



Resolving the Problem of Seasonal Labor Shortage by Establishing Professional Technical Groups

Min-Hsien Yang, Professor, Feng Chia University, Taiwan
I Han, Associate Professor, Feng Chia University, Taiwan

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INTRODUCTION

Taiwan and the rest of the world are facing the challenges of labor shortage in agriculture. Low labor participation rate in domestic agricultural sector, the aging society with low fertility rate and the fact that young adults move to cities for work has resulted in a constrictive population pyramid, which made for a constant labor shortage in agricultural sector. Therefore, the elderly and some of the working population are utilized as labor force to solve the problem. But still, it's not enough to support the overall production of domestic agriculture. This urgent issue needs to be addressed as soon as possible in order to prevent further threats to the development of domestic agriculture, the sustainability of the villages and national food security in the future.

The problem of labor shortage in agriculture is caused by multiple factors, such as low income, the lack of construction in rural areas and poor working environments. The younger generation is concerned and not willing to stay in the agricultural sector due to the lack of motivation. Moreover, small farming by family labors cannot cover the peak time workloads, while local manpower hiring is mostly restricted by location and connection. The solutions for the insufficient and unstable labor supply will be introduced in this paper.

FARMLAND AND LABOR STRUCTURE

Farmland usage

There were totally 800,000 hectares of farmland by the end of 2015 in Taiwan, with 719,000 hectares cultivated, including 250,000 hectares for rice, 72,000 hectares for grain crops, 32,000 hectares for special crops, 184,000 hectares for fruit trees, 146,000 hectares for vegetables, 140,000 hectares for flowers, and 150,000 hectares for forage. In addition, 8,000 hectares are for husbandry lands, while 33,000 hectares are for fishing.

Farm Households and Labors

There were 784,000 farm households by the end of 2014, accounting for 9.4% of the entire

households in Taiwan. Farmer population was 3.01 million, accounting for 12.9% of the total Taiwanese population. Among all farm households, 83.9% of them have their own farmlands, while 4.5% farm households are commissioned. There were 555,000 farm labors at the end of 2015, accounting for 4.9% of all employed population of all sectors.

Farm Labor Shortage

There were 555 thousands (self-) employed population in the agricultural sector in 2015, a sharp reduction from 1.6 million in 1978. The age of agricultural labors is 57 on average, 17.3% above 65 years old, 57.3% between age 45 and 64, 19.6% between age 30 and 44, and only 5.8% between age 15 and 29. The agricultural labors mostly consist of family members, accounting for 86% of all labor forces, whereas regular labor only accounts for 4% and temporary labor for 10%. The problem of family-centered labors results from aging population, decreasing labor participation rate, low income level and unfavorable working conditions. The outflow of rural labor forces to urban areas makes dispatching manpower a sever challenge, and it is only when during peak seasons would farm owners increase salary to hire more labors.

Overall speaking, human resources in agriculture encounter a sever challenge. Unpaid family members becomes the main source of labor and temporary labors are only hired during busy seasons. The younger generation gets no incentives to join the agricultural sector, and aging farmers can hardly find successors. The insufficient agricultural labors creates a big problem in sustainable agricultural development. It is an urgent and critical issue for the authorities to attract young people back to the rural areas by providing income protection as well as enhancing small farm efficiency.

AGRICULTURE FEATURES AND FARM LABOR SITUATION IN TAIWAN

The following points are main reasons why agricultural sector is unable to create incentives for younger generations compared with manufacturing and service sectors.

Farm Labor Shortage

Farm labor shortage has two types: regular and seasonal. Regular labor shortage happens on a daily basis. For example, in dairy farming, continuous operation on milking, feeding, observation of estrus for breeding, barn cleaning and waste treatment are needed, but there aren't enough labors to do the work. On the other hand, seasonal shortage usually happens in the busy time of seeding and harvesting, during which time it demands more labor forces to help.

Inferior Working Conditions in Agricultural Sector

Working in the agriculture requires body health because of the extreme weather in summer and winter. Even in greenhouse, the indoor temperature can be as high as 40°C. Therefore, such working environment pales in comparison with other office jobs such as in the manufacturing and service industries.

Irregular Working Time

Working hours of farm workers are mostly irregular, depending on weather conditions such as sunshine intensity. Most farmers choose to work from 5 to 9 in the morning, or 14 to 18 in

the afternoon to avoid mid-day sun. The irregular working time is not attractive to the general public, which causes difficulties in recruiting new members.

Low Salary Level

The high skill it requires does not equal to its payment. The lower than average salary is usually NT\$1,000~1,500 per day, but could be as low as NT\$800 per day. Women are also treated unfairly in the agricultural job market.

Professional Technique Requirement

Farm work requires high skills and good health condition in harvesting, grafting, cutting, fruits and flowers thinning, bagging, spraying, and weeding.

Small Scale Operation

Small-scale farming increase production costs because automation using machines is not fully feasible. The average farming size is reduced to 0.7 hectares per household, from 0.79 hectares in 2000, and 0.91 hectares in 1960.

Improvement on Working Environment

It is not possible to reduce the demand for farm labor without automation in Taiwan. Compared to machine-based farm works in America, Europe, and Japan, Taiwan should improve working environment in farm to effectively increase labor supply.

SEASONAL LABOR SHORTAGE

The need for seasonal farm labors depends on many factors, such as the variety of crops and seasons of growth. Therefore, it is necessary to analyze peak seasons and labor requirement in order to meet labor demand. COA surveyed the labor demand of tea, vegetable, fruit, and strawberry farming in 2014 and found that the time of serious labor shortage for tea farms are the following three seasons: from April to September, and in November, which required more than 100 working hours, and even up to 184.8 hours in May. Usually, more than 20 temporary labors on average are commissioned per day during the busiest month in spring. Vegetable farms require more than 80 hours of work per day from April to May and August to September, particularly in August due to the labor shortage problem. The problem can last as long as 20 days without sufficient labor supply. It is estimated that more than 20 temporary workers should be hired per day to fill the gap.

On the other hand, the labor shortage in managing fruit trees farms happens from April to June and September to November. The busiest time for farms of most tropical fruit, such as mango, wendan, and sugar apple, is in summer time, when average working hours exceed 80 hours, particularly in September. The average labor shortage lasts about 20 days, therefore each farm demands additional 4 to 9 working labors.

Overall, the peak demand of labor force in farm is fulfilled by temporary labors. However, it is not appropriate in practice that farms always hire temporary labors with various skill requirements. On the one hand, temporary labors are required during the harvest time. On the other hand, regular farm operation requires long-term labors. Therefore, the agricultural authorities should plan accordingly for the varieties of crops, farm regions, and labor dispatching.

In a survey for tea farm, nearly 60% of farms reported that temporary labor supply is sufficient via self-employed family members and temporary labors, while 35% of farms reported a serious shortage in labor. Nevertheless, 68% of farms still demand more manpower, while 57% of farms can still handle the issue. In the future, tea farms wish the government to resolve the labor shortage problem by using foreign labors (38.3%), providing labor-dispatching agents (37.8%), establishing manpower banks (30.4%), and coordinating skill training courses (27.8%).

In a vegetable farm survey, the labor shortage problem is even more serious than in tea business, because vegetables are always in production. 49% vegetable farms reported severe labor shortage. Nearly 77% reported the future need of labor because of the aging farm labors. In the future, vegetable farms wish the government to resolve the labor shortage problem by using foreign labors (47.9%), providing labor-dispatching agents (52.7%), establishing manpower banks (43.6%), and coordinating skill training courses (42.4%). Finally, the result of survey on fruit and strawberry farms are very much like tea farms.

THE PROBLEM SHOOTING OF LABOR SHORTAGE IN AGRICULTURE

COA is keen to promote farm automation by using agricultural machines to resolve the problem of labor shortage and improve working conditions. Meanwhile, COA collaborates with 1111-Manpower Bank to recruit regular labors as well as summer interns. The recruitment network for regular and temporary manpower is via 359 local employment service centers in Taiwan.

COA plans the following proposals in 2017 in order to resolve the labor shortage problem and improve the working environment to attract new sources of labor participants in the agricultural industry.

Improve Working Condition and Industrial Standard Operation Procedure

Continue to promote automation by using machines to optimize operation in technology development, facilities, and procedures.

Increase New Labor via Agricultural Seasonal Labor Shortage 2.0 Program by Two Service Groups

- (1) Train and hire young adults to join agricultural technical groups and send technical assistant groups to farms to relieve the problem of high-skilled labor shortage.
- (2) Explore new sources of labor by recruiting village women, young men on military waitlist, the jobless and aboriginal people, providing them health care and labor insurance benefits.
- (3) Form holiday farm service groups and get assistances from open prison inmates to do easy farm jobs.

ESTABLISHING AGRICULTURAL PROFESSIONAL TECHNICAL GROUPS

Operation Model

(1) Dispatching & Supporting Units

- a. Three groups (six agricultural regions) as the first trial: Taichung group (including Taichung, Changhua, Nantou and Miaoli County), Kaohsiung group, and Pingtung group.

- b. Each group selects one region with high-value produce: 4 cities/counties and 9 villages in Taichung group, 1 county and 9 districts in Kaohsiung group, 1 county and 13 villages in Pingtung group. A NGO is selected as dispatching units while other groups work as support units.

(2) Recruit and Improve Labor Sources

Recruit young adults as mentors to resolve the problem of seasonal labor shortage particularly in the sector for high-value products, such as high peaches, persimmons, grapes, strawberries, oranges, wax apples, candied dates, tomatoes, lychees, mangos, guavas, and papayas, which requires high technical skills in harvesting, grafting, cutting, fruits and flowers thinning, bagging, spraying, and weeding.

(3) Operation Method

Dispatching unit should arrange farm jobs, send working teams to nearby farms and control the labor shortage by dispatching labors to areas in need.

(4) Dispatching Units

- a. Labor recruitment: 30 agricultural mentors are selected to form an agricultural group. Agricultural certificates, long-term labor insurances and bonus are also provided.
- b. The benefits for agricultural mentors:
 - i. Salary: Salary should be provided on a monthly basis.
 - ii. Employment bonus: Monthly bonus can be paid as high as NT\$8,800 (or NT\$50 per hour) for mentors.
 - iii. Agricultural fund: Agricultural mentors can get NT\$10,000 subsidy per month for over 144 hours of works.
 - iv. Salary, employment bonus, and agricultural fund: The total payment can be as high as NT\$51,800 for more than 22 days of works. The calculation is as follows: NT\$1,500 per day for 22 days equals NT\$33,000, plus scholarship for up to NT\$18,800 per month (including NT\$10,000 for agricultural fund).
 - v. Transportation compensation: NT\$100 per day per person, or NT\$50 for half a day per person.
 - vi. Training bonus: The training bonus for attending agricultural training courses is NT\$133 per hour per person.
 - vii. Labor insurance: Employees are qualified for the labor insurance.

Division of Labor

(1) Local government

Local government assists and integrates crop surveys in local regions, submitting proposals to COA and Farmers' Associations for the first review. In addition, local government will assign a local Farmers' Association as a dispatching unit to report to National Farmers' Association.

(2) Supporting Units

Supporting units will help dispatching tasks to local farms as well as Production and Marketing Group to improve the problem of labor shortage. In addition, monthly operation status should be evaluated and reported, so that agricultural mentors can be sent to problem areas.

Implementation Period

Problem shooting for labor shortage starts from April 5 to December 31, 2017.

CONCLUSION

The top priority is to utilize the domestic labors. The first year should be a trial with smaller scale. The problem shooting procedure should be reviewed and modified for future operation. In addition, the survey done with scientific method can provide information of crops, labor supply, seasons, and regions for future reference. The good balance of labor demand and supply requires an information platform for manpower dispatching and management. The platform should be accessible online or by mobile application across regions. The labor shortage map is generated by timely cloud computing. Technical consulting group will further help to resolve the problem of seasonal labor shortage. The COA adopts multiple methods for agricultural development, by joint recruitment, automation via machines, agricultural technical groups, fishery youth league, high-technology operation, information platform, and data matching.

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