



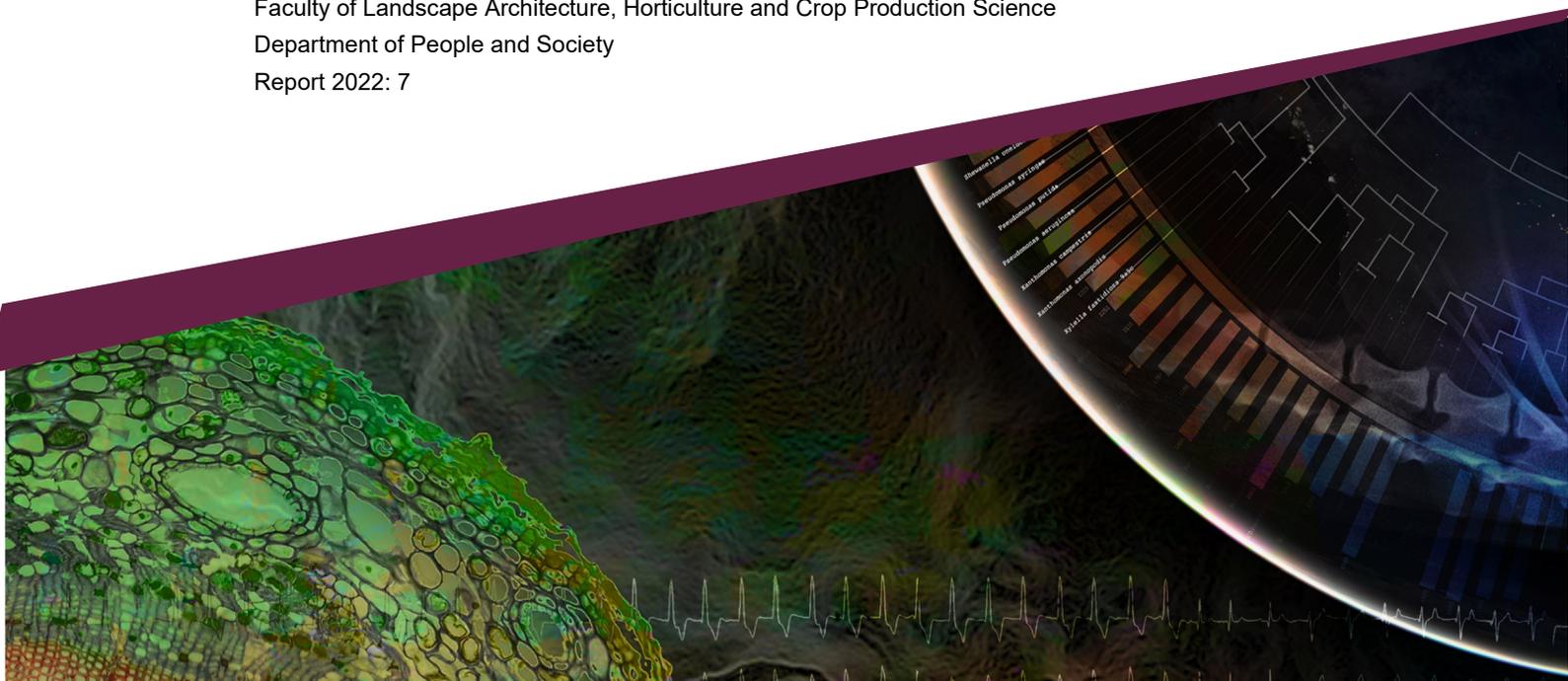
Agricultural health and safety in Sweden and South Korea

– A comparison and the implications

Arbetsmiljön inom lantbruket i Sverige och i Sydkorea – En jämförelse och dess konsekvenser

**Kyungsu Kim, Peter Lundqvist, Kyungsuk Lee,
Kyungran Kim, Hyeseon Chae, Hyocher Kim,
Eva Göransson & Catharina Alwall Svennefelt**

Swedish University of Agricultural Sciences (SLU)
Faculty of Landscape Architecture, Horticulture and Crop Production Science
Department of People and Society
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**Kyungsu Kim, Kyungsuk Lee, Kyungran Kim, Hyeseon Chae
& Hyocher Kim**

Agricultural Health and Safety Division, Rural Development Administration
(RDA), Jeonju, South Korea

Peter Lundqvist, Eva Göransson & Catharina Alwall Svennefelt

Swedish University of Agricultural Sciences, Department of People and
Society, Alnarp Sweden

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Sammanfattning

Inledning och målsättning

Dela kunskap, information och erfarenheter mellan länder och samverkan över hela världen behövs för att främja lantbrukares arbetsmiljö. För utbyte och samarbete för ömsesidig utveckling av lantbrukets arbetsmiljöfrågor mellan Sydkorea och Sverige, genomfördes ett internationellt samarbete under åren 2017-2019.

Material och metoder

Det treåriga samarbetsprogrammet innehöll såväl kortvariga besök som vistelser under längre perioder för grupper och enskilda forskare från båda länderna.

Resultat

Sverige har ett avancerat socialförsäkringssystem och har drivit ett framgångsrikt program för att förebygga arbetsskador bland lantbrukare ”Säkert Bondförnuft”, medan Sydkorea är i en viktig process för att stärka lantbrukares hälsa och säkerhet på nationell nivå genom upprättande av nya lagar och system i ett arbete som leds av olika lantbruksinstitutioner. Även om det finns skillnader mellan Sydkorea och Sverige fanns det många likheter i svårigheterna och utmaningarna för att förbättra lantbrukares hälsa och säkerhet.

Slutsatser

För att säkerställa hälsa och säkerhet för alla människor som arbetar inom lantbruket inklusive egenföretagare, deras familjemedlemmar och anställda konstaterades att flera saker var gemensamma för både Sverige och Sydkorea. Det behövs: korrekt statistik gällande arbetsskador och arbetssjukdomar inom lantbruket, praktiskt förebyggande program lämpligt utformade och anpassade för lantbrukssektorn samt tillgång till arbetsmiljöexperter inom lantbruket och resurser till deras verksamheter. För att få arbetsmiljöarbetet att fungera inom denna sektor krävs ett säkerhetsledningssystem som utformas med hänsyn till lantbrukets särart samt ett långsiktigt stödsystem med de rättsliga, institutionella och organisatoriska åtgärder som är nödvändiga.

Nyckelord: Sydkorea, Sverige, lantbruk, lantbrukare, arbetsmiljö, samarbete, utbyte, statistik, förebyggande program

Abstract

Introduction and objective

Sharing knowledge, information and experiences between countries and collaborative efforts worldwide are needed to promote occupational protection of farmers. In order to exchange and cooperate for the mutual development of agricultural health and safety in Korea and Sweden, international cooperation projects were conducted during the years 2017-2019.

Material and methods

The three year collaboration and exchange program included short and long-term visits for groups and individual researchers from both countries.

Results

Sweden has an advanced social security system, an experience of “Safe Farmer Common Sense” (*Säkert Bondförnuft*) as a successful preventive project, and a stable health and safety network, whereas Korea is in an important stage of strengthening agricultural health and safety management at the national level, establishing laws and systems in a development led by agricultural and forestry institutions. Although there are differences between Korea and Sweden, there were many similarities in the difficulties and challenges in improving agricultural health and safety.

Conclusions

To ensure the health and safety of all people working on farms including self-employed farm operators and their family members, several things were found to be needed in common in both countries: accurate statistics on the current situation of occupational injuries and diseases in agriculture, an application of practical preventive programs suitable for the agricultural sector, and fostering agricultural health and safety experts and promoting their activities. To obtain these goals, a separate or complementary safety management system considering the specificity of agriculture as well as supporting system with the legal, institutional, and organizational measures should be prepared.

Keywords: South Korea, Sweden, agriculture, health & safety, collaboration, exchange, statistics, prevention programs, farmers

스웨덴-한국의 농업안전보건 현황의 비교 및 시사점 초록 (Abstract)

전세계적으로 직업적 안전보건관리의 취약계층인 농업인의 직업적 보호 증진을 위해서 국가 간의 지식·정보·경험의 공유 및 협력이 필요하며, 이러한 노력의 일환으로 2017~2019 년 동안 한국-스웨덴 간 국제협력사업을 수행하였다.

스웨덴의 경우 선진적 사회보장제도, 농가안전상식 (“safe common sense in farming” (“Säkert Bondfornuft”) 국가 프로그램을 통한 성공적인 예방사업의 경험, 안정적인 안전보건 네트워크를 보유하고 있으며, 한국의 경우 국가 차원의 농업안전보건관리를 강화해하고 있는 초기단계로서 농림기관 주도의 별도의 법과 제도를 구축해가고 있다.

양국간에 제도적 차이가 있지만, 농업인 안전보건관리의 어려움과 해결과제는 유사하였다. 자영농업인을 포함한 모든 농업인 대상의 실효성 있는 안전보건관리를 위해서는 농업인의 재해발생에 대한 정확한 통계의 생산, 농업분야에 적합한 실천적 예방 프로그램의 적용, 이를 위한 농업안전보건 전문가의 양성과 활동이 필요하며, 특히 농업의 특수성을 고려한 안전보건관리체계와 이를 뒷받침할 법, 제도적, 조직적 대책 마련의 필요성이 공통적으로 도출되었다.

한국-스웨덴 간 국제협력 사업을 통해 서로 간의 배움과 지원을 통해 양국의 농업안전보건의 발전에 기여할 수 있었으며, 또한 유럽, 아시아, 북미 국가들을 연결하는 역할, 나아가 세계적인 네트워크의 강화에 기여하고자 노력하였다.

Preface

There was an intensive collaboration and exchange program during three years (2017-2019) between the Agricultural Health and Safety Division, Rural Development Administration (RDA), Jeonju, South Korea and the Department of Work Science, Business Economics and Environmental Psychology, Swedish University of Agricultural Sciences in Alnarp. This collaboration had a focus on the development of improved working environment for farmers in both South Korea and Sweden.

A number of scientists visited both countries and stayed for shorter or longer visits. We have learned a lot from each other and our countries. We also share a common vision to make life and working conditions better for farmers and their families. Our formal exchange program is finished, but we will continue to find new ways of collaboration.

Alnarp in May 2022

Peter Lundqvist
Professor in Work Science

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Appendix 1. South Korea – Sweden Memorandum of understanding (MoU)

Appendix 2. Honorary Scientist and Advisor

1. Introduction

Farming has been reported to be one of the most dangerous occupations in most countries, including the United States, Canada, and Europe with the highest rate of occupational fatalities in agriculture¹⁻³. The severity of the injury was also reported to be higher than that of the general occupational group.

The occurrence of occupational fatalities for farmers in Korea (29.9 deaths per 100,000 population⁴) was reported to be at a serious level, i.e. 2.7 times that of all workers in Korea (11.2 deaths per 100,000 population³) in 2018 and 6.5 times that of European agriculture (4.6 deaths per 100,000 population²). Also, age-adjusted deaths rates among farmers was highest in all industries in Korea⁵.

Despite this high rate of agricultural injuries and diseases in Korea, the awareness of the importance of occupational health and safety in agriculture and the policy support and management of the country have been insufficient. As these problems were shared socially, efforts have been made to improve occupational health and safety in agriculture since the mid-2000s, mainly by the Korean Rural Development Administration and related researchers. In recent years, preventive efforts have been revitalized as related laws were enacted and national plans were established. Sweden has also been reported to have higher occupational injuries in agriculture than other occupational groups, and has successfully carried out a large-scale national project (*Säkert Bondförnuft*)⁶ to reduce the occupational injuries in agriculture. Nevertheless, there is a need for continuous efforts to improve farm safety and health.

Preventing occupational injuries in agriculture is not easy due to certain characteristics such as exposure to various risk factors, composition of farm labor, i.e., self-employed and family farm workers, individuality of work environment by farm house, and spatially scattered farm houses⁷⁻¹⁰. It has been reported that different approaches from the methods used in the general industries and separate efforts are required^{9,11-12}.

For more effective prevention of occupational injuries, countries around the world are conducting various attempts and studies, an exchange of technology, knowledge-sharing including advanced case studies, and international collaborative activities¹³⁻¹⁴. Korea has established an agricultural health and safety network with some European countries¹⁵⁻¹⁶ as well as in Asia with Japan and Taiwan¹⁷, and

Sweden has conducted a variety of cooperative activities with Nordic countries¹⁸ and major North American countries.

Therefore, as an international cooperation project between 2017 and 2019 for the exchange of technology and mutual support to improve occupational health and safety in agriculture in Korea and Sweden, the “Exchange of Health & Safety Systems and Preventative Measures for Farmers” was carried out. This cooperative project aimed at not only improving occupational health and safety in agriculture in both countries, but also improving international solidarity by promoting linkages between Europe and Asia.

2. Methods

In this international cooperation project, people-to-people and technical exchanges were conducted through mutual exchanges of researchers, joint seminars, exchange of various materials, and MOUs between the two sides. International exchange and cooperation activities were also carried out by holding international symposiums on occupational health and safety in agriculture, and attending international academic conferences.

3. Research findings

3.1 Agricultural Status

In most developed countries, including Korea and Sweden, the agricultural population has declined sharply over the past 50 years. Farmers are faced with a multi-layered economic burden due to exposure to a competitive system due to the agricultural market opening, investments for scaling up the farm and agricultural mechanization, and weakening of agricultural condition such the decline of farm labor. Korea experienced a sharp decline of farms from 2.3 million in the 1960s to 1.1 million today, and the farming population of Korea was about 2.3 million in 2018, less than 5% of the total population¹⁹. The majority of farmers are self-employed with small-scale farms and aged 70 and older, accounting for 32% of the farming population¹⁹. There is an aging crisis in farming and agriculture, and due to the farm labor shortage, the dependence on foreign-born labor force to perform seasonal farm labor on a temporary basis is increasing. Major crops and products in order of production in Korea are rice, vegetables, fruits, and livestock¹⁹.

Sweden's agricultural holdings from the Swedish Farm Register (LBR) was reduced from 96,560 in 1990 to 62,937 in 2016²⁰. Most of the farms in Sweden are family farms. Sweden has made remarkable progress in improving the level of agricultural mechanization, but participation of foreign-born labor force in harvesting horticultural products on a temporary basis has been critical in harvest seasons. Major crops and products in Sweden are crops (wheat, barley, oats, etc.) and livestock (dairy farming, pigs, etc.²⁰).

3.2 The Status of Occupational Injuries and Diseases in Agriculture

Producing accurate statistics on the occurrence of occupational injuries and diseases in agriculture makes an important contribution to prevention by providing objective basic data for preparing prevention measures, selecting high-risk groups, and

evaluating the effectiveness of policy projects. In both Korea and Sweden, although the occurrence of occupational injuries among farmers is higher than other occupational groups, this status cannot be properly reflected in the national/official statistics on injuries and diseases by occupational group due to unique farm structures. Thus, efforts such as production of separate survey statistics were required. According to the Korean official statistics based on occupational safety and health insurance data from the Ministry of Employment and Labor, the rate of farm-related injuries and diseases in Korea in 2018 (0.78 cases per 100 employees, death or treated for 4 days or more) was reported to be 1.45 times higher than those for all industrial workers³. However, the information on small-scale and self-employed farmers (about 98% of the total agricultural population) is not included in the statistics based on occupational health and safety insurance.

In the case of Korea, there is neither compulsory entry system for the occupational health and safety insurance nor reporting system for the occurrence of occupational injuries and diseases for farmers including the self-employed, and thus separate surveys have been conducted. According to the results, in the case of non-fatal occupational injuries and diseases (leave of absence for one or more days) in 2012-2020, the incidence rate of occupational injuries was estimated to be 1.9~3.0%²¹, and the prevalence rate of self-reported occupational diseases was 4.8~5.2%²². The major occupational injuries for farmers were agricultural machine related injuries, falls, slips, and injuries resulting from excessive use of force or movement²¹. Musculoskeletal diseases accounted for more than 80% of occupational diseases²².

In Sweden, it is also reported that the fatal injury rate in agriculture is higher and more serious than other industries²³. Statistics on occupational injuries by industry are produced as a system for reporting an occupational injury to the Swedish Work Environment Authority is in place, but in the case of the self-employed it was found that occupational injury reporting was insufficient. As the results of a survey conducted by the Swedish University of Agricultural Sciences (Sveriges Lantbruksuniversitet, SLU) and Statistics Sweden (Statistiska Centralbyrån) in cooperation by postal mail and telephone interviews, only about 8% of actual occupational injuries emerged in the official statistics of Statistics Sweden²⁴. Major occupational injuries in agriculture were in the order of injuries by machinery or vehicle, being hit by moving objects, kicked or crushed by animals and falls²⁵.

When comparing the rate of fatal occupational injuries in agriculture in 2018 between Korea and Sweden, Korea was 29.9 deaths per 100,000 population based on the compensation data of 806,692 subscribers of Farmer Safety Insurance⁴, and Sweden was 17.13 deaths from Euro-stat data², respectively, i.e., the fatal injury rate of Korean farmers was 1.75 times higher than that of Sweden. To determine

the exact status of occupational injuries and diseases for farmers, a separate survey based on legal basis has been conducted: a survey of farm visits to representative national sample of farms has been conducted since 2009 to produce official/national statistics. In addition, statistics on agricultural-related injuries and diseases are collected and analyzed, using the compensation data of Farmer Safety Insurance subscribed by about one third of all farmers (about 800,000 persons). Furthermore, through the analysis of secondary statistics of other organizations (i.e., Analysis of Farmers' Health Status using National Health Insurance Data, Emergency Medical Data, Status of Traffic Accidents Related to Agricultural Machinery by National Police Agency, etc.), comprehensive statistics are being produced and a database is being built. In the future, we plan to develop a warning system for farm-related injuries and diseases through collection and linkage analysis of big data.

Sweden also needs some improvements so that accurate statistics on agricultural injuries and diseases can be produced. It is necessary to prepare a complementary method to promote the reporting of occupational injuries by self-employed farmers to the Swedish Work Environment Authority, or to prepare related laws and systems to regularly conduct separate surveys on occupational injuries and diseases in agriculture. In addition, the collection and use of secondary statistics from other ministries or institutes will help to grasp the current state of agricultural health and safety and to make development plans more cost-effectively.

In the future, if international joint research on standards for agricultural injury statistics and cooperative survey on common items is conducted, it will contribute to understanding the international status and drafting global strategies for prevention.

3.3 National Management System of Agricultural Health and Safety

Occupational health and safety system in most countries consists of a system to protect wage workers, so the occupational safety protection of self-employed individuals including farmers is insufficient. Korea and Sweden have similar problems and measures are needed.

Korean Ministry of Employment and Labor is responsible for managing occupational health and safety, based on the Industrial Accident Compensation Insurance Act²⁶ and the Occupational Safety and Health²⁷ Act, which are intended only for paid employees. Because of that, small-scale and self-employed farmers

and (approximately 98% of the total agricultural population) have been excluded from the national policy management and support eligibility requirements related to occupational health and safety, and have been in the blind spot of the safety management for a long time.

As the problem recognition was shared socially, efforts have been made to improve the occupational health and safety in agriculture, mainly by the Korean Rural Development Administration and related researchers since the mid-2000s. As a result of such efforts, the Act on the Safety Insurance for Farmers and Fishers and Prevention of Work Accidents²⁸ (abbreviated as the Act on Safety Insurance for Farmers) was enacted in 2016. In this Act, various matters for the prevention, compensation support, and management of farm-related injuries and diseases were prescribed as national obligations. Through this Act, the operations of Farmer Safety Insurance, the national support of more than 50% of insurance subscription fees, and surveys on the current state of agricultural injuries and diseases, and activities to prevent them were prescribed as the state's obligations and the responsibility of the Minister of Agriculture, Food and Rural Affairs. Under the act, prevention projects were delegated to the Rural Development Administration. Through the enactment of this Act, the foundation for the implementation of national policies and projects related to agricultural health and safety was established in earnest, and as the beginning, the first five-year plan for preventing farm-related injuries and diseases (2020-2024) was established in 2019.

In summary, as this Act was enacted, the Korean agricultural health and safety management has a dual system. Agricultural workers in corporate workplaces or scaled-up farms with 5 or more workers at all times receive support and management by the Ministry of Employment and Labor under the Occupational Safety and Health Act and are obliged to join the Industrial Accident Compensation Insurance as the national social insurance. On the other hand, other farmers, i.e., small-scale and self-employed farmers, are managed and supported by agricultural and forestry institutions based on the Farmer Safety Insurance Act. In the case of occupational injury insurance, they are to join the Farmer Safety Insurance, which has a voluntary subscription method.

Within this dual system, practical management of agricultural health and safety has been performed by agricultural and forestry institutions since most farmers are self-employed. The reason for this national decision regarding the dual system is that the Ministry of Employment and Labor has expressed the difficulties and limitations of safety management for the self-employed rural farmers, as the ministry has the general principle of responsibility of employer. This is also based

on the practical judgment that, the agricultural and forestry guidance institutions are effective in achieving safety management in the agricultural field when their characteristics are considered, i.e., they have high degree of understanding of the agricultural field, strong people-to-people connection with farmers and farmworkers, and organized systems in rural areas.

In the case of occupational injury insurance scheme (Trygghetsförsäkring vid arbetsskada, TFA) in Sweden, it is operated as national social insurance, and it is compulsory for everyone, including the self-employed and wage workers. In the case of occupational health and safety management, Swedish Work Environment Authority is responsible for it based on the Work Environment Act of 1977²⁹. In other words, if there is even one wage worker in the agricultural field, this Act is applied and the employer is responsible for the occupational health and safety of the employee. However, the Labor Environment Act is basically a law for the protection of wage workers and does not apply to self-employed farmers or their families. However, since most farmers employ wage workers at least on a temporary basis, it should be considered that this Act applies to all farms, except self-employed farmers (they only have to follow regulations regarding the use of pesticides and the use of farm machinery). In addition, in the case of regulations in certain fields (e.g., pesticides and chemicals, farm machinery, animal handling, etc.), they must be observed by all employers and in all work environments, regardless of whether or not a wage worker is employed, and fines are imposed if the rules are violated. However, a careful review is required to determine whether the Act applies the standards of effective safety management in consideration of the special circumstances of agriculture, and whether the Labor Environment Authority actually implements safety management suitable for farmers scattered throughout regions.

Experts from various countries argue that in order to effectively achieve the occupational safety and health protection of farmers, it is necessary to prepare a separate health and safety management system suitable for agricultural characteristics. In fact, Germany and Poland, which manage occupational injuries and diseases in agriculture at a national level by separate institutions and systems, have significantly lower fatal injury rates compared to other countries in Europe: the average fatal injury rate in agriculture during 2009-2018 was 0.70 in Poland, 2.33 in Germany, and 9.60 in Sweden².

Korea is at a critical point in establishing a separate safety management system for farmers. The new Act for this work was established, and a separate responsible institution have been designated, but they have various challenges for materialization. Future tasks include preparing specific provisions of the new Act,

compulsory participation in Farmer Safety Insurance, stabilization and strengthening of centralized preventive national institutions, and reinforcing the linkage system of prevention-compensation-rehabilitation. For example, according to the survey research, 36.3% and 32.0% of farmers were aware of and had farmers' safety insurance, although 70.7% of farmers felt the need farmers' occupational compensation insurance³⁰.

In Sweden, an advanced national system for workers' safety and health is in operation. However, in order to solve the problems of farmers who are at high risk for occupational injuries and fatalities, review of the legal and regulatory frameworks considering the specificity of farmers and stable preventive resources are required. In particular, it is necessary to prepare a dedicated national institution for the sustainable and stable health and safety management of farmers and farmworkers.

3.4 Major Preventive Activities for Agricultural Health and Safety

The Korean government has been working hard to improve the working environment and health of farmers through the Rural Development Administration since the 1990s, establishing rural healthcare facilities in farming villages, developing and providing auxiliary tools for improving agricultural work, and creating and implementing various types of occupational safety model projects for rural village units. However, there is a limitation in that this kind of state-funded services have been provided to a limited number of farmers on a trial and a limited scope basis. The farmers' response to these services was very positive, but due to the lack of related laws and systems and limited resources, they were not successfully established as stable agricultural support policy for all rural communities.

Fortunately, based on the Farmer Safety Insurance Act established in 2016, the opportunity to further expand and develop agriculture injury prevention activities was prepared. However, more detailed provisions for prevention must be prepared for the Farmer Safety Insurance Act to be implemented realistically. In addition, it is necessary to prepare a cooperative system composed of various stakeholders such as related public organizations, private organizations, and academic researchers in order to provide preventive projects and support to all farmers under limited manpower and resources that can be administered in the field of agricultural health and safety.

Also, Ministry of Agriculture, Food and Rural Affairs (MAFRA) in Korea is planning to establish a new national program of an occupational regular medical check-up with government funds for the purpose of early detection and prevention of occupational diseases among farmers. As the pilot project, the specified medical check-up program will be conducted for 9,000 women farmers in 2022. In Korea, a regular medical check-up program for all Korean adults has been conducted since 1995. The occupational medical check-up programs have been carried out for the employees who join the occupational health and safety insurance since 1953 and for fire/fire-fighting officers since 2004.

In the case of Sweden, a total of 6.5 million USD was funded for reducing agricultural injuries by the EU for 5 years, and a large-scale five-year national program (2009-2013) was run⁶. The program was organized by the Federation of Swedish Farmers (LRF) and was conducted in cooperation with the University of Swedish Agricultural Science (SLU) and the Swedish Institute of Agricultural Environmental Engineering (JTI). For the implementation of this national program, systematic preparations were made, such as the development of training programs for agricultural health and safety experts, the selection and training of experts, and the demonstration applications for farm visit guidance services by trained experts.

The main preventive activities in the Swedish Safe Farmer Common Sense program were counseling services through individual farm visits by experts/supervisors. The services were adopted and developed based on a preliminary survey of the prevention activities in the most preferred way by Swedish farmers. Through the large-scale implementation of the Safe Farmer Common Sense (Säkert Bondförnuft) program, a total of more than 48,000 people (at least 75% of Swedish farm households) participated in the program by 2013, and participants involved in farm visit services performed actions to improve the risk factors of their farm. The program was successful and as the results, the fatal injury rate was reduced by 50% during the five-year national program. The successful prevention activities and specific implementation techniques in the Safe Farm Common Sense program will be an important best-practice example for many other countries, including Korea.

In addition, Sweden has been operating the Swedish Committee on Working Environment in Agriculture (Lantbrukets Arbetsmiljökommitté, LAMK), a network of national institutions, private organizations, farmers' organizations, and experts related to agricultural safety and health since its founding in 1982³¹. Through this solidarity, the Swedish government is active in establishment, interventions, and coordination of national health and safety strategies and prevention activities.

In the case of Korea, there is a partial flow of cooperation between related domestic institutions, but there is no comprehensive and stable cooperation system. In the future, Korean government needs to build a permanent cooperation system covering public institutions-private organizations-farmer groups at the central government level and at regional units.

In summary, major preventive activities in Sweden were health and safety education and training such as farm visits and consulting services by fostering agricultural health and safety experts, establishing cooperative networks between related institutions and organizations, publicity/campaigns, and legal and institutional management of risk factors (farm machinery, pesticides, etc.) in the agricultural work environment.

Both in Korea and Sweden, to achieve the systematic sustainability of core preventive activities, it is essential to build the human capital base and prepare organizational resources to perform them. It would be more effective for these organizations and human resources to be made up of those who have practical access to the agricultural field, i.e., who understand the characteristics of the agricultural field and close contact with farmers.

3.5 Korea - Sweden International Cooperation Exchange Activities

Through the Korea-Sweden international cooperation project during the years 2017-2019, mutual exchanges of researchers from both countries, joint seminars, and hosting and attending international academic conferences have resulted in mutual and technical exchanges and strengthened networks. International symposiums were held to exchange agricultural health and safety information between various countries in 2017 and 2018, and exchange seminars (20 times) were also held by mutual visits by researchers from Korea and Sweden. The international networks were strengthened by attending international conferences and meetings related to agricultural health and safety (4 times). Through such exchanges and cooperation, publications, production of training materials for farmers, and policy proposals for the development of Korean agricultural health and safety were made.



Figure 1. Korea-Sweden International Cooperation and Exchange Activities..

4. Conclusions

Farmers are the vulnerable group worldwide in terms of the occupational health and safety. To promote the occupational health and safety in agriculture, collaborative efforts and sharing knowledge, information and experiences between countries are needed. Through this international cooperation project, Sweden and Korea have strived to contribute not only to the collaboration between the two countries, but also to connection of countries in Europe, Asia and North America, and further promotion of establishment of global networks.

Although there are differences between Korea and Sweden in laws, systems, and organizations related to agricultural health and safety, there were many similarities in the socioeconomic conditions facing farmers, difficulties, and the lack of safety management of farmers. This is considered to be a similar situation experienced by farmers around the world. For effective agricultural health and safety management for farmers, including the self-employed, both countries identified that developing a special or complementary safety management system with legal, institutional, and organizational measures considering the on-farm specificity were necessary in common.

In addition, efforts are needed to predict and grasp the new problems and environmental impacts facing farmers and to prepare countermeasures. Examples of new burdens on farmers as follows: Direct and indirect problems and challenges to the agricultural sector due to climate change (e.g., health, property damage and loss due to high temperature, ultraviolet rays, fine dust, typhoons, floods, etc.); the decline of agriculture employment (i.e., aging population, shortage of young farmers, increasing influx of foreign workers, etc.); various changes following the introduction of new technologies; and policy demands resulting from changes in food consumption patterns.

Lastly, it is not easy to solve occupational health and safety problems in the field of agriculture, and each national and international cooperation should be further promoted as related resources are shrinking. In each country, collaborative partnership of various public and private organizations should be encouraged. Also, internationally, globally distributed networks should be arranged to be more

systematic to achieve maximal global efficiency through a fully connected network as suggested in the previous efforts. In addition, international standards concerning health and safety in agriculture should be established through collective agreements with the ILO and WHO initiative.

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Appendix 1



MEMORANDUM OF UNDERSTANDING
FOR
AGRICULTURAL SCIENCE AND TECHNOLOGY COOPERATION
BETWEEN
THE DEPARTMENT OF WORK SCIENCE, BUSINESS ECONOMICS AND
ENVIRONMENTAL PSYCHOLOGY,
THE SWEDISH UNIVERSITY OF AGRICULTURE SCIENCE, SWEDEN
AND
THE DEPARTMENT OF AGRICULTURAL SAFETY ENGINEERING,
NATIONAL INSTITUTE OF AGRICULTURAL SCIENCES,
RURAL DEVELOPMENT ADMINISTRATION, REPUBLIC OF KOREA

The Department of Work Science, Business Economics and Environmental Psychology, the Swedish University of Agricultural Science of Sweden, hereinafter referred to as “WBE-SLU” and the Department of Agricultural Safety Engineering, National Institute of Agricultural Sciences, Rural Development Administration of the Republic of Korea, hereinafter referred to as “ASE-RDA”, both hereinafter jointly referred to as “the Sides”, do hereby enter into this Memorandum of Understanding hereafter referred to as the “MOU”, affirm mutual interest, and desire to broaden agricultural cooperative research programs and build a long-term partnership, in accordance with the following conditions:

I. PURPOSE

The main objective of this MOU is to establish a long-term partnership for coordinating and cooperating on complementary agricultural research, development and capacity building in areas of mutual interest, which will be implemented on the basis of mutual understanding and in accordance with the internal laws and regulation of the Sides.

This MOU will provide a framework for the partnership between the Sides to facilitate technical, financial, and material cooperation for the achievement of the aforementioned main objective.

II. MUTUAL INTERESTS

The Sides intend to work toward long-term cooperation in agricultural research and development programs. The Sides may cooperate in the following areas of interests:

- Occupational Health Promotion in Agriculture
- Occupational Safety Enhancement in Agriculture
- Welfares and Wellness of Farmers and Farm Families
- Any other field of interest to the Sides

III. SCOPE OF COOPERATION

The Sides aim to cooperate for the achievement of improvement in agricultural technology research, innovation and capacity building in the areas of mutual interest through the following:

- Development of joint activities, designed to foster and promote cooperation in the field of research, education, and capacity building to address issues of mutual interest,
- Conduct the cooperative research project which fulfil interest of both Sides,
- Visits or Exchanges of scientists, experts, and/or trainees for short, medium or long durations for the conduct of training activities or technical support and assistance in the areas of mutual interest,
- Exchange of research publications and other technical information,
- Co-hosting and participating in common or complementary workshops, conferences, seminars, symposium, and exhibitions in the field of agriculture, and
- Any other forms of cooperation in agriculture as may be jointly decided upon.

IV-GENERAL PROVISIONS

It is mutually understood by the Sides that:

1. Effect, Termination and Modification

This MOU will come into effect on the date of its signature by WBE-SLU and ASE-RDA and will remain valid for five (5) years unless one Side notifies the other of its intention to terminate this MOU.

The early termination of this MOU may be made by either of the Sides, by means of express notification, with proof of receipt, with a minimum of six (6) months prior notice, and it will not affect the implementation of any agreements or cooperative projects under way.

This MOU may be amended and extended upon the mutual consent of both Sides.

2. Financial Obligation

Nothing in this MOU will obligate either WBE-SLU or ASE-RDA to commit or transfer any funds. Specific work projects or activities that involve the transfer of funds, services, or property will require the execution of separate agreements and be negotiated by the Sides based upon the actual situation.

3. Intellectual Property Rights and Copyrights

Both Sides will consult with each other before the publication of information for commercial uses obtained from cooperative activities under this MOU.

4. Legal Obligation

This MOU is not intended to create any legally binding obligations.

5. Focal Points and Communication

Communication between the Sides shall be in writing using the English language and addressed to the focal points listed below. Each side hereby designates the following focal points for all purposes associated with this MOU and cooperative activities ensuing therefrom:

For WBE-SLU

Position : Head of department of Work Science, Business Economics and Environmental Psychology, the Swedish University of Agricultural Science

Address : P.O. Box 88, SE 230 53 Alnarp, Sweden

Tel: +46-40-415494

E-mail: christina.kolstrup@slu.se

For ASE-RDA

Position : Director of the Division of Farmers' Health and Safety, ASE, NIAS, RDA

Department of Agricultural Safety Engineering

National Institute of Agricultural Sciences

Rural Development Administration

Address : (54875) 409, 310 Nongsangmyong-ro, Wansan-gu, Jeonju-city, Jeonbuk-province, Republic of Korea

Tel: +82-63-238-4171

E-mail: leeks81@korea.kr

6. Dispute Resolution

Should any controversy concerning the interpretation or application of this MOU arise between WBE-SLU and ASE-RDA, the Sides will make reasonable efforts to resolve any such controversy by friendly negotiations.

IN WITNESS WHEREOF, The MOU is executed and signed in duplicate by duly authorized representatives of the Sides.

For WBE-SLU

For ASE-RDA

By *Christina Lunner Kolstrup*

By *Lee Seung Kee*

Christina Lunner Kolstrup
Head of Department

Seung-kee, Lee
Head of Department

Department of Work Science, Business
Economics and Environmental Psychology
The Swedish University of Agricultural Science

Department of Agricultural Safety Engineering
National Institute of Agricultural Science
Rural Development of Administration

Date *18/5 - 2018*

Date *25/5 - 2018.*

Place *Aluarp, Sweden*

Place *Jeonju, Korea.*

Appendix 2



Rural Development
Administration

Republic of Korea
Rural Development Administration

Presents this

Certificate of Recognition

to

Dr. Peter S.R. Lundqvist

as

Honorary Scientist and Advisor

on Agricultural Science and Technology

From the 1st day of January 2020 to the 31th day of December 2022

Presented this 1st day of March 2020, at Jeonju, Korea.

Kim Kyeong Kyu
Administrator

