

# Training Need Analysis Model at Central Java Agricultural Training Center

Nugroho Hasan\*, Widiyanto Widiyanto, and Agung Wibowo

*Agricultural Communication and Extension, Sebelas Maret University, Ir. Sutami No. 36A Street Surakarta, Indonesia 57126*

\*Corresponding author. Email: [nugrohohasan@student.uns.ac.id](mailto:nugrohohasan@student.uns.ac.id)

## ABSTRACT

The training need analysis model is a strategy in the process of gathering information about needs that can be addressed by organizing training programs. This research aims to find out the training needs analysis model in the Central Java Agricultural Training Center. This research employed a descriptive qualitative and quantitative approach with a survey on garlic and chili farmers in Central Java. The selection of respondents by purposive sampling. Data were collected using a questionnaire, interviews, and observation. Data analysis was conducted using training methods need assessment tools. Respondents of the research are 10 garlic farmers in Karanganyar, Magelang, and Wonogiri Regency and 14 chili farmers in Magelang, Grobogan, Kudus, and Wonogiri Regency consisting of the head and members of chili and garlic farmers in Central Java. The result of the research showed that garlic farmers require training on irrigation, pest control, storage, packaging, good agriculture practice (GAP), marketing, and group success. Chili farmers require training on irrigation, pest control, marketing strategies, and group success.

**Keywords:** *Training needs analysis model, farmers*

## 1. INTRODUCTION

Human resources are an important aspect in development planning, implementation, and evaluation. Human resource development is needed to improve knowledge and skills in the work they do. Efforts that can be taken to develop training resources include education, counseling, workshops, training, seminars, training, and others. Training is an effort to increase knowledge and skills due to performance discrepancies.

Increasing the capacity of human resources is an important thing that must be done from time to time. Training in the context of increasing the capacity of human resources is carried out to increase the level of empowerment. The level of empowerment in terms of social, economic, and cultural. Human empowerment is very important along with the times. The last decade brought real changes in social and cultural life with the development of information and communication technology [1]. Changes in information technology are very fast so that it encourages social change in society. The concept of social change according to Gillin

and Leibo (1986) in Indraddin & Irwan, (2016) Social change is a change that occurs in human life that is accepted, oriented to changes in the geographical conditions of material culture, population composition, ideology, and diffusion in discoveries of new things.

Social changes in society also occur in the agricultural world so that increasing the capacity of agricultural human resources is very important to improve a dynamic and productive farming community. The productivity of farming communities can be shown from the increase in their farming income, cultivation capabilities, and fulfillment of their needs. Training is very important for increasing the productivity of farming communities in the era of changing technology and information. The ultimate goal of training is to get all the benefits that employees who participate in training will receive new knowledge, new skills and new thinking effectively in practice, and to gain the effective transfer of training achievement [3].

The organizers of agricultural training activities are agricultural training technical institutions at both the

central and regional levels. The Agricultural Training Center (Bapeltan) of Central Java Province is a Technical Implementation Unit (UPT) of the Central Java Province Agriculture and Plantation Service which has the main task of carrying out the development of agricultural and plantation human resources in the Central Java Province through empowering agricultural and plantation human resources. The vision of Bapeltan Central Java is the realization of strong and character human resources in the context of developing competitive, populist, and sustainable agribusiness systems and businesses.

Bapeltan Central Java has the technical authority to organize training in agriculture from upstream to downstream. The main tasks of Bapeltan are, (1) preparation and implementation of agricultural and plantation human resource empowerment programs in Central Java through training and non-training activities, and (2) providing education and training in the technical fields of agriculture and plantation officers/apparatus, farmers, and entrepreneurs. agribusiness based on Central Java's agricultural human resource development program. Based on these duties and principals, Bapeltan Central Java annually conducts training plans. The training planning carried out by Bapeltan is pursued through the identification of training needs. The process of identifying training needs is carried out in the area of prospective trainees by conducting interviews, observations, and filling out the questionnaire. Based on the identification of training needs, it will be known related to the type of planning and training needs analysis model carried out by Bapeltan Central Java.

The process that will be taken in this paper is related to the analysis of the training needs of chili and garlic farmers in Central Java Province. The choice of these commodities was due to the policy from the Ministry of Agriculture of the Republic of Indonesia in 2021 related to increasing productivity, production, and exports of horticultural commodities. The chili commodity was chosen because it is widely cultivated by farmers in Central Java and is vulnerable to cultivation and post-harvest problems. The garlic commodity was chosen because it is widely cultivated by farmers in the highlands and often experiences problems related to maintenance, post-harvest management and marketing. So, this research aims to find out the training needs analysis model in the Central Java Agricultural Training Center for agribusiness training on chili and garlic farmer.

## 2. LITERATURE REVIEW

There are three basic concepts in planning, namely the definition of planning, substantive planning (what will be planned and for whom to plan it), normative planning (how and what reasons for planning to be prepared. Planning can be interpreted as community activities or institutions that are serious to develop optimal strategy to achieve a set of desired goals [4]

The types of planning that are often known in Indonesia include top-down and bottom-up planning, vertical and horizontal planning, and participatory and non-participatory planning. Participatory planning prioritizes the target or community as the subject, while non-participatory planning emphasizes the community as the object[5]. The planning approach is divided into five, namely (1) prescriptive planning, (2) incremental planning, (3) advocacy planning, (4) transactive planning, and (5) radical planning.[6]

Training management is a series of training processes that are managed through various procedures or activities including training planning, training implementation, and training evaluation by utilizing human resources, information, systems and funding sources while still paying attention to management functions, roles and expertise to produce training in accordance with the objectives. and useful for participants. Training management includes training planning, training implementation, and training evaluation[7].

Training needs are defined as the gap between actual performance and desired performance. Training needs will determine the effectiveness and efficiency of the training program. Therefore, proper training needs analysis is needed by managers. Training needs assessment is defined as measuring and assessing the gap between the actual state of performance and the desired performance[8]

The training needs analysis model according to Gilley and Egglund (1991) in Karsidi (2017) is the individual self-fulfillment model (random and selective approach model), the individual appraisal model (collaborative and non-collaborative model of individual participation), the discrepancy model (a model for measuring the actual performance gap). with expectations), diagnostic models (describes training needs as related to deficiencies that prove harmful to the organization, analytical models (models that focus on a clue that provides information about the status of a person or a program), and democratic models (active and collaboratively using nomination and voting techniques).

## 3. METHODOLOGY

This research use mix method, quantitative and qualitative method. Data were collected using a questionnaire, interviews, and observation. Respondents of the research are 10 garlic farmers in Karanganyar, Magelang, and Wonogiri Regency and 14 chili farmers in Magelang, Grobogan, Kudus, and Wonogiri Regency consisting of the head and members of chili and garlic farmers in Central Java. Data collected was processed using percentage tabulation analysis. Furthermore, measurement table was analyzed using Likert Summated Rating Scale (LSRS). For validity the result of the research use source triangulation.

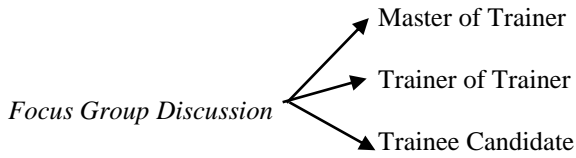


Figure 1. Source Triangulation

The implementation of training needs analysis activities at the Central Java Agricultural Training Center uses a participatory approach including field practice, interviews, participatory observations, documentation, and literature studies.

Table 1. Training needs analysis method

Activity	Method				
	PL	W	O	D	SP
Examine the type of planning	V	V	V	V	V
Training needs analysis	V	V	V	V	V
Determination of training needs analysis model	V	V	V	V	V

Information

- PL : Field Practice
- W : Interview
- O : Observation
- D : Documentation
- SP : Literature review

## 4. RESULT AND DISCUSSION

### 4.1. Identification of Training Needs and Training Design

Training is an effort to improve the ability of human resources with low skill levels and high needs based on the performance discrepancy between real working conditions and ideal working conditions. [9]. The Central Java Agricultural Training Center (Bapeltan) conducts training as an effort to increase the capacity of agricultural human resources in Central Java Province. The basis for planning Bapeltan Central Java training, namely,

- 1) Government policies related to agriculture
- 2) Identify training needs
- 3) Self-Innovation Trial

The training plan carried out by the Agricultural Training Center on chili and garlic commodities is based on the policy of the Ministry of Agriculture of the Republic of Indonesia related to the national movement to increase productivity, production, and exports [10]. Strengthening the analysis of the training plan is carried

out through identification of field needs because it is to find out the real needs and skills of farmers. Identification of training needs is an action taken to explore information and farmers' needs for skills that need to be improved in training. The Agricultural Training Center identifies training needs for district farmers in Central Java Province. The process of identifying training needs is based on Candidates for Training (CP) / Candidates for Training (CL) who receive assistance from related fields at the Department of Agriculture and Plantation of Central Java Province. The participants (CP)/Training Candidates (CL) who received the assistance were sampled by 2 farmer groups in each district based on the related commodities.[11]

The next step that is prepared for the identification of training needs is making a field needs analysis instrument containing the skills needed in farming, from land processing, plant cultivation, to marketing of agricultural products. The questionnaire is based on each CP/CL farming commodity. The design of the questionnaire was carried out by the training section of Bapeltan together with Widyaiswara. The next step is the process of identifying training needs by the Agricultural Training Center to 15 districts in Central Java Province for 2 weeks. The chili commodity is carried out in 4 districts (Magelang, Grobogan, Kudus, Wonogiri) and the garlic commodity (Karanganyar, Magelang, Wononogiri) in the identification process of training needs carried out by filling out questionnaires by CP/CL farmers and in-depth interviews related to problems experienced in farming. The purpose of this is to find out the detailed needs of farmers to be used as material for the training curriculum at the Agricultural Training Center.

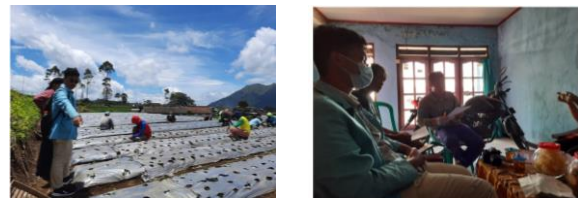


Figure 2. Identify Exercise Needs

The planned training design focuses on farmer competency-based skills. The training design is described in the planning stages as follows.

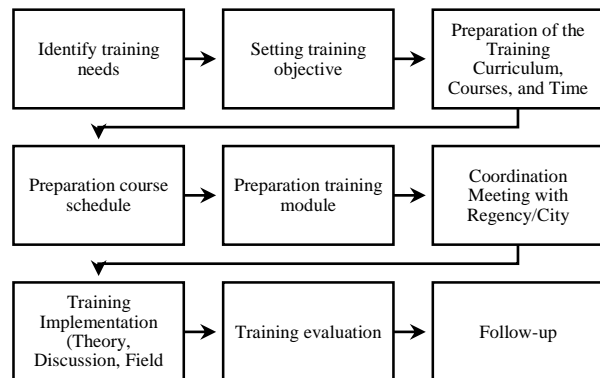


Figure 3. Training Planning Stage

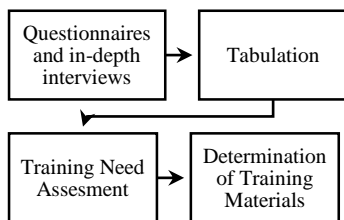
Based on the training planning stages above, it can be concluded that the type of planning carried out by the Central Java Provincial Agricultural Training Center is a blended plan between top down and bottom up with a rational approach. Top-down planning is planning based on government policies that are passed down to stakeholders below so that there is program alignment. Planning Bottom up planning is intended to involve prospective trainees and related stakeholders in planning the training program that will be carried out so that all stakeholders have the same interest for the success of the training.

This plan is in line with Tarigan (2015), planning *bottom up* is a plan that collects the aspirations and needs of the community, then becomes a thought in government planning. Community needs in the context of this training are farmers who receive assistance from the Central Java Provincial Agriculture Office. The rational approach in bottom-up planning is through training objectives that have been previously determined by Bapeltan which are tentative in nature so that they can be added from the results of discussions with prospective farmers for training. This approach is in line with Netting et al. (2008), which the approach aims for the best training plan.

**4.2. Training Needs Analysis**

**4.2.1. Training Needs Analysis Process**

Training needs analysis is defined as measuring and assessing the gap between actual performance and desired performance. The purpose of the training needs analysis is to determine the nature of the problem, which affects the problem, the number of people experiencing the problem, the form of performance deficiency, what should be done but not done, and what should be done when it should not be done. The following is the process of analyzing training needs at the Central Java Agricultural Training Center.



**Figure 4.** Training Needs Analysis Process

Training needs analysis was carried out based on a training needs identification questionnaire. Identification of training needs includes training subjects, types of skills, skill levels, level of needs, and other proposed skills. After identifying training needs, the training needs assessment is carried out using training needs assessment

tools to find out the material needed by prospective trainees.

1	2	3	Low	Needs
4	5	6	Currently	
7	8	9	Table	
Low	Currentl y	Tal l		
Skills				

**Figure 5.** The Process of Determining Training Materials Through Training Needs Assessment Tools

Based on the table above, it is possible to determine the priority and level of importance of training materials at the Central Java Agricultural Center which can be seen in the following table.

**Table 2.** Priority Determination of Training Materials

Priority of Training Material	Color	Interests Delivered
1	Red	Yes
2	Yellow	Yes
3	Yellow	Yes
4	Yellow	Yes
5	Yellow	Yes
6		No

Training needs analysis conducted on chili and garlic farmers in Central Java Province resulted in data on the needs and skills needed by farmers so that the material to be given in the training could be analyzed. The following is the final result of identifying the training needs for garlic and chili commodities in Central Java Province.

**Table 3.** Final Results Identification of Garlic Exercise Needs

Number	Exercise Eyes	Type of Skill	Skill Level	Level of Need	Information
1.	Land preparation and planting	a Quality seeds	Currently	Tall	2
		b Onion seed seeding	Currently	Tall	2
		c Land preparation	Currently	Currently	4
		d Planting	Currently	Tall	2
2.	Plant maintenance	a Fertilization	Currently	Tall	2
		b Irrigation	Low	Tall	1
		c pest control	Low	Tall	1
3.	Harvest and Post-harvest handling	a Harvest time and method	Currently	Tall	2
		b Grading and sorting	Low	Currently	3
		c Storage	Low	Tall	1
		d Packaging	Low	Tall	1
4.	Garlic Gap	Completely understand the garlic gap	Low	Tall	1
5.	Processed onion business opportunity	a Fried onions	Low	Currently	3
		b Onion flour	Low	Currently	3
		c Onion paste etc	Low	Currently	3
6.	Onion marketing	a Farming capital	Low	Tall	1
		b Marketing strategy	Low	Tall	1
		c Business partnership	Low	Tall	1
		d Online business	Low	Tall	1
7.	Farmer's Institution	a Farmer's organization	Currently	Tall	2
		b Book administration	Low	Currently	3
		c Group meeting	Currently	Tall	2
		d Tips for success because of a group	Low	Tall	1

**Table 4** Final Results Identification of Chili Exercise Needs

No	Exercise Eyes	Type of Skill	Skill Level	Level of Need	Information
1.	Planting preparation	a Quality seeds	Currently	Tall	2
		b Chilli seed seeding	Currently	Tall	2
2.	Plant maintenance	a Land preparation	Currently	Currently	4
		b Planting	Currently	Currently	4
		c Plant care	Currently	Tall	2
		d Fertilization	Low	Tall	1
		e pest control	Low	Tall	1
3.	Harvest and Post-harvest handling	a Harvest time and method	Currently	Tall	2
		b Grading and sorting	Low	Currently	3
		c Storage	Low	Currently	3
		d Packaging	Low	Currently	3
4.	Chili Gap	Complete understanding of chili gap	Low	Currently	3
5.	Processed chili business opportunity	a Sauce / chili / shredded	Low	Low	6
		b Susetan dry chili	Low	Low	6
		c Candied chili	Low	Low	6
6.	Chili Marketing	a Farming capital	Low	Currently	3
		b Marketing strategy	Low	Tall	1
		c Business partnership	Low	Currently	3
		d Online business	Low	Currently	3
7.	Farmer's Institution	a Farmer's organization	Currently	Tall	2
		b Book administration	Currently	Tall	2
		c Group meeting	Currently	Tall	2
		d Success tips	Low	Tall	1

Based on the training needs analysis, the results of the identification of training needs (IKL) on garlic and chili farmers can be determined the priority of the material presented in the garlic agribusiness training and chili agribusiness training. The following are the priority materials that will be delivered by the Agricultural Training Center in the 2 types of training above, which are based on the level of needs and skills of farmers in the training needs assessment.

**Table 5** Priority of Material Delivered in Training

Material Priority Order	Garlic Agribusiness Training	Chili Agribusiness Training
1	<ul style="list-style-type: none"> <li>Watering and pest control</li> <li>Postharvest Storage and Packaging</li> <li>Garlic Gap</li> <li>Garlic marketing</li> <li>Tips for group success</li> </ul>	<ul style="list-style-type: none"> <li>Fertilization and pest control</li> <li>Marketing strategy</li> <li>Tips for group success</li> </ul>
2	<ul style="list-style-type: none"> <li>Quality seeds, seeding, planting</li> <li>Fertilization</li> <li>Harvest time and method</li> <li>Farmers' organizations and meetings</li> </ul>	<ul style="list-style-type: none"> <li>Quality seeds, nursery</li> <li>Plant care</li> <li>Harvest time and method</li> <li>Farmer organizations, administration, group meetings</li> </ul>
3	<ul style="list-style-type: none"> <li>Grading and Sorting</li> <li>Garlic processing (fried onions, onion flour, onion paste)</li> <li>Book administration</li> </ul>	<ul style="list-style-type: none"> <li>Grading and sorting, storage, packaging</li> <li>chili gap</li> <li>Farming capital, business partnerships, online business</li> </ul>
4	<ul style="list-style-type: none"> <li>Land preparation</li> </ul>	<ul style="list-style-type: none"> <li>Land preparation and planting</li> </ul>
5	-	-
6	-	<ul style="list-style-type: none"> <li>Sauce/sambal/shredded, dried chili, candied chili</li> </ul>

The training materials are of course very important to be included in the training curriculum. What needs to be considered is how the material is transferred to the trainees in the training. Material transfer is strongly influenced by communication, support and assignments in training[12].

#### 4.2.2. Training Needs Analysis Model

The training needs analysis model is a strategy used in the training needs analysis process. The training needs analysis model carried out by the Agricultural Training Center is a discrepancy system model with a problem need approach. According to Gilley and Egglund in Karsidi (1991), the discrepancy model is to identify the gap between the actual state of performance and the state of supposed performance. The problem need approach is carried out to define deficiencies and then develop improvement programs. Training needs and objectives are directly linked to diagnosing system difficulties.

Central Java Agricultural Training Center uses a discrepancy model with a problem-needs approach which is indicated by a needs analysis process using training needs assessment tools so that it can determine the level

of needs and skill levels of prospective trainees. The level of needs and skills of prospective trainees is the key to determining the training material to be delivered. Analysis of training needs is directed at the needs of farming community groups so that the training team has been recommended to enhance patient safety by reducing human errors[13]

## 5. CONCLUSION

Central Java Agricultural Training Center uses a discrepancy model with a problem-needs approach which is indicated by a needs analysis process using training needs assessment tools so that it can determine the level of needs and skill levels of prospective trainees. The level of needs and skills of prospective trainees is the key to determining the training material to be delivered.

## AUTHORS' CONTRIBUTIONS

The authors of this article are (1) Nugroho Hasan as the main writer and implementer of training needs analysis activities at the Central Java Agricultural Training Center, (2) Widiyanto as a companion and director of writing content, (3) Agung Wibowo as article reference director.

## ACKNOWLEDGMENTS

Sincere thanks to the Central Java Agricultural Training Center (Bapeltan) as recipients of internship students and the Agricultural Extension and Communication Study Program, Faculty of Agriculture, Sebelas Maret University who have assisted in the implementation of student internships.

## REFERENCES

- [1] Mulhayatiah D, Sinaga P, Rusdiana D, Kaniawati I, Suhendi HY (2021) Pedagogical and professional physics teacher training: Why hybrid learning is important? *J Phys Conf Ser.* <https://doi.org/10.1088/1742-6596/1806/1/012036>
- [2] Indraddin, Irwan (2016) *Strategi Dan Perubahan Sosial.*
- [3] Liu C, Liu X (2020) Employee Training System of Manufacturing Enterprises for Implementing Industry 4.0. *J Phys Conf Ser.* <https://doi.org/10.1088/1742-6596/1648/4/042117>
- [4] Mahi AK, Trigunarso SI (2017) *Perencanaan Pembangunan Daerah: Teori & Aplikasi.* Kencana, Jakarta
- [5] Tarigan R (2015) *Perencanaan Pembangunan Wilayah, Revised Edition.* JB Earth Script

- [6] Netting FE, O'Connor MK, Fauri DP (2008) *Comparative Approaches to Program Planning*. Johnson Willey & Sons Inc, New Jersey
- [7] Jannah DEN (2015) *Manajemen Pelatihan Di Lembaga "Cristal Indonesia Manajemen."* Univ. Negeri Yogyakarta
- [8] Karsidi R (2017) *Manajemen Pelatihan*. UNS Press, Surakarta
- [9] Hickerson JF, Middleton J (1975) *Helping People Learn: A Module for Training Trainers*. East West Communication Institute, East West Honolulu Hawaii
- [10] Nursyamsi D (2020) *A Pembangunan Sumber Daya Manusia Pertanian Mendukung Ketahanan Pangan Nasional*. Jakarta
- [11] Barnes K, Ngari C, Parkurito S, Wood L, Otundo D, Harrison R, Oluoch GO, Trelfa A, Baker C (2021) Delays, fears and training needs: Perspectives of health workers on clinical management of snakebite revealed by a qualitative study in Kitui County, Kenya. *Toxicon X*. <https://doi.org/10.1016/j.toxcx.2021.100078>
- [12] Ismail A, Foboy NA, Mohamad Nor A, Abdullah AA, Ismail Y (2019) Training Management as an Antecedent of Training Transfer. *J Nusantara Study*. <https://doi.org/10.24200/jonus.vol4iss1pp136-158>
- [13] De Schepper S, Geuens N, Roes L, Hilderson D, Franck E (2021) Generic Crew Resource Management Training to Improve Non-technical Skills in Acute Care—Phase 1: An Interdisciplinary Needs Assessment Survey. *Clin Simul Nurs*. <https://doi.org/10.1016/j.ecns.2020.12.009>