Capacity Building Through KVKs: Training Needs Analysis of Farmers of Arunachal Pradesh

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ABSTRACT

Krishi Vigyan Kendras (KVKs) conduct a variety of trainings for the benefit of farmers and rural youth of their district. Any KVK training programme 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 youths was conducted by the Zonal Project Directorate (Zone III) in collaboration with the KVKs in Arunachal Pradesh. A list of 11 major components/ thematic areas was prepared. Under each major component, specific and relevant training needs item were collected and systematically incorporated in to an interview schedule and administered in terms of frequency of training imparted. The results revealed that even in the most popular areas of training, there was an inadequacy. Farmers sought maximum trainings on Integrated farming systems, integrated pest and disease management and technologies for soil and water conservation.Nursery management topped the list under horticulture while training with respect to rearing of piggery was the most sought after one under animal sciences. Income generating activities for empowerment of rural women, formation and maintenance of SHGs and training on small scale processing and value addition were also in high demand. The KVKs have to re-orient their trainings based on these findings to reduce the existing technological and adoption gap among the farmers in Arunachal Pradesh.

***Key words**: Farmers and rural youth; Training need analysis; Capacity building;*

Training plays an important role in the advancement of human performance in a given situation. Training provides a systematic improvement of knowledge and skills which in turn helps the trainees to function effectively and efficiently in their given task on completion of the training. Training is a process of acquisition of new skills, attitude and knowledge in the context of preparing for entry into a vocation or improving ones productivity in an organization or enterprise. Effective training requires a clear picture of how the trainees will need to use information after training in place of local practices what they have adopted before in their situation. *Lynton and Pareek* (*1990*) stated that training consists largely of well organized opportunities for participants to acquire necessary understanding and skill. Farmer training is directed towards improving their job efficiency in farming. The kind of education we call as training is not for knowing more but behaving differently.In KVKs, trainings are conducted at various levels for which the programmes are designed based on the clientele problems and their needs and interests. Normally KVKs have the following types of trainings conducted by them (*Venkatasubramanian et al, 2009a*):

1. Training for farmers (On and Off Campus)
2. Training for rural youth (On and Off Campus)
3. Training for extension personnel (On and Off Campus)
4. Sponsored training programmes (On and Off Campus) - For farmers, rural youth and extension personnel
5. Vocational training programmes (On and Off Campus) - For farmers and rural youth

Based on duration, the KVK trainings can be classified to:

1. Short duration trainings (1-7 days) &
2. Medium duration trainings (8-14 days) and
3. 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 has 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 and Front Line Demonstrations of the new technologies as well as training the technology users for providing with required knowledge and skills for adopting the recommended technologies. Therefore, KVK training is an essential component for the successful dissemination and adoption of latest agricultural technologies in a social system particularly among farming communities.

METHODOLOGY

The present study on training needs analysis of the farmers and rural youths was conducted by the Zonal Project Directorate (Zone- III) in collaboration with the KVKs in Arunachal Pradesh. The study covered 4 rural Districts of Arunachal Pradesh (Table 1) which were purposively selected. From each selected district, four villages based on production potential of the different farming system were drawn up for inclusion in the present study. 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, a total of 80 farmer respondents were finally selected for data collection from 4 districts of the state. Data collection from randomly selected respondents was made by using pre-tested 'structured schedule' through personal interview method. For this purpose, an interview schedule was constructed for data collection from respondents in the light of the objectives of the study. The selected respondents were personally interviewed. For the present study, a list of 11 major components/ thematic areas was prepared. Under each major component, specific and relevant training need items were collected through different review of literature, discussion with state extension functionaries, KVK staff as well as investigators on field experiences and were systematically incorporated in the interview schedule. The schedules were administered to the indented respondents for data collection. In this regard, the farmers were requested to give a tick (?) in one of the three response categories (viz. Very Important, Important and Not Important) provided against the identified specific items under each major component based on their perceived needs for providing training to them for further improvement in their farming system and livelihood. 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 in 3 – point continuum scale such as Very Important (VI), Important (I) and Not Important (NI) by assigning scores 3, 2 and 1, respectively. The results were calculated as weighted score for each of the thrust area identified for the training

Weighted Score (WS)

$$= \frac{(\text{No. of VI} \times 3) + (\text{No. of I} \times 2) + (\text{No. of NI} \times 1)}{\text{Total No. of VI + I + NI}} \times 100$$

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.

RESULTS AND DISCUSSION

The district-wise training needs of the farmers and rural youth are presented in the form of weighted scores in the tables 1 – 5. 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. The following are the thematic areas where there are high training needs among the farmers of Arunachal Pradesh.

a. Training needs of farmers

Crop Production: Training on Integrated farming system was the most sought after by farmers (45%) in Arunachal Pradesh followed by Water conservation and irrigation management (36%) of the field crops and Training on Production of organic inputs (table 1). Training on weed management in field crops, Training on nursery management of field crops, integrated crop management and cropping systems and Agroforestry based integrated farming systems also closely followed.

Table: 1. Weighted Score (1 – 3 Scale) and Rank of the training needs of farmers of Arunachal Pradesh in the disciplines of Crop Production, Plant Protection, Soil Health & Fertility Management and Agro Forestry.

Thematic Area	Arunachal Pradesh (n = 80)					Tirap	West Kameng	East Siang	West Siang
	VI	I	NI	WS	Rank	WS	WS	WS	WS
Crop Production									
Weed Management	40	19	21	2.24	4	2.80	2.50	1.25	2.40
Resource Conservation Technologies	21	28	31	1.88		1.55	2.60	1.25	2.10
Cropping Systems	34	29	17	2.21	5	2.40	2.30	1.55	2.60
Crop Diversification	26	26	28	1.98		2.70	1.90	1.30	2.00
Integrated Farming	45	19	16	2.36	1	2.75	2.25	1.65	2.80
Water management	36	36	8	2.35	2	2.05	2.80	2.35	2.20
Seed production	21	22	37	1.80		1.05	2.50	1.45	2.20
Nursery management	22	39	19	2.04	6	1.65	2.10	1.90	2.50
Integrated Crop Management	26	29	25	2.01	7	2.35	1.85	1.55	2.30
Fodder production	15	17	48	1.59		1.10	1.90	1.35	2.00
Production of organic inputs	40	20	20	2.25	3	2.75	2.40	1.55	2.30
Plant Protection									
Integrated Pest Management	71	9	0	2.89	1	3.00	3.00	2.65	2.90
Integrated Disease Management	56	23	1	2.69	2	2.80	2.65	2.40	2.90
Bio-control of pests and diseases	28	33	19	2.11	3	2.45	2.10	1.70	2.20
Production of bio control agents and bio pesticides	21	21	38	1.79		2.30	1.60	1.25	2.00
Soil Health and Fertility Management									
Soil fertility management	42	30	8	2.43	1	2.75	2.75	2.30	1.90
Soil and Water Conservation	43	30	8	2.43	1	2.10	2.90	2.62	2.00
Integrated Nutrient Management	47	16	17	2.38	4	2.75	2.50	1.45	2.64
Production and use of organic inputs	47	19	14	2.41	3	2.95	2.45	1.65	2.60
Management of Problematic soils	17	26	37	1.75		1.70	1.35	1.75	2.09
Micro nutrient deficiency in crops	2	31	47	1.44		1.20	1.65	1.10	1.80
Nutrient Use Efficiency	20	23	37	1.79		2.15	1.70	1.10	2.20
Soil and Water Testing	27	28	25	2.03	5	2.00	2.70	1.80	1.60
Agro forestry									
Production technologies	20	14	46	1.68		1.55	1.35	1.20	2.60
Nursery management	13	17	50	1.54		1.00	1.30	1.25	2.60
Integrated Farming Systems	34	18	28	2.08	1	2.45	1.90	1.35	2.60

Plant Protection : Training on integrated pest and disease management of the crops was the most important (71%) need in plant protection followed by control of pest and disease by use of biological agents (Table 1).

Soil Health and Fertility Management: Under Soil health and fertility management, technologies for soil and water conservation (43%) and management of soil fertility (42%) was the most needed followed by production and use of organic inputs to improve the soil fertility, training onintegrated nutrient management and training on field based soil and water testing kits (Table 1).

Horticultural Sector : In horticultural sector, under Vegetable crops, Nursery management topped (37%) the list followed by cultivation of low volume and high value crops and cultivation of Off-season vegetables in

Table 2. Weighted Score (1 – 3 Scale) and Rank of the training needs of farmers of Arunachal Pradesh in the discipline of Horticulture.

Thematic Area	Arunachal Pradesh (n = 80)					Tirap	West Kameng	East Siang	West Siang
	VI	I	NI	WS	Rank	WS	WS	WS	WS
Vegetable Crops									
Production of low volume and high value crops	33	29	18	2.19	2	2.60	1.95	1.50	2.70
Off-season vegetables	26	41	13	2.16	3	2.40	2.20	1.65	2.40
Nursery raising	37	22	21	2.20	1	1.65	2.25	2.00	2.90
Exotic vegetables like Broccoli	4	15	61	1.29		1.10	1.45	1.10	1.50
Export potential vegetables	6	17	57	1.36		1.00	1.40	1.15	1.90
Grading and standardization	7	15	58	1.36		1.00	1.25	1.40	1.80
Protective cultivation (Green Houses, Shade Net)	18	27	35	1.79		2.05	1.80	1.10	2.20
Fruits									
Training and Pruning	35	19	26	2.11	4	1.90	2.45	1.40	2.70
Layout and Management of Orchards	47	14	19	2.35	2	2.45	2.35	1.70	2.90
Cultivation of Fruit	52	13	15	2.46	1	2.60	2.65	1.80	2.80
Management of young plants/orchards	41	18	21	2.25	3	2.60	2.30	1.50	2.60
Rejuvenation of old orchards	29	16	35	1.93		1.90	1.35	1.55	2.90
Export potential fruits	11	20	49	1.53		1.20	1.90	1.10	1.90
Micro irrigation systems of orchards	18	32	30	1.85		2.20	2.30	1.20	1.70
Plant propagation techniques	8	31	41	1.59		1.20	1.85	1.40	1.90
Ornamental Plants									
Nursery Management	22	6	52	1.63		1.05	1.40	1.15	2.90
Management of potted plants	10	12	58	1.40		1.00	1.40	1.10	2.10
Export potential of ornamental plants	10	12	58	1.40		1.05	1.35	1.10	2.10
Propagation techniques of Ornamental Plants	12	17	51	1.51		1.10	1.40	1.15	2.40
Plantation Crop									
Production and Management technology	19	21	40	1.74		1.70	1.15	1.50	2.60
Processing and value addition	19	11	50	1.61		1.35	1.05	1.15	2.90
Tuber Crops									
Production and Management technology	37	19	24	2.16	1	2.30	1.85	1.80	2.70
Processing and value addition	30	16	34	1.95		2.35	1.20	1.45	2.80
Spices									
Production and Management technology	28	27	25	2.04	1	2.40	1.35	1.90	2.50
Processing and value addition	27	25	28	1.99		2.40	1.20	1.65	2.70
Medicinal and Aromatic Plants									
Nursery management	20	11	49	1.64		1.50	1.35	1.20	2.50
Production and management technology	24	18	38	1.83		2.40	1.40	1.30	2.20
Post harvest technology and value addition	20	12	48	1.65		2.15	1.25	1.10	2.10

Table 3. Weighted Score (1 – 3 Scale) and Rank of the training needs of farmers of Arunachal Pradesh in animal husbandry & fisheries sector and On farm production of Inputs

Thematic Area	Arunachal Pradesh (n = 80)					Tirap	West Kameng	East Siang	West Siang
	VI	I	NI	WS	Rank	WS	WS	WS	WS
Animal Husbandry									
Dairy Management	19	18	43	1.70		1.20	2.25	1.35	2.00
Poultry Management	44	20	16	2.35	3	2.60	2.05	1.75	3.00
Piggery Management	54	17	9	2.56	1	2.90	1.95	2.40	3.00
Rabbit Management	2	10	68	1.18		1.00	1.00	1.10	1.60
Disease Management	48	16	16	2.40	2	2.85	2.50	1.55	2.70
Feed management	34	29	17	2.21	4	2.50	2.15	1.60	2.60
Production of quality animal products	6	21	53	1.41		1.15	1.40	1.00	2.10
Fisheries									
Integrated fish farming	43	18	18	2.32	1	3.00	1.37	2.35	2.50
Carp breeding and hatchery management	3	13	63	1.24		1.20	1.16	1.20	1.40
Carp fry and fingerling rearing	15	12	52	1.53		1.80	1.26	1.75	1.30
Composite fish culture	31	19	29	2.03	2	2.80	1.37	2.20	1.70
Hatchery management & culture of freshwater prawn	0	7	72	1.09		1.00	1.05	1.20	1.10
Breeding/ culture of ornamental fishes	4	11	64	1.24		1.00	1.00	1.05	1.90
Portable plastic carp hatchery	0	1	78	1.01		1.00	1.00	1.05	1.00
Pen culture of fish and prawn	0	7	72	1.09		1.00	1.11	1.05	1.20
Shrimp farming	0	11	68	1.14		1.00	1.05	1.00	1.50
Edible oyster farming	18	2	59	1.48		1.00	1.00	1.00	2.90
Pearl culture	0	5	74	1.06		1.00	1.05	1.00	1.20
Fish processing and value addition	8	15	56	1.39		1.00	1.05	1.20	2.30
On farm Production of inputs									
Seed Production	31	22	27	2.05	4	1.20	2.40	1.70	2.90
Planting material production	31	20	29	2.03	6	1.15	2.40	1.65	2.90
Bio-agents production	6	27	47	1.49		1.50	1.55	1.10	1.80
Bio-pesticides production	15	35	30	1.81		2.50	1.60	1.25	1.90
Bio-fertilizer production	31	28	21	2.13	3	2.75	1.80	1.85	2.10
Vermi-compost production	60	17	3	2.71	1	2.85	2.50	2.50	3.00
Organic manures production	62	13	5	2.71	1	2.95	2.65	2.25	3.00
Production of fry and fingerlings	11	25	44	1.59		1.45	1.45	1.55	1.90
Production of Bee-colonies and wax sheets	21	5	54	1.59		1.00	1.15	1.20	3.00
Small tools and implements	19	30	31	1.85		2.30	1.70	1.20	2.20
Production of livestock feed and fodder	29	25	26	2.04	5	2.55	1.80	1.40	2.40
Production of Fish feed	18	25	37	1.76		2.65	1.20	1.20	2.00

Table 4. Weighted Score (1 – 3 Scale) and Rank of the training needs of farmers of Arunachal Pradesh in disciplines of Home Science, Capacity building & Agricultural Engineering

TThematic Area	Arunachal Pradesh (n = 80)					Tirap	West Kameng	East Siang	West Siang
	VI	I	NI	WS	Rank	WS	WS	WS	WS
Home Science/Women empowerment									
Household food security by kitchen gardening and nutrition gardening	35	29	16	2.24	3	2.75	2.30	1.60	2.30
Design and development of low/mini. cost diet	19	28	33	1.83		1.20	1.90	1.70	2.50
Designing/ development for high nutrient efficiency diet	10	37	33	1.71		1.40	1.65	1.40	2.40
Minimization of nutrient loss in processing	16	28	36	1.75		1.60	1.80	1.10	2.50
Gender mainstreaming through SHGs	31	26	23	2.10	5	1.85	2.40	1.35	2.80
Storage loss minimization techniques	20	27	33	1.84		1.65	1.80	1.20	2.70
Value addition	35	16	29	2.08	7	2.30	1.55	1.65	2.80
Income generation activities for empowerment of rural Women	40	30	10	2.38	1	2.70	2.30	1.80	2.70
Location specific drudgery reduction technologies	35	19	26	2.11	4	2.40	2.45	1.10	2.50
Rural Crafts	32	24	24	2.10	5	2.85	1.40	1.65	2.50
Women and child care	42	22	16	2.33	2	2.80	2.05	2.05	2.40
Capacity Building and Group Dynamics									
Leadership development	25	31	24	2.01	3	1.50	2.15	1.80	2.60
Group dynamics	15	36	29	1.83		1.70	1.95	1.15	2.50
Formation and Management of SHGs	43	21	16	2.34	1	2.00	2.50	1.85	3.00
Mobilization of social capital	13	28	39	1.68		1.40	2.15	1.15	2.00
Entrepreneurial development of farmers/youths	32	31	17	2.19	2	2.05	2.35	1.65	2.70
WTO and IPR issues	8	7	65	1.29		1.15	1.40	1.20	1.40
Agricultural Engineering									
Installation and maintenance of micro irrigation systems	40	20	20	2.25	2	2.40	2.70	1.30	2.60
Use of Plastics in farming practices	36	25	19	2.21	3	2.20	2.70	1.15	2.80
Production of small tools and implements	23	29	28	1.94		2.40	1.50	1.35	2.50
Repair and maint. of farm machinery and implements	13	22	45	1.60		1.55	1.20	1.25	2.40
Small scale processing and value addition	49	8	23	2.33	1	2.90	2.05	1.35	3.00
Post Harvest Technology	34	11	35	1.99		1.30	2.35	1.30	3.00

Table 5. Weighted Score (1 – 3 Scale) and Rank of the training needs of rural youths of Arunachal Pradesh in different vocations

Thematic Area	Arunachal Pradesh (n = 80)					Tirap	West Kameng	East Siang	West Siang
	VI	I	NI	WS	Rank	WS	WS	WS	WS
Mushroom Production	43	15	22	2.26	4	2.75	1.65	1.65	3
Bee-keeping	24	11	45	1.74		1	1.2	1.75	3
Integrated farming	43	22	15	2.35		2.6	2.25	1.65	2.9
Seed production	30	15	35	1.94		1	2.45	1.5	2.8
Production of organic inputs	20	39	21	1.99		2	2.3	1.35	2.3
Integrated Farming	33	27	20	2.16	5	2.45	2.05	1.65	2.5
Planting material production	23	25	32	1.89		1.15	2.25	1.75	2.4
Vermi-culture	44	31	5	2.49	2	2.3	2.55	2.1	3
Sericulture	20	4	56	1.55		1	1.2	1.1	2.9
Protected cultivation of vegetable crops	16	39	25	1.89		1.95	1.6	1.5	2.5
Commercial fruit production	26	34	20	2.08	9	1.9	2	1.7	2.7
Repair and maintenance of farm machinery and implements	10	14	56	1.43		1.1	1.55	1.15	1.9
Nursery Management of Horticulture crops	28	28	24	2.05	10	1.7	2.1	1.8	2.6
Training and pruning of orchards	29	29	22	2.09	8	1.9	2.25	1.4	2.8
Value addition	35	20	25	2.13	6	2.45	1.7	1.55	2.8
Production of quality animal products	9	17	54	1.44		1.1	1.35	1	2.3
Dairying	16	25	39	1.71		1.1	1.95	1.4	2.4
Sheep and goat rearing	2	25	53	1.36		1.1	1.65	1	1.7
Quail farming	1	6	73	1.10		1.1	1	1	1.3
Piggery	57	14	9	2.60	1	2.8	2.25	2.45	2.9
Rabbit farming	1	20	59	1.28		1.1	1.15	1.15	1.7
Poultry production	42	24	14	2.35	3	2.55	2.15	1.8	2.9
Ornamental fisheries	6	22	52	1.43		1	1.2	1.4	2.1
Para vets	4	13	63	1.26		1	1.15	1.2	1.7
Para extension workers	7	11	62	1.31		1.15	1.1	1	2
Composite fish culture	17	23	40	1.71		2.15	1.35	2.15	1.2
Freshwater prawn culture	0	3	77	1.04		1	1.05	1.1	1
Shrimp farming	0	2	78	1.03		1	1.05	1.05	1
Pearl culture	0	0	80	1.00		1	1	1	1
Cold water fisheries	3	18	59	1.30		1	1.45	1.55	1.2
Fish harvest and processing technology	8	16	56	1.40		1.05	1.05	1.3	2.2
Fry and fingerling rearing	10	28	42	1.60		1.7	1.15	1.55	2
Small scale processing	34	15	31	2.04	11	2.45	1.65	1.15	2.9
Post-Harvest Technology	28	12	40	1.85		1.15	2.05	1.2	3
Tailoring and Stitching	20	26	34	1.83		1.65	1.35	1.4	2.9
Rural Crafts	31	28	21	2.13	6	2.75	1.4	1.75	2.6

third position (table 2).Under Pomology, cultivation techniques of fruit bearing trees (52%) like layout andmanagement of orchards, management of young plants/ orchards, training and pruning etc. were the most important training needs as perceived by farmers. Production and management technology of tubers and spices (37%) was the most important training need with respect to other horticulture crops.

Animal husbandry and fisheries sector : Training with respect to rearing of piggery was the most sought after one (54%) by farmers of Arunachal Pradesh (Table 3). This was followed by prevention and cure of diseases, rearing of poultry, production of feed ingredients and feeding management of animals, integrated fish farming and composite fish culture.

On farm production of agricultural inputs : Training on production of Vermin-compost and Organic manures and Bio fertilizers were still hot topics among farmers (60 & 62% respectively). This was followed by seed production technologies and production of planting materials and feed and fodder production for livestock feeding (Table 3)

Home Science/Women empowerment : Training on income generating activities for empowerment of rural women was the most sought after (40%) followed by health care of women and children, provision of household nutritional security through kitchen gardening and training on location specific drudgery reduction techniques (Table 3). Training on rural crafts, formation of women self-help groups for gender mainstreaming and training on value addition closely followed.

Capacity building and group dynamics : Formation and management of self help groups in the villages (43%) followed by Entrepreneurship and Leadership development among rural youths and farmers were the most important training needs under capacity building and group dynamics (Table 4).

Agricultural engineering : Training on small scale processing and value addition (49%), installation and maintenance of micro irrigation systems, use of plastics in farming practices and participatory watershed creation and management were the highly sought after training needs under agricultural engineering (Table 4).

b. 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 separately identified and presented shows a picture of inadequate training (Table 5). Training on Pig rearing seems to be most inadequate and in need as responded by majority of the rural youth (57%). Same was the case with Vermi-culture (44%) followed by Poultry, Mushroom production, integrated farming, rural crafts and value addition. Training and pruning of orchards, commercial fruit production, nursery management of Horticulture crops and Post-harvest technology and small scale processing were also sought after.

CONCLUSION

The results revealed that even in the most popular areas of training, there was an inadequacy in terms of frequency of training imparted. This is evident from the fact that farmers sought maximum trainings on Integrated farming systems, integrated pest and disease management and technologies for soil and water conservation which were also found to be the most common training components in KVKs. Under horticulture sector also the trend was similar with Nursery management topping the list followed by cultivation techniques of fruit bearing trees like layout and management of orchards. Training needs under animal sciences also showed demand for the most common vocation i.e. pig rearing followed by prevention and cure of diseases. 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 gap which needs to be addressed. The KVKs have tore-orient their trainings based on these findings to fill the gap existing in their respective districts.

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