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A review of occupational safety and health risks in agriculture sector in Malaysia

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Abstract

Similar to other industrial sectors, agricultural workers too are confronted with much hazards include chemical hazards, biological hazards, ergonomic hazards, psychosocial hazards and physical hazards. The agriculture sector is associated with a variety of occupational injuries and illnesses. In this paper, the OSH performance in agriculture sector in Malaysia is discussed. Compared with some other industries, agricultural workers are relatively facing higher risk of accidents than other workers. While much work has been done leading to the development of extensive OSH resources, however the rate of fatal accidents has not yet reduced and may indicate that other comprehensive policy approaches need to be reviewed. The objective of this study was to identify the hazards to workers who work in agriculture sector and the potential remedial action to reach a better understanding of accidents in Malaysia. The method used in this study was a review and analysis of past data. The study classified the number and rate of occupational fatalities for workers in the agriculture sector. Efforts to improve occupational safety and health have to be made to extend to the agriculture workers, including foreign workers.

Keywords: accidents, ergonomics, foreign workers, hazards, safety and health, injury, risk.

INTRODUCTION

Early agricultural policies in Malaysia were economically oriented. However, 1987 was the cut-off point when the manufacturing sector's contribution to the country's Gross Domestic Product (GDP) surpassed the agricultural sector's contribution for the first time (Rahim, 2006). Nevertheless, the agricultural sector is still a crucial component of the Malaysian economy. Agriculture sector in Malaysia can be categorised into food subsector (e.g. crop, livestock and fisheries) and industrial commodities (e.g. oil palm, rubber, cocoa, wood and timber, and pepper). The two pillars of industrial commodities, oil palm and rubber continued to benefit from export demand which added to higher export incomes. This in part raised the incomes of smallholder farmers especially among the community in rural areas involved in the cultivation of these two crops (Rahim, 2006). In terms of economic output, Agriculture contributed 8.8% to the Gross Domestic Product (GDP) in 2015 (Bank Negara Malaysia, 2016). In terms of export, agricultural goods' contributed 8.6% or RM67.27 billion in 2015, mainly by palm oil (RM40.14 billion) and natural rubber (RM4.03 billion) (MATRADE, 2016).

The agriculture industries have covered 7.9 million hectares of land for all sorts of agricultural development, which comprises of 24% of the total land in Malaysia. Palm oil, cocoa, and rubber dominate the total plantation of agricultural effort on top of tobacco and pepper, with 77% of the total use of land, together with other crops like paddy, fruits, vegetables and coconuts, while the other sectors cover the rest (Hamid & Ahamad, 2014). Refer Table 1. In recent years, oil palm witnessed an increment in its planted area for both estates and smallholders by 1.41 million hectares (38.4%) with an average rate of 3.8% per annum for the period of 2002-2012. In contrast, the planted areas for rubber continued to

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decline by 798 thousand hectares with 43.4% decrease with an average annual contraction of -2.0% for the period of 1990-2012. In relation to rice as a staple food in Malaysia, paddy experienced a marginal increment in its planted area by 16 thousand hectares (2.4%) with an average rate of 0.4% per annum for the period of 2006-2012.

Table 1. Area of Crop Plantation

Crop	Year (Before)	Area of Plantation	Year (After)	Area of Plantation
Oil Palm	2002	3.67 million hectares	2012	5.08 million hectares
Rubber	1990	1.84 million hectares	2012	1.042 million hectares
Paddy	2006	676,034 hectares	2012	692,340 hectares

Source: Hamid and Ahamad (2014)

The hazardous working conditions in agriculture can increase the risk of occupational accidents (adapted from Forastieri, 2001), include open air work, seasonal work, a variety of tasks, variation in working postures, contact with animals and plants, contact with chemicals, utilisation of machines, isolated work, limited provision of emergency services, home embedded in the farm, etc. Machineries used in agriculture, such as tractors and harvesters have the highest frequency and fatality rates of injury (Yiha and Kumie, 2010). On the other hand, exposure to pesticides and other agrochemicals can cause poisoning and in certain cases, lead to work-related cancer and death (Fieten et al., 2009, Kesavachandran et al., 2008). Besides, there are also other hazards caused by multiple contacts with poisonous and wild animals, plants and biological agents which may give raise to allergies, respiratory disorders stress (Bernard et al., 2011, Rocha et al., 2010) and psychological disorders (Wesseling et al., 2010).

METHODOLOGY

The objective of this descriptive research was to detect the risks to those who work in agriculture sector. This paper also has express usages for smallholder farmers, and other persons who regularly work on farms. This paper evaluated the trend in occupational fatalities for working in the agriculture sector. This paper is to recognise the hazards of workers in Malaysian agriculture.

RESULTS AND DISCUSSION

Agriculture sector is an important industry in Malaysia in terms of employment which contributed 12% to the workforce, involves approximately 1.7 million workers in 2014 (Department of Statistics, 2015). About a third of foreign workers were employed in agriculture in 2014 (World Bank, 2015).

Malaysia achieved the best ever accident rate of 102 per 10,000 employees, and industrial accident rate of 57 per 10,000 employees in 2014. SOCSO (Social Security Organisation) Malaysia's statistics on occupational accident in 2014 show that there 63,331 (SOCSO, 2015) reported cases, reflecting a reduction of 0.36% in comparison to 2013. The vast majority of occupational accidents in agriculture happened on males (80%) in 2014. Most occupational accidents occurred in the manufacturing sector with 15,323 reported cases. In 2014, there were 2,135 reported occupational accidents in the agricultural, forestry and fishing sector in Malaysia. In the same year, the occurrences of accidents showed high occurrence of stepping on, striking against or struck by object with 21,845 cases (34.49%), and followed by falls (26.4%) with 17,803 cases (28.11%). The main locations of injury are upper limb with 21,512 cases (33.97%), lower limb with 15,501 cases (24.48%) and multiple locations with 10,392 cases (16.41%).

On the other hand, fatalities in the agriculture sector were also observed. Agriculture sector employees are at very high risk for fatal accidents. Agriculture is the third most hazardous occupational sectors. The total number of work-related agriculture fatalities on Malaysian farms in 2014 as investigated by Department of Occupational Safety and Health (DOSH) was 42 fatality cases representing a 27% increase from 33 fatality cases in 2013; this is in contract with the manufacturing sector which shows declining trend from 76

fatality cases in 2008 to 45 fatality cases by 2014. Therefore, there is a possibility that any policy towards improving the safety and health in agriculture sector is ineffective and needs revision. Related to occupational accidents in agriculture, it is also important to remember that the statistics are more difficult to collect than those for fatalities. This is due to possible under reporting of non-fatal accidents and injuries by agriculture workers especially those in isolated workplace.

Table 2. Occupational Accidents by Sector for the Category of Death (Investigated)

Year	Constr uction	Manuf acturin g	Agricu lture, Forest ry and Fisher y	Utility	Transp ort, Storag e & Comm unicati on	Mining & Quarry ing	Financ ial, Insura nce, RE & BS	Public Servic es & Statut ory Bodies	Hotel & Restau rant	Whole sale & Retail Trade
2014	72	45	42	0	15	15	4	5	2	6
2013	69	58	33	7	8	5	2	2	2	5
2012	67	40	38	5	22	7	4	4	0	4
2011	51	45	41	5	11	7	6	7	2	1
2010	66	59	30	11	14	1	1	3	0	0
2009	71	63	44	23	18	3	1	1	0	0
2008	72	76	42	19	8	6	4	2	1	0
2007	95	63	30	10	2	9	4	3	0	3

Source: Department of Occupational Safety and Health (DOSH)

Estimation by Forastieri (2007) indicated that the highest frequency and fatality rates of injury or mortality were caused by farm machinery or non-chemical occupational accidents. Furthermore, mortality rates in agriculture have still been rising in the industrialized and developing countries (ILO, 2002). The study by AbuBakar et al., (2010) too reported that farm machineries are involved in a high proportion of farm fatalities and severe injuries.

There are many risks to health present in agriculture sector. Statistics from SOCSO shows 2,997 reported cases of occupational diseases in 2014 in Malaysia. The main cause agents of occupational disease are physical agents with 1,277 cases (43%) and occupational musculo-skeletal disorders with 675 cases (23%). Disability due to musculoskeletal injuries and diseases incurred during their working years affect the workforce in agriculture sector more frequently and more severely than any other safety and health problem during the rest of their working years (Chapman and Meyers, 2001). Quoted by Social Watch (2005), a Consumer Association of Penang (CAP) study shows that female workers in oil palm plantations work as herbicide sprayers suffer back-breaking which is hazardous to health; and recommended safety measures are rarely employed owing to the hot and humid tropical climate. Consequently, inhalation and skin absorption are the major causes of occupational poisoning cases among women sprayers.

Many workers are at risk due to inadequate education, training, and safety or personal protective equipment (PPE). Specifically, some potential hazards are difficult to be eliminated and they have in fact persisted over the years, despite the manufacturers' and engineering efforts to provide better designs (Cole et al., 2006; Melvin et al., 2009).

Under section 15 of Occupational Safety and Health Act, OSHA 1994 (Act 514), the hierarchy of control measures for reducing risks in the work place are elimination, substitution, engineering control, administration control, personal protective equipment (PPE) and training. To enhance the safe and healthy workplace, the following measures are suggested by Bahari, Hassan and Wahab (2014), i.e. intensification of drive to enhance education programs and to propagate and instil awareness for employees.

The increasing number of plantations which often have safety programmes, may reduce the risk for plantation workers. Hong (2013) elaborates the case of palm oil mills of Genting Plantations (GENP) that there was decrease in accident rate and no fatality accident

recorded since year 2009 implementation of Environmental, Health and Safety Management System (EHSMS), showing that implementation of EHSMS proved the commitment to sustainability as GENP oil mills continuously recorded zero fatal accident since year 2009.

Keys to success of intervention programmes in the sector are cooperative partnership, focus on commodity or crop specific tasks and tools, intervention evaluation focused on health as well as ergonomics outcomes and fitting interventions to accepted production methods (Chapman and Meyers, 2001). The vital factor encouraging implementation of work methods and labour aids that can prevent musculoskeletal disorders was having a group of research scientists coupled with outreach specialists and farm workers to work toward the same purpose (Chapman and Meyers, 2001). According to the results of Cecchini et al., (2015), among those who attended safety courses, there was a clear improvement in the perception of risk though it did not always enact safe behaviour.

The main purpose of reporting the incidences stated under section 32 of OSHA 1994 is for the enforcer, DOSH, to determine the underlying causes of the incidences. At the same time, the data gathered would form important database for DOSH to carry out analysis and to devise strategic plans. For this purpose, it is essential that data recorded by the employers are uniform to facilitate analysis and to assure the validity of the statistical results.

CONCLUSIONS

The following conclusions can be drawn from the study:

- It was estimated that for 958 fatalities due to accidents with estimated deaths of 1,207 there are 79% of reported versus estimates in Malaysia (Wickramatillake, 2011).
- The total number of workplace fatalities investigated by DOSH in 2014 had fallen to 206. However, of those fatalities, 42 fatalities (20%) were in the agriculture sector, the highest level recorded in five years.
- Furthermore, there is also possibility of under reporting behaviour among the agricultural workers for workplace that is lacking safety management system and reporting system.
- It is important to further develop understanding of the mechanisms which can motivate agriculture workers to participate in intervention programmes.
- Otherwise, agriculture continues to be a tough sector to achieve sustained improvements in safety and health outcomes.
- In this first decade of the 21st Century, the third most hazardous industrial sector in Malaysia continues to be agriculture, forestry, and fishing.

Literature cited

- Abubakar, M.S., Ahmad, D., and Akande, F.B. (2010). A Review of Farm Tractor Overturning Accidents and Safety. *Pertanika J. Sei. & Technol.* 18 (2), 377 – 385.
- Bahari, A., Hassan, H., and Wahab, F. (2014). Propagating Occupational Safety and Health Programmes Among Small Scalefarmers and Entrepreneurs in Essential Oils Industry. *J. Asian Sci. Res.* 4(10), 585-589.
- Bank Negara Malaysia (BNM). (2016). Economic and Financial Developments in Malaysia in the Fourth Quarter of 2015. Available from http://www.bnm.gov.my/files/publication/qb/2015/Q4_en.pdf
- Bernard, C., Courouve, L., Bouee, S., Adjemian, A., Chretien, J.C., and Niedhammer, I. (2011). Biomechanical and psychosocial work exposures and musculoskeletal symptoms among vineyard workers. *J. Occup. Health.* 53(5), 297-311.
- Cecchini M., Monarca D., Colantoni A., Baciotti B., Bedini L., Menghini G., and Porceddu P.R. (2015). Safe in the field: a project for training and integration of foreign agricultural workers. *International Conference Rural Health & Ragusa SHWA*, September 8-11, 2015 Lodi, Italy.
- Chapman, L., and Meyers, J. (2001). Ergonomics and Musculoskeletal Injuries in Agriculture: Recognizing and Preventing the Industry's Most Widespread Health and Safety Problem.
- Cole, H.P., Myers, M. L., and Westneat, S.C. (2006). Frequency and severity of injuries to operators during overturns of farm tractors. *J. Agric. Safety Health.* 12(2), 127-138 <http://dx.doi.org/10.13031/2013.20386>

Department of Occupational Safety and Health. Guidelines on Occupational Safety and Health in Agriculture.

Department of Statistics (DOS). (2015). Number of Employed Persons by Industry, Labour Force Survey Time Series Data (1982-2014). Available from https://www.statistics.gov.my/index.php?r=column/ctimeseries&menu_id=NHJlaGc2Rlg4ZXlGTjh1SU1kaWY5UT09

Fieten, K.B., Kromhout, H., Heederik, D., and DeJooode, B.V.W. (2009). Pesticide Exposure and Respiratory Health of Indigenous Women in Costa Rica. *Am. J. Epidemiol.* 169(12), 1500-1506 <http://dx.doi.org/10.1093/aje/kwp060>

Forastieri, V. (2001). Challenges in providing occupational safety and health services to workers in agriculture. *Afr. Newslett on Occup. Health and Safety.* 11, 33-38.

Hamid, A.A., and Ahamad, W.M.Z.W. (2014). Country Report: Malaysia. 1st Asia Pacific Network for Testing Agricultural Machinery (ANTAM) Meeting. 16-19 September 2014, Beijing, China.

Hong, W.O. (2013). ISO Certification Initiatives Prove the Commitment to Sustainability. *Commun. Appl. Sci.* 1(2), 188-200.

Kesavachandran, C.N., Rastogi, S.K., Mathur, N., Siddiqui, M.K.J., Singh, V.K., Bihari, V., and Bharti, R.S. (2008). Health status among pesticide applicators at a mango plantation in India. *J. Pesticide Safety Edu.* 8, 1-9.

Malaysia External Trade Development Corporation (MATRADE) (2016). Trade Performance for the Year of 2015 and the Month of December 2015, Malaysia External Trade Statistics. Available from <http://www.matrade.gov.my/en/malaysia-exporters-section/235-trade-performance-2015/4518-trade-performance--december-2015-and-january-december-2015>

Melvin, L.M., Henry, P.C., and Susan, C.W. (2009). Injury severity related to overturn characteristics of tractors. *J. Safety Res.* 40, 165-170.

Ministry of Agriculture (MOA). (1985). National Agricultural Policy. Kuala Lumpur.

Rahim, A.S.A. (2006). A critical assessment the contribution of the agriculture sector in the growth of the Malaysian economy.

Rocha, F.L.R., Marziale, M.H.P., and Hong, O.S. (2010). Work and health conditions of sugar cane workers in Brazil. *Revista da Escola de Enfermagem da USP.* 44(4), 978-983 <http://dx.doi.org/10.1590/S0080-62342010000400017>

Social Security Organisation (SOCSO). (2015). Annual Report 2014.

SocialWatch.Org (2005). Plantation Workers Face Poverty and Poison. Social Watch Report 2005. Available from <http://www.socialwatch.org/node/10932>

Wesseling, C., De Joode, B.V.W., Keifer, M., London, L., Mergler, D., and Stallones, L. (2010). Symptoms of psychological distress and suicidal ideation among banana workers with a history of poisoning by organophosphate or n-methyl carbamate pesticides. *Occup. Environ. Med.* 67(11), 778-784 <http://dx.doi.org/10.1136/oem.2009.047266>

Wickramatillake, H. (2011). Occupational Health in South and South East Asia.

World Bank (2015). Malaysia Economic Monitor December 2015: Immigrant Labour. Southeast Asia Country Management Unit: Kuala Lumpur, Malaysia.

Yiha, O., and Kumie, A. (2010). Assessment of Occupational Injuries in Tendaho Agricultural Development S.C., Afar Regional Stte. *Ethiopian J. Health Develop.* 24(3), 167-174.