Kohima, Zunheboto, Mokokchung, Tuensang, Phek, Mon, Dimapur and Wokha where major farming systems of the region were found were selected for the study. From each selected district, four villages based on production potential of the different farming system were drawn up for inclusion. On consultation with the extension functionaries of state agricultural department, local leaders as well as KVK staff, a list of farmers representing different categories was prepared for each village. From the individual list of farmers from selected village, five farmer respondents were randomly selected which made twenty farmers from each district. Thus, 160 farmers were finally selected for data collection from 8 districts of the state. Totally, 155 farmers participated and gave response in the survey.

The major training needs components identified for the study were Crop Production, Plant Protection, Soil Health and Fertility Management, Agro forestry, Horticulture (Vegetables, fruits, ornamental plants, plantation crops, tubers, spices, medicinal and aromatic plants), Animal Husbandry, Fisheries, On farm production of inputs, Home Science/Women Empowerment, Agricultural Engineering, Capacity building and group dynamics and Vocational training for rural youth. The farmer’s responses were collected on three point continuum as Very Important, Important and Not Important by assigning scores 3, 2 and 1 respectively and weighted score for each of the thrust area identified for the training was calculated.

$$\text{Weighted Score} = \frac{(\text{No. of VI} \times 3) + (\text{No. of I} \times 2) + (\text{No. of NI} \times 1)}{\text{Total number of VI} + \text{I} + \text{NI}}$$

Weighted Scores were ranging from 1 to 3. i.e., If all the selected farmers in a particular district marks that thrust area X is very important, then the WS will be 3. If all the selected farmers in a particular district marks that thrust area X is not important/ no response, then the WS will be 1. If all the selected farmers in a particular district marks that thrust area X is important, then the WS will be 2. If majority of the famers are marking that thrust area X is very important and important, the WS will be in between the range of 2–3. If majority of the famers are marking that thrust area X is not important, the WS will be in between the range of 1–2. Weighted Scores in the range of 2–3 were ranked within each discipline and the first five rankings were identified as training needs of the farmers of the state. On perusal of the tables, it might be noted that some of the training needs are not high at state level; however, the same may be important at the district level.

RESULTS AND DISCUSSION

Weed management in field crops (WS = 2.63) was the most sought after area of training under crop production (Table 1 followed by training on cropping system and Integrated farming system, Water conservation and irrigation management of the field crops, Weeds are often recognized as the principal biotic constraint to organic crop production. This is more pronounced in hill areas of the N.E. Region particularly in field crops (ZPD-III, 2011). Development of suitable weed control measures through integrated weed management practices is, therefore, a prerequisite for profitable farming in the region and well understood by farmers. Training on seed production technology and resource conservation techniques and training on integrated crop management followed respectively as next most important areas of training need. Under plant protection, training on integrated disease management of the crops (WS = 2.77), control of pest and disease by use of biological agents, training on integrated pest management of the crops and production of the bio control agents/ pesticides were the most sought after training areas. Impact of over adoption of pest control chemicals in the long run is often ignored by farmers.

In area of soil health and fertility management, technologies for management of soil fertility (WS=2.50)

followed by soil and water conservation techniques, production and use of organic inputs to improve the soil fertility, training on field based soil and water testing kits and integrated nutrient management were the most sought after training areas while for agroforestry, agroforestry based integrated farming system (WS=2.32) and production technologies and nursery management were the most important training needs. This is attributed to the fact that farmers in valley areas of Nagaland often resort to over adoption of fertilizers and pesticides/fungicides. Continuous adoption of unscientific methods of hill farming coupled with injudicious use of chemical fertilizers has led to soil degradation particularly in hill districts of the state. This calls for immediate control measures and proper management practices against further degradation of soil fertility.

Horticulture being a very important vocation in Nagaland, the training needs identified (Table 2) shows that under vegetable crops most needed training area was cultivation of off season vegetables (WS=2.60) followed by nursery management of vegetable crops, training on cultivation of low volume and high value crops and grading and standardization of the marketable produce for optimal returns. The identified training needs of farmers under horticulture sector in hill areas should find a place in planning and designing of future KVK training programmes.

Canopy management of fruit bearing trees like training and pruning (WS=2.57) was the most sought after training area under cultivation of fruit crops. Trainings were sought after in areas of layout and management of orchards, management of young plants/ orchards and rejuvenation of old orchards also. Training on plant propagation techniques like grafting etc. were still in demand among entrepreneurship oriented farmers. Among other horticulture crops, training on production and management technology of plantation crops, tubers and spices were also in high demand.

Analysis of training needs under Animal husbandry revealed that 'rearing of pigs/piggery' (WS=2.59) was the most sought after training (Table 3) followed by poultry farming, prevention and cure of animal diseases, production of feed ingredients and feeding management

Table 1: Training needs of farmers of Nagaland in major areas of Crop Production and Agro Forestry

Thematic Area	Nagaland (n = 155)		Kohi- ma	Zuhe- nabeto	Moko- kchung	Tuen- sang	Phek	Mon	Dima- pur	Wokha
	WS	Rank	WS	WS	WS	WS	WS	WS	WS	WS
Crop Production										
Weed Management	2.63	1	2.60	2.65	2.75	2.86	2.15	2.90	2.20	3.00
Resource Conservation Technologies	2.37	6	2.65	2.30	2.00	2.93	2.05	2.90	1.70	2.60
Cropping Systems	2.52	2	2.60	2.35	2.55	2.67	2.15	2.85	2.50	2.50
Crop Diversification	2.12	10	2.15	2.25	1.70	2.80	2.15	1.85	1.75	2.50
Integrated Farming	2.50	3	2.50	2.50	1.90	3.00	2.25	2.60	2.45	2.95
Water management	2.46	4	2.70	2.60	2.00	2.40	2.35	2.75	2.50	2.40
Seed production	2.45	5	2.40	2.30	2.15	2.80	2.10	2.85	2.20	2.85
Nursery management	2.21	8	2.10	2.05	1.45	2.80	2.15	2.20	2.35	2.70
Integrated Crop Management	2.30	7	2.60	2.20	1.60	2.93	2.40	2.15	1.95	2.70
Fodder production	2.11	11	1.85	2.00	1.80	2.33	2.70	2.20	1.70	2.35
Production of organic inputs	2.18	9	2.00	2.20	2.15	2.87	2.40	1.75	1.85	2.40
Plant Protection										
Integrated Pest Management	2.46	3	2.70	2.85	2.10	3.00	2.60	2.25	2.40	3.00
Integrated Disease Management	2.77	1	2.70	2.80	2.85	3.00	2.60	2.75	2.50	3.00
Bio-control of pests and diseases	2.67	2	2.70	2.50	2.65	3.00	2.90	2.30	2.40	3.00
Production of bio control agents/bio pesticides	2.15	4	2.70	2.40	1.25	3.00	2.30	1.55	1.65	2.55
Soil Health and Fertility Management										
Soil fertility management	2.50	1	2.70	2.65	-	3.00	2.65	2.70	2.40	3.00
Soil and Water Conservation	2.44	2	2.70	2.80	-	2.80	2.55	2.75	2.00	3.00
Integrated Nutrient Management	2.21	5	2.70	2.60	-	3.00	2.30	1.65	1.90	2.75
Production and use of organic inputs	2.29	3	2.20	2.45	-	3.00	2.60	2.20	2.20	2.85
Management of Problematic soils	1.86	-	1.15	2.45	-	1.93	2.45	1.75	1.85	2.35
Micro nutrient deficiency in crops	1.81	-	1.75	2.40	-	2.07	2.25	1.10	1.65	2.30
Nutrient Use Efficiency	1.92	-	2.30	2.60	-	2.47	1.85	1.30	1.65	2.30
Soil and Water Testing	2.26	4	2.05	2.50	-	2.87	2.65	2.85	1.95	2.35
Agro forestry										
Production technologies	2.27	2	2.3	2.05	2.15	1.60	2.05	2.75	2.20	2.90
Nursery management	2.17	3	2.15	2.05	1.35	1.60	2.20	2.85	2.00	3.00
Integrated Farming Systems	2.32	1	2.60	2.20	1.80	2.20	2.25	2.65	1.85	2.95

of animals, management of dairy animals and dairy farming and production of quality animal products. Rural farmers have inadequate knowledge about technical aspects of diseases such as etiology, symptoms, diagnosis, prevention and control measures of the diseases. In fisheries sector, integrated fish farming was reported the most needed training area (WS=2.43)

followed by composite fish culture and carp fry and fingerling rearing.

Training needs of rural youth with respect to vocational training by KVKs

KVKs also provide vocational training specially crafted for rural youth. The training needs of rural youth

Table 2: Training needs of farmers of Nagaland in the discipline of Horticulture

Thematic Area	Nagaland (n = 155)		Kohi ma	Zuhe- nabeto	Moko- kchung	Tuen- sang	Phek	Mon	Dima- pur	Wokha
	WS	Rank	WS	WS	WS	WS	WS	WS	WS	WS
Vegetable Crops										
Production of low volume and high value crops	2.31	3	2.65	2.40	1.90	2.47	2.05	2.35	2.45	2.25
Off-season vegetables	2.60	1	2.65	2.45	2.95	3.00	2.70	1.90	2.40	2.85
Nursery raising	2.42	2	2.10	2.05	2.00	2.73	2.55	2.85	2.40	2.75
Exotic vegetables like Broccoli	1.61		1.90	1.30	1.05	1.07	2.30	1.25	1.75	2.15
Export potential vegetables	1.75		2.20	1.70	1.20	1.33	2.00	1.05	2.05	2.35
Grading and standardization	2.00	4	2.50	1.75	1.35	2.93	1.60	1.85	1.80	2.45
Protective cultivation (Green Houses, Shade Net)	1.81		2.05	1.80	-	1.27	2.00	1.40	2.15	1.80
Fruits										
Training and Pruning	2.57	1	2.55	2.65	2.80	2.73	2.05	2.70	2.35	2.80
Layout and Management of Orchards	2.47	3	2.35	2.40	2.25	2.33	2.45	2.70	2.45	2.80
Cultivation of Fruit	2.54	2	2.50	2.65	1.90	2.93	2.85	2.40	2.35	2.80
Management of young plants/orchards	2.41	4	2.10	2.50	2.20	2.60	2.50	2.75	2.10	2.60
Rejuvenation of old orchards	2.25	5	1.60	2.05	2.20	3.00	2.40	2.60	2.05	2.25
Export potential fruits	1.80		2.05	1.75	1.25	2.07	1.95	1.25	1.90	2.25
Micro irrigation systems of orchards	1.62		1.80	1.80	1.35	1.20	1.70	1.10	1.90	2.00
Plant propagation techniques	2.17	6	2.25	1.80	2.00	2.33	2.00	2.20	2.15	2.65
Ornamental Plants										
Nursery Management	2.04	1	2.25	1.95	1.15	1.87	2.45	2.70	2.05	1.85
Management of potted plants	1.77		2.20	1.20	1.80	1.73	1.90	1.50	1.80	2.00
Export potential of ornamental plants	1.61		2.30	1.25	1.25	1.73	1.85	1.05	1.90	1.60
Propagation techniques	1.74		2.45	1.30	1.40	1.80	2.00	1.50	1.75	1.70
Plantation Crop										
Production and Management technology	2.17	1	2.30	1.70	2.05	2.33	2.10	2.70	2.25	2.00
Processing and value addition	1.90		2.55	1.80	1.20	2.40	2.10	1.35	2.10	1.80
Tuber Crops										
Production and Management technology	2.05	1	2.40	2.00	1	2.73	2.05	2.45	1.45	2.45
Processing and value addition	1.92		2.65	1.95	1	2.73	2.20	1.25	1.60	2.15
Spices										
Production and Management technology	2.07	1	2.45	1.60	1	2.73	2.05	2.60	2.15	2.15
Processing and value addition	1.91		2.65	1.60	1	2.80	2.15	1.20	1.90	2.20
Medicinal and Aromatic Plants										
Nursery management	1.81		2.00	1.65	1	1.93	1.95	2.60	1.70	1.65
Production and management technology	1.75		2.25	1.65	1	1.93	2.00	1.95	1.65	1.65
Post-harvest technology and value addition	1.73		2.40	1.50	1	2.07	1.90	1.75	1.65	1.65

Table 3: Training needs of farmers of Nagaland in Animal Husbandry and Fisheries Sector

Thematic Area	Nagaland (n = 155)		Kohi- ma	Zuhe- nabeto	Moko- kchung	Tuen- sang	Phek	Mon	Dima- pur	Wokha
	WS	Rank	WS	WS	WS	WS	WS	WS	WS	WS
Animal Husbandry										
Dairy Management	2.10	5	2.65	1.45	-	2.53	2.20	2.05	2.40	2.60
Poultry Management	2.58	2	2.70	2.65	-	3.00	2.95	2.95	2.50	3.00
Piggery Management	2.59	1	2.70	2.65	-	3.00	2.95	2.95	2.55	3.00
Rabbit Management	1.58	-	1.95	1.50	-	1.60	2.00	1.20	1.80	1.60
Disease Management	2.57	3	2.65	2.70	-	3.00	3.00	2.90	2.45	2.95
Feed management	2.40	4	2.40	2.55	-	2.93	2.70	2.90	2.15	2.70
Production of quality animal products	2.02	6	2.55	2.20	-	2.93	1.60	2.00	2.00	2.10
Fisheries										
Integrated fish farming	2.43	1	2.65	1.70	2.00	2.67	2.55	2.55	2.40	3.00
Carp breeding and hatchery management	1.84	-	1.95	1.45	1.25	2.67	1.85	1.65	1.70	2.40
Carp fry and fingerling rearing	1.70	-	1.85	1.30	1.15	2.67	1.65	1.55	1.60	2.05
Composite fish culture	2.12	2	2.45	1.35	1.45	2.60	2.85	2.10	1.85	2.40
Hatchery management & culture of freshwater prawn	1.39	-	1.75	1.20	1	1.33	2.00	1.20	1.30	1.30
Breeding and culture of ornamental fishes	1.29	-	1.80	1.15	1	1.27	1.70	1.10	1.30	1.00
Portable plastic carp hatchery	1.50	-	1.65	1.20	1.1	2.07	1.75	1.15	1.20	2.05
Pen culture of fish and prawn	1.37	-	1.60	1.10	1	1.20	2.30	1.10	1.20	1.45
Shrimp farming	1.27	-	1.60	1.05	1	1.20	1.70	1.05	1.45	1.10
Edible oyster farming	1.25	-	1.45	1.00	1	1.07	1.70	1.20	1.50	1.05
Pearl culture	1.19	-	1.45	1.00	1	1.00	1.55	1.00	1.45	1.05
Fish processing and value addition	1.66	-	2.55	1.25	1	2.20	2.00	1.20	1.65	1.60

separately identified and presented shows a picture of inadequate training (Table 4). Training on piggery happens to be most inadequate (WS=2.66) and in need as responded by majority of the rural youth. Same was the case with poultry and mushroom production (WS=2.57) followed by vermi-culture (WS=2.47). Vocational training on integrated farming, post-harvest value addition and bee keeping were also highly sought after by rural youth. The results reveal that the rural youth felt inadequacy even in the most popular areas of training. This may also be due to the inability of rural youth to reinforce learning from attending only limited training on a particular topic.

CONCLUSION

there was an inadequacy in terms of frequency of training imparted in most popular subject matters by

KVKs of Nagaland. Farmers sought maximum trainings on weed management in field crops followed by training on cropping system & integrated farming system which were also found to be the most common training components in all KVKs. Under horticulture sector off season vegetables being the most sought after one followed by nursery management of vegetable crops, training on cultivation of low volume and high value crops and grading and standardization of the marketable produce for optimal returns. Training needs under animal sciences also showed demand for the most common vocation i.e. pig rearing followed by poultry. The results show that even though considerable efforts have been made in training of farmers in the common vocations and areas of interest, there still remains a large gap which needs to be addressed. The KVKs have to re-orient their trainings based on findings to fill the gap existing with

Table 4: Training needs of rural youths of Nagaland in different vocations

Thematic Area	Nagaland (n = 155)		Kohi- ma	Zuhe- nabeto	Moko- kchung	Tuen- sang	Phek	Mon	Dima- pur	Wokha
	WS	Rank	WS	WS	WS	WS	WS	WS	WS	WS
Mushroom Production	2.57	2	2.15	2.25	2.65	2.87	2.95	2.20	2.60	3.00
Bee-keeping	2.33	7	2.15	2.25	2.20	2.60	2.85	2.25	1.90	2.50
Seed production	2.26	12	2.40	2.15	1.30	2.73	2.00	2.95	2.00	2.70
Production of organic inputs	2.32	8	2.35	2.30	1.35	2.87	2.70	2.50	2.00	2.60
Integrated Farming	2.37	5	2.70	2.35	1.35	2.87	2.50	2.75	1.80	2.80
Planting material production	2.27	11	2.55	2.15	1.25	2.47	2.35	2.85	1.80	2.80
Vermi-culture	2.47	4	2.70	2.30	2.15	2.87	2.75	2.40	1.80	2.90
Sericulture	1.88	-	2.20	2.00	1.70	1.87	1.80	1.65	1.50	2.30
Protected cultivation of vegetable crops	2.02	-	2.55	1.95	1.70	1.87	2.00	2.25	1.80	2.00
Commercial fruit production	2.26	-	2.45	2.25	1.80	2.73	2.60	1.95	2.00	2.45
Repair and maintenance of farm machinery and implements	1.65	-	1.60	2.00	1.20	1.47	1.95	1.45	1.35	2.10
Nursery Management of Horticulture crops	2.32	8	2.05	2.40	1.15	2.73	2.40	2.60	2.50	2.85
Training and pruning of orchards	2.28	10	2.55	2.60	1.60	2.80	2.20	2.35	1.70	2.60
Value addition	2.13	-	2.70	2.40	1.25	2.87	2.35	1.45	1.30	2.90
Production of quality animal products	2.11	-	2.70	2.40	1.10	2.60	1.85	2.25	1.65	2.45
Dairying	2.04	-	2.65	1.45	1.65	2.60	2.00	2.10	1.60	2.40
Sheep and goat rearing	1.62	-	2.20	1.20	1.40	2.20	1.55	1.55	1.30	1.70
Quail farming	1.40	-	1.90	1.15	1.25	1.33	1.70	1.20	1.35	1.30
Piggery	2.66	1	2.70	2.55	2.40	2.80	2.50	3.00	2.50	2.85
Rabbit farming	1.77	-	2.00	1.65	1.85	1.80	2.20	1.25	1.80	1.65
Poultry production	2.57	2	2.70	2.50	2.05	2.73	2.35	2.90	2.60	2.80
Ornamental fisheries	1.39	-	1.60	1.30	1.10	1.00	2.00	1.25	1.50	1.25
Para vets	1.46	-	1.65	1.00	1.10	2.00	1.85	1.45	1.35	1.40
Para extension workers	1.63	-	2.20	1.60	1.05	2.00	2.05	1.35	1.35	1.50
Composite fish culture	2.07	-	2.35	1.30	1.75	2.53	2.55	1.95	2.10	2.15
Freshwater prawn culture	1.35	-	1.65	1.05	1.00	1.07	2.15	1.10	1.45	1.25
Shrimp farming	1.24	-	1.60	1.05	1.05	1.07	1.80	1.05	1.15	1.10
Pearl culture	1.23	-	1.40	1.00	1.00	1.13	1.90	1.20	1.10	1.10
Cold water fisheries	1.62	-	1.95	1.25	1.10	2.60	2.10	1.40	1.35	1.45
Fish harvest and processing technology	1.71	-	2.25	1.35	1.05	2.73	1.65	1.45	1.65	1.80
Fry and fingerling rearing	1.68	-	1.85	1.10	1.10	2.60	1.65	1.75	1.45	2.15
Small scale processing	2.04	-	2.45	1.70	1.25	2.67	1.95	1.95	1.60	2.90
Post-Harvest Technology	2.35	6	2.35	2.00	2.70	2.67	2.10	2.65	1.50	2.95
Tailoring and Stitching	2.03	-	1.70	1.50	1.15	2.13	2.65	2.00	2.15	3.00
Rural Crafts	2.10	-	1.85	2.35	1.30	2.73	2.40	2.35	2.00	2.00

respect to imparting need based training in the respective districts of Nagaland. It is recommended that both extensive and intensive hand on-training programmes should be emphasized for farmers and rural youth through proper assessment of their training needs in the state. The concerned stakeholders should pay relatively higher emphasis and care on those specific most important needs, as identified while formulating different training strategies and programmes for the farmers in hills and plain regions of Nagaland.

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