



OCCUPATIONAL HEALTH, SAFETY, AND RISK GROUPS IN HAZELNUT PRODUCTION

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EXECUTIVE SUMMARY

The Report on Occupational Health, Safety, and Risk Groups in Hazelnut Production

charts the steps in hazelnut production and related tasks from an occupational health and safety perspective. The report also discusses the hazards different labor groups encounter during production, the risk of workplace accident and injury, and the work environment generally. The effects of hazards on high-risk groups (child, young, and pregnant laborers) are elaborated.

RESEARCH METHOD

In order to identify all tasks and labor groups involved in hazelnut production, researchers conducted face-to-face interviews with producers, workers, experts in the field, and

the heads of relevant institutions. These interviews took place between March and May 2017 in Düzce, Ordu, Şanlıurfa and Mardin. Eight main categories of hazards (based on classifications used by the U.S. Department of Labor Occupational Safety and Health Administration, or OSHA) were identified: biological hazards (working in the field among plants and animals), physical hazards (sunlight, UV radiation, heat and cold), chemical hazards (pesticides and fertilizers), ergonomic hazards (repetitive movement and exhaustion), work-related accidents and injuries (at both work and habitation environments), and psychosocial hazards. Researchers then calculated risk scores for each hazard category using the L-type matrix risk-evaluation method.



OCCUPATIONAL HEALTH AND SAFETY IN TURKISH AGRICULTURAL SECTOR

The agricultural sector in Turkey has the second highest number of work-related accidents in the country, surpassed only by construction. The work requires long hours and physical stamina. The sector is troubled by problems ranging from low wages, poor living conditions and health care, dangerous commutes, and education and social issues. But because agricultural production is generally small scale and involves family workers, the sector falls outside labor regulation and policy.

The Labor Act 4857 and Occupational Health and Safety Act 6331 jointly regulate the occupational health and safety and legal status of agricultural workers in Turkey. While the Act 4857 does not cover enterprises with 50 or fewer employees, the Act 6331 covers all businesses and defines legal responsibilities of all employers. Act 6331 classifies enterprises into three categories—low hazard, hazardous, and high hazard—and stipulates employment of workplace physicians and OHS specialists accordingly. Hazelnut production is legally identified as hazardous¹, a categorization important in evaluating child labor (family workers and paid workers) in hazelnut production. However, enforcement of Act 6331 in hazardous and high-hazard enterprises has been postponed until the year 2020; furthermore, the act excludes two types of employment common in agriculture: self-employed and unpaid family workers. Thus, a significant portion of agricultural production is not covered by legal regulations and practice.

In addition, Turkey has not yet recognized the International Labor Organization Convention

184 Regarding Occupational Health and Safety in Agriculture. Recognition of ILO Convention 184 and the concomitant alignment of national law is crucial, as this will ensure internationally accepted legal guidelines for inclusive health and safety regulation in the sector.

HIGH-RISK GROUPS: CHILD, YOUNG, AND FEMALE WORKERS

Ideally, children should not participate in the labor force in any form; nevertheless, many children in many countries around the world are employed under extremely poor working conditions. Poor working conditions affect children more than adults, since children are growing and developing. Children and young workers also are at greater risk of workplace accident and injury.

All countries have legal regulations limiting child employment. Turkey has national laws governing employment of children and young workers and recognizes international conventions, including the ILO's Minimum Age Convention 138 and Worst Forms of Child Labor Convention 182. In Turkey, Article 71 of Labor Act 4857 forbids employment of minors under age 15. However, minors age 14 and up are allowed to perform light work that won't negatively influence their physical, mental, social, and moral development or their education.

Physical, biological, chemical, and ergonomic factors in the workplace can negatively affect both male and female workers' reproductive health, although the effects on women are more pronounced. Labor Act 4857 identifies specific labor rights, such as pre- and post-birth maternity leave and nursing breaks, for working women. Additionally, the Regulation Regarding Pregnant or Nursing Women's Employment Conditions, Nursing Rooms, and Day-Care Centers outlines standards for work

¹ İşyeri Tehlike Sınıfları Listesi, www.mevzuat.gov.tr/MevzuatMetin/1/9516909-Ek.xls, date of access: 14.07.2017; and Official Journal of Turkey, date of access: 27.02.2017, issue 29992 www.resmigazete.gov.tr/eskiler/2017/02/20170227M1-1-1.pdf

conditions, work hours, and the occupational health and safety of pregnant and nursing women.

WORKER PROFILES IN HAZELNUT PRODUCTION IN TURKEY

Turkey is the leading hazelnut producer in the world and hazelnuts are among the primary exports of the country. The sector is an important source of income for many families. In the past, local residents from the Black Sea region sought seasonal employment during the hazelnut harvest, but today workers migrate to Ordu, Giresun, Samsun, Trabzon, Zonguldak, Düzce and Sakarya where hazelnut cultivation is more common. Migrant worker groups mostly originate from eastern and southeastern Anatolia provinces, with foreign workers coming from Georgia and Syria. Seasonal workers tend to form work groups based on kinship. Child labor is common among these groups and women play a significant role in the harvesting process.

In addition, because hazelnut production takes place mostly in family-owned small-scale orchards, traditional labor-intensive techniques remain in place and labor relations are informal. Especially during the harvest, laborers work long hours under severe conditions like extreme heat, on steep and slippery terrain, usually seven days a week. They work without social-security benefits and must cope with sunstroke, cervical and spinal hernias, risk of miscarriage and, of course, colds, allergies and other illness.

There are four types of workers involved in hazelnut harvest:

- (a) family members or close relatives of the orchard owner;
- (b) paid local workers from nearby provinces, counties and villages;

- (c) seasonal migrant workers from outside the cultivating regions;
- (d) foreign nationals seeking temporary employment.

The Fair Labor Association (FLA) recently conducted a study investigating worker profiles in hazelnut production. The study provides detailed information on working conditions of both local and seasonal workers. Researchers found that 407 people from the 71 households participating in the study migrated to the Düzce/Sakarya region from Mardin (35.6 percent), Şırnak (23.3 percent), Şanlıurfa (19.2 percent) and Diyarbakır (11 percent). Of all the workers, 60 percent were female and 40 percent were male; 40 percent of the workers were between the ages 16 and 18, 31 percent between the ages 19 and 25; and 7.4 percent were between the ages 11 and 15. Only 21.4 percent of the workers were older than 25. Interestingly, 35 percent of the workers reported that they were attending high school, indicating that harvesting hazelnuts does not always conflict with formal education.

OCCUPATIONAL HEALTH AND SAFETY IN HAZELNUT PRODUCTION AND THE RISK GROUPS

HAZELNUT PRODUCTION PROCESS

Hazelnut production process can be divided into three main phases: **pre-harvest**, **harvest**, and **post-harvest**.

Pre-harvest activities—pruning, stump clearing, and weeding—are carried out by experienced adults (owners of the orchard or close relatives) and, for that reason, usually involve lower risk. Workers can incur injury while operating pruning and weeding equipment, have accidents caused by steep and slippery terrain, or experience muscular injury prompted by repetitive movement. Such hazards are easily preventable by

taking simple precautions such as wearing protective gear and learning the proper use of equipment. Mishandling chemicals during liming, fertilizing, and the application of pesticides, or misusing protective gear (masks, eyewear, gloves, coveralls) can cause skin rash (contact dermatitis) and acute poisoning.

Harvest activities—picking and sacking of hazelnuts—are often performed by seasonal workers. Hazelnuts can be picked directly from tree branches or from the orchard floor, either by hand or using equipment. The process, which can include shaking the trees, demands intense physical effort but is performed by female as well as male workers. Usually female workers pick fallen nuts from the ground after branches are shaken by male workers. Child laborers also are commonly employed to gather nuts on the ground.

Nuts picked from the ground are put into baskets tied around the workers' waists. These baskets weigh between 5 and 7 kilograms. The nuts are then poured into large sacks weighing 40 to 60 kilograms and carried to the threshing field. In some orchards, bagging is done by a separate group of workers, most of which are male. These "sackers" are typically paid 50 percent more than pickers. In small-scale orchards, however, the sacks are carried by young male workers paid half the typical daily wage. According to field researchers, producers generally stop employing seasonal workers after hazelnuts are carried to the threshing field (that is, before winnowing begins).

Post-harvest activities—drying, winnowing, and transporting the harvest to storage—are commonly carried out by orchard owners with the help of a few male workers. After the hazelnuts are carried to the threshing field, they are left to dry for three or four days. Then they are processed with a winnowing machine

to separate dirt from husks, and the shells are cleaned. Cleaned hazelnuts are put into large sacks and transported to storage or the marketplace. Although the size of these sacks can vary from region to region, one worker was reported to carry sacks weighing over 80 kilograms.

HAZARDS AND RISKS IN HAZELNUT PRODUCTION

As an "agricultural-forestry-fishery activity, hazelnut production is categorized as "hazardous." This report identifies eight hazard groups based on OSHA classifications. The hazard groups are:

- biological hazards (plants, animals, and humans);
- physical hazards (sunlight and UV radiation, heat and cold);
- chemical hazards (chemical substances used in the production process);
- ergonomic hazards (repetitive movement and severe exhaustion);
- accidents and injuries;
- work environment hazards;
- habitation environment hazards;
- psychosocial hazards.

Biological hazards include bee stings and mosquito, tick, and spider bites; scorpion stings and snake bites; animal dander; organic dust; moss; certain plants; dense branches. Although these hazards create risk for all worker groups, scorpion stings and snake bites can be more distressing for women and children workers, creating a higher degree of risk.

Physical hazards include exposure to intense sunlight; extreme heat and humidity (depending on the geographical location of the orchard); sharp drops in air temperature; and accidents caused by steep, muddy terrain (considered high risk for back and leg injury).

Chemical hazards include liming, fertilizing, and the application of pesticides. Generally, these tasks are performed by orchard owners or experienced workers with proper protective gear and equipment; and hazelnuts are harvested long after the pesticides are applied. Therefore, the risks for seasonal workers are minimized and within acceptable limits.

Orchard owners report that harvesting begins at least three or four weeks after the last fertilization or pesticide application, although leftover pesticide cans and buckets can harm harvest workers and their children when those containers are used to carry drinking water, or as toys. Chemical hazards are considered to be a lethal risk. Workers applying pesticides and fertilizers should have a Certificate for Applying Plant Protection Products.

Ergonomic hazards refer to bending, kneeling, reaching, repetitive movement, heavy lifting and carrying (during sacking and transportation of hazelnuts), and exhaustion. Maintaining uncomfortable body and wrist postures for long periods of time can result in hand, finger and knee injuries; muscle, joint and bone pain; stiffness in neck, lower back and shoulders; cramps; lumber pain and disc herniation; prolapsed disks; and muscle tears. Slip- and-fall injuries are also listed as ergonomic hazards.

Accidents and injuries related to the use of machinery and equipment during pruning and stump clearing, or due to slippery terrain or dense branches, are considered low to medium risk and preventable by taking simple precautions. Traffic accidents, however, are the most common type of accident in agricultural production and carry a high risk beyond acceptable levels. Vehicles used to transport harvest workers to and from the orchards are often unsafe. Untrained drivers, overcrowded vehicles, and steep terrains also contribute to



the high rate of traffic accidents that result in severe injury and death.

Work environment hazards include low wages and lack of job security; lack of health and social security insurances; overlong work days, insufficient break periods and seven-day work weeks; exhausting work pace and lack of control of work flow; and limited access to clean water and hygienic facilities. These hazards cause severe exhaustion; stress; monotony and alienation; occupational burnout; and low motivation, productivity, and self-esteem. These risks, as indicated by field interviews, are categorized as beyond acceptable levels.

Habitation environment hazards include insufficient access to clean water and proper restroom and bathroom facilities; inadequate and dirty cooking facilities; inadequate rest and sleep areas or dormitory-style accommodations without privacy; lack

of sufficient infrastructure; no access to health services; malnourishment; pest stings and bites; and electric shock from faulty equipment. These hazards cause stress, lack of sleep, undiagnosed and untreated disease, and psychological and social alienation and earn high-risk scores that exceed acceptable risk levels.

Field researchers identified discrimination as a major psychosocial hazard. While discrimination takes many forms, social exclusion is common when different cultures rub up against each other. Seasonal workers describe what might be called the marginalization of their identities, while orchard owners, institutional heads, and local producers mention “being constrained to or being obligated to work with seasonal migrant workers.” On the other hand, some interviewees noted that, “when we get used

to each other, the problems disappear”; that is, cultural differences ranging from apparel to eating habits can be overcome—and “the problems disappear” —when members of different cultures socialize.

RISK GROUPS: CHILD, YOUNG, AND FEMALE WORKERS

The employment of minors is highly problematic considering the harsh working conditions and the levels of risk in agricultural production. Employment of seasonal workers under 18 is forbidden by law. Local minors between ages 16 and 18 are allowed to work in agricultural production.

The typical 12-hour workdays during hazelnut harvest are well above the legal limit of eight hours for workers aged 16 to 18. Young workers should not be made to carry heavy sacks. Chemical, biological, and ergonomic hazards in hazelnut agriculture, along with accidents and injuries, earn high-risk scores. Additionally, habitation environment hazards threaten children’s well-being and threaten their physical, mental, and psychological health.

The dense nature of hazelnut branches poses a biological risk to pregnant and nursing workers: branches may hit workers and cause injury or can result in muscle strain from overstretching; they can also cause shortness of breath. Slip-and-fall accidents in muddy, steep terrain carry a risk of miscarriage. Women are not involved in fertilizing, spraying and pest control, but reuse of chemical containers poses risk for pregnant and nursing women and children. Lack of clean water and hygienic bathroom facilities carry a risk of miscarriage or premature birth. Sharing a restroom with a large group of people, cooking in the open air, and exposure to rain and extreme temperatures in tent camps also pose problems for pregnant and nursing women.





INTRODUCTION

Turkey is the world's leading producer of hazelnuts, a main ingredient in chocolate and pastries. Hazelnut production is a key source of income for many families, not only for those residing in Ordu, Düzce and other areas where the production takes place, but also for migrant worker families who travel to these regions during the harvest. The demand for paid labor has increased in the hazelnut growing regions, most of which are located in the Black Sea region, due to many factors: social and economic transformation, the shrinking scale of the orchards, emigration, and an aging population. While pruning, fertilizing, stump clearing, the application of pesticides, winnowing, and storing are undertaken by the owners

of the orchards and their families or by local paid workers, impoverished families from eastern and southeastern Anatolia seek work during the harvest. There have been studies regarding the working and living conditions of seasonal migrant workers, but evaluations of occupational health and safety hazards and risks in a specific branch of agricultural production are rare.

RESEARCH GOALS

The Report on Occupational Health, Safety, and Risk Groups in Hazelnut Production identifies the steps in hazelnut production, related tasks, and worker groups involved. The report also examines potential hazards

and risks each task poses to workers from an occupational health and safety perspective. Since work-related accidents are quite common in Turkey, an analysis of the hazards and risks faced by different worker groups is crucial to improving workers' rights and working conditions.

Risks due to working and living conditions do not affect all worker groups equally. Child, young, and female workers form a special group in hazelnut production, particularly in regard to physical, biological, and psychological risks. This report pays special attention to the occupational health and safety of this group and aims to evaluate risks using internationally recognized standards, classifications and risk scores. Hopefully, the findings will further the effort to eliminate child labor in hazelnut production.

THE RESEARCH METHOD, TOOLS, AND APPLICABILITY

Between March and May 2017, researchers conducted face-to-face interviews with producers, workers, experts in the field, and heads of relevant institutions. They interviewed 20 producers in Ordu and Düzce about specific tasks assigned to workers, types of equipment and machinery used to carry out the tasks, and the hazards and risks involved in the process. They also interviewed 29 seasonal workers in Şanlıurfa and Mardin (14 female and 15 male adult workers) about their work, the hazards and risks involved, and their living conditions and transportation options. Questions regarding child and young workers were directed to the adults interviewed (Appendix 1).

The researchers conducted another series of interviews with principals connected with the Directorate of Agriculture and Animal Husbandry, the Chamber of Agriculture, the

Ordu Commodity Exchange, local social assistance and solidarity foundations, and private firms. Experts on hazelnuts and hazelnut labor were also interviewed.

Interviewers created different lists of questions for producers and workers covering the stages of production, tasks undertaken at each stage, the use of equipment and machinery, and the hazards and risks faced by different worker groups. Because the interviews had to be completed before the harvest, researchers were unable to observe the harvest process directly. Nevertheless, OSHA Hazard Identification and Risk Assessment states that investigators can incorporate information gathered from earlier studies, group discussions, and other methods.² Researchers conducted a detailed review of the existing literature and news articles on occupational health and safety, seasonal migrant labor, and hazelnut production. The final report, then, is synthesis of all the above sources.

This report identifies eight categories of hazards in accordance with the OSHA's hazards list and risk ratings³: biological hazards (working in the field among plants and animals), physical hazards (UV radiation, sunlight, heat and cold), chemical hazards (pesticides and fertilizers), ergonomic hazards (repetitive movement and exhaustion), work-related accidents and injuries (in work and habitation environments), and psychosocial hazards (the last added to OSHA's list in order to evaluate how poor living conditions, isolation, and social exclusion affect seasonal migrant workers).

2 OSHA (Occupational Safety and Health Administration) Hazard List, www.osha.gov/dte/grant_materials/fy10/sh-20839-10/circle_chart.pdf, accessed in: 14.07.2017.

3 OSHA (Occupational Safety and Health Administration) Hazard List, www.osha.gov/dte/grant_materials/fy10/sh-20839-10/circle_chart.pdf, accessed in 14.07.2017.

After identifying hazard categories, researchers evaluated related risks for each hazard and calculated corresponding risk scores⁴ using L-type matrix method⁵. L-type matrix method generally is employed in evaluating cause-effect relations and therefore deemed suitable for situations requiring precipitate analysis. The method is popular and user-friendly, important criteria given the study's originality and constraints.

In order to produce the L-type matrix (5x5 matrix diagram), analyzers enter their data into the Risk Evaluation Form (REF). The likelihood and impact of a hazard is calculated and multiplied to reach a risk score. To determine the likelihood variable (L), for example, the likelihood of each hazard is rated on a score of 1 to 5: (1) very low, (2) low, (3) medium, (4) high, and (5) very high (Table 1). For the impact variable (I), hazard damage is also scored 1 to 5: (1) very minor, (2) minor, (3) moderate, (4) severe, (5) very severe (Table 2). These two scores are multiplied to determine the Risk Score (RS), which is then entered in the Risk Score Matrix (Table 3). The magnitude of the Risk Scores⁶ is checked against the values in the Acceptability Values of Consequences (AVC) Table in order to

4 Once the hazards and risks are identified, a risk evaluation method for agricultural production should be decided upon. Various methods exist in the literature. The most suitable method depends on the nature of the work and the workplace. Risk evaluation can be quantitative or qualitative. In quantitative risk analysis, risks are calculated using mathematical theorems. In qualitative risk analysis, the probability and the impact of the threat are given numerical values, and these values are processed through mathematical and logical methods to calculate the risk scores. (Çalışma ve Sosyal Güvenlik Bakanlığı Risk Değerlendirme Standartları ve Metodolojilerinin Karşılaştırılması, www3.csgb.gov.tr/csgbPortal/ShowProperty/WLP&20Repository/itkb/dosyalar/ipm/isg03, accessed in: 14.07.2017).

5 Common risk evaluation methods in Turkey are "Preliminary Hazard Analysis (PHA)," "Occupation Safety Analysis," "What if...? Risk Chart," "Relative Ranking-Dow and Mond Indexes Analysis," "Risk Evaluation Decision Matrix," "Primary Risk Analysis Check List," "L type Matrix," "Multivariate X type Matrix Diagram," "Hazard and Operability Study (HAZOP)," "Fault Tree Analysis (FTA)," "Possible Fault Types and Effects Analysis (HTEA/OHTEA)," "Safety Monitoring," "Event Tree Analysis (ETA)," "Cause effect Analysis" (Özkılıç, 2005:125-128).

6 Risk Score = Likelihood of Occurrence multiplied by Impact Level

TABLE 1. LIKELIHOOD OF AN EVENT

LIKELIHOOD OF OCCURRENCE	RATING STEPS FOR LIKELIHOOD OF OCCURRENCE
1-Very Low	Almost never
2-Low	Very rarely (once a year), only under abnormal conditions
3-Medium	Rarely
4-High	Frequently (once a month)
5-Very High	Very frequently (once a week, every day), under normal working conditions

TABLE 2. IMPACT OF AN EVENT

IMPACT	RATING
1-Very Minor	No loss of work hours, requires first aid
2-Minor	No loss of work day, requires nonpermanent ambulatory treatment or first aid
3-Moderate	Minor injury, requires inpatient treatment
4-Severe	Severe injury or occupational disease, requires long-term treatment
5-Very Severe	Death, permanent incapacitation

determine necessary precautions. (Özkılıç, 2005:113-114; Koltan et al., 2010: 38-39).

In the report, the likelihood and impact scores of the hazards in hazelnut production were calculated using the data from interviews and a review of the existing literature. For example, slip-and-fall accidents in steep terrain are common and may cause minor injuries, but in some cases, the scoring considers possible long-term consequences. For example, bending to pick hazelnuts from the ground could lead to spinal herniation over many years. Most workers and producers interviewed do not connect bending with spinal hernia, but the prevalence of spinal hernia among the workers is enough to increase the risk score. On the other hand, the likelihood of chemical risk is very low for seasonal migrant workers, yet if a chemical event occurs, the impact is considered severe.

TABLE 3. RISK SCORE (RATING) MATRIX (L-TYPE MATRIX)

LIKELIHOOD	IMPACT				
	1 (VERY MINOR)	2 (MINOR)	3 (MODERATE)	4 (SEVERE)	5 (VERY SEVERE)
1-Very Low	Insignificant 1	Low 2	Low 3	Low 4	Low 5
2-Low	Low 2	Low 4	Low 6	Medium 8	Medium 10
3-Medium	Low 3	Low 6	Medium 9	Medium 12	High 15
4-High	Low 4	Medium 8	Medium 12	High 16	High 20
5-Very High	Low 5	Medium 10	High 15	High 20	Unacceptable 25

TABLE 4. CONSEQUENCE AND ACTION GUIDE TO ACCEPTABILITY VALUES

CONSEQUENCE	ACTION
Unacceptable Risks (25)	Work should not start until the risk is lowered to an acceptable level; ongoing work should stop immediately. If lowering the risk is not possible, the task should be abandoned.
Significant Risks (between 15, 16, 20)	Work should not start until the risk is lowered to an acceptable level; ongoing work should be ceased immediately. Immediate precautions should be taken, and continuation of the task should be based upon the results of these precautions.
Medium Level Risks (8, 9, 10, 12)	Action should be taken to lower risks. Risk-lowering precautions may require time to take effect.
Acceptable Risks (2, 3, 4, 5, 6)	Additional control processes might not be needed to remove risks. However, existing control processes should continue and be monitored.
Insignificant Risks (1)	Planning control processes and recording precautionary actions may not be necessary to eliminate risks.

Additionally, legal limits on working hours and regulations regarding worker groups influence risk scores. Risk Score Evaluation is an independent process based on data collected by experts. The calculated values are recorded in the Risk Evaluation Table (Table 3) according to the matrix methodology, and any required actions are given scores and listed in the L-type matrices (Table 4). Hazelnut production stages and L-type matrices for child, young, and women workers are presented in Part 3 of the report.

As noted above, this report is the first occupational health and safety evaluation focusing on only one agricultural product, and it is also unique in terms of methodology (interviews combined with literature review). The report's methodology could be adapted to similar occupational health and safety evaluations of the processes involved in producing tea, cotton, tobacco and similar products, as this report uses standard measuring and evaluation techniques that lend themselves to measurable and comparable results. Naturally, an evaluation that also encompasses field observations will produce more detailed results, but the report's methodology remains useful in situations requiring swift analysis and results.

HAZARD CATEGORIES IN OCCUPATIONAL HEALTH AND SAFETY

Eight main categories of hazards were identified in hazelnut production: biological, physical, chemical and ergonomic hazards; injuries and accidents; hazards related to work and habitation environments; and psychosocial hazards.

Biological Hazards: Working in an open-air environment alongside plants, animal, and other workers invite injury from insect stings and animal bites as well as bacterial and viral

infections such as brucellosis, salmonella, tularemia, ringworm and rabies. Injuries and respiratory distress due to the dense nature of hazelnut branches fall into this category.

Physical Hazards: Ultraviolet radiation, dust, vibration, and high noise levels are primary examples of physical hazards. Since agricultural production takes place mostly in fields and orchards, workers are exposed to rapid temperature fluctuations and strong winds, but heat and humidity are the most prominent physical hazards in hazelnut production. Under extreme heat, a person's circulatory system dilates, perspiration increases, and the body loses heat, leading to exhaustion, cramps, sunstroke, drowsiness and fatigue. Extreme cold, also a danger, may lead to lowered awareness and mental incapacity.

Chemical Hazards: In agriculture, fertilization and spraying are labor intensive and require a degree of expertise. Workers can find themselves at risk of poisoning depending on their level of expertise, their use of protective gear, and weather conditions during application. Direct contact with pesticides may lead to irritation of eyes, skin or lungs; allergic reactions, headaches, vomiting, diarrhea; peculiar and aggressive behavior; depression (nervous system dysfunction); muscle weakness or coordination problems; and acute pulmonary edema, Parkinson's disease, and cancer (leukemia, lymphoma, brain and soft-tissue cancers, etc.). Chemical hazards also encompass exhaust fumes and flammable, incendiary or explosive materials.

Ergonomic Hazards: Hazards from awkward postures during work, continuous pressure on the body, or repetitive movement can cause short-term effects (such as muscle pain) or lead to serious disease. Agricultural workers generally work in uncomfortable positions for long hours and suffer from musculoskeletal



and circulatory problems. Lifting and carrying heavy loads without proper technique, and intense vibrations from machinery fall into this category.

Work Environment Hazards: Hazelnuts are harvested under severe time constraints, necessitating long work days and seven-day work weeks. Most employment in the agricultural sector is informal and does not include health or social-security benefits. These circumstances lead to work environment hazards that include heavy workloads, unreasonable work pace and flexibility, physical or psychological violence, and sexual harassment.

Habitation Environment Hazards: Problems such as lack of clean water, lack of hygienic facilities, disease from pest bites and refuse decay can be avoided by improving the living conditions of workers. Seasonal workers mostly dwell in tent camps without access to clean water and proper restroom/bathroom facilities, or sleep in inappropriate conditions, vulnerable to insect stings and bites.

Psychosocial Hazards: Stress occurs when groups from different cultural and ethnic backgrounds rub up against each other, often leading to exclusion, discrimination and isolation. Malnutrition comes under this heading as well. Concerns about hazelnut productivity, market price of the product, and other economic-related difficulties can have negative effects on unpaid family workers.

CHAPTER 1

OCCUPATIONAL HEALTH AND SAFETY RISK GROUPS IN AGRICULTURE

Rural agricultural production mostly takes place in small-scale enterprises using unpaid family labor; it is not usually covered by legal regulations and practices. However, data on workplace accidents tells us that occupational health and safety in agriculture needs to be taken seriously, starting with the identification of hazards and related risks. Turkey's agriculture sector ranks second (after construction) for

the highest number of workplace accidents. The increasing number of paid employees due to social and economic transformation has magnified this statistic. The long workdays, informal nature of employment, and use of chemicals and pesticides call for a professional evaluation of the agricultural production process, especially in regard to high-risk groups like child, young, and female workers.

1.1. Occupational Health and Safety in Agriculture

Occupational health aims to minimize hazards and risks in the workplace and in regard to work practices. Occupational safety, on the other hand, encompasses the entire body of technical regulations delineating the responsibilities of employers to reduce and eliminate hazards and risks⁷ (Demircioglu and Centel, 2012). Considering the labor-intensive nature of the work and the potentially dangerous equipment, machinery and chemicals used by workers, occupational health and safety matters are critically important to the sector.

The reasons behind the high incidence of work accidents and occupational disease in agriculture are: (1) inadequate investment in suitable protective gear and equipment due to the temporary nature of employment; (2) insufficient education of employers and workers on safety issues; (3) long

work days under stressful conditions; and (4) lack of a complaint mechanism for the workers. Malnutrition, poor living conditions, language and cultural barriers, and limited access to health services also contribute to the frequency of accidents and injuries in this sector. Notably, slip-and-fall accidents, injuries involving machinery and equipment, and accidents involving tractors are frequent (May and Kullman, 2012). Studies conducted in the United States and Europe have found an elevated incidence of eye disease, heart disease, organ failure, skin conditions and other disorders in agricultural workers (McCurdy 2002; Earle Richardson, 2003; Ahonen et al., 2007).

Harsh working conditions and poor ergonomic practice also harm workers' musculoskeletal systems. Heavy lifting, repetitive movement, and sustained awkward body posture cause skeletal disease and injury (acute or chronic pain in the back and neck) and can result in permanent discomfort that prevents workers from earning a living.

⁷ For the basic concepts used in occupational health and safety literature, see Appendix 2.



According to studies on agricultural labor, most workers dwell in substandard, overcrowded and unhygienic environments. A U.S. study mentions living quarters with broken windows, unhygienic bathroom facilities, leaking roofs and damp walls (Larson, 2001). Living in unfit environments facilitates the spread of disease.

Various studies also highlight the social exclusion that can isolate agricultural workers living in a foreign environment. Language barriers and cultural differences are the most

prominent cause of discrimination. Seasonal agricultural workers avoid voicing complaints for fear of getting fired or being blacklisted. One Canadian study found that local residents in Ontario develop minimum relations with migrant workers and, generally, display a racially discriminative attitude towards them, even though they share the very same living environment with them. Such factors may lead to alcohol and drug abuse among migrant workers, not to mention acute stress, fatigue, depression and burnout syndrome (Svensson et al., 2013).

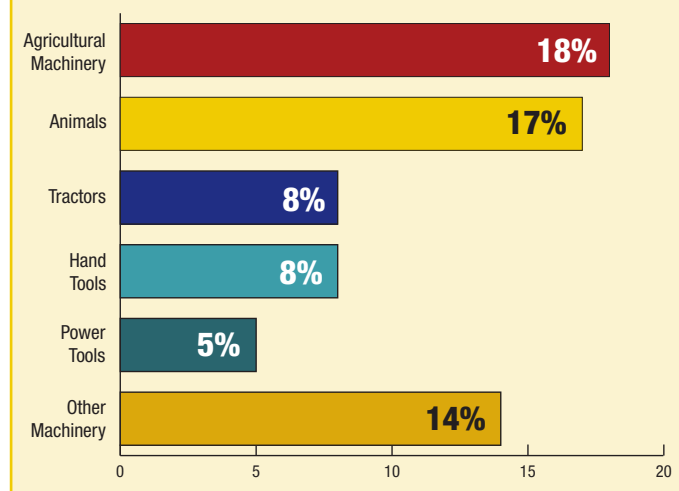
1.2. Occupational Health and Safety in Turkish Agricultural Sector

According to data published by the Turkish Social Security Institution (Sosyal Güvenlik Kurumu-SGK) on workers covered by Social Insurance and General Health Insurance Act 5510 Article 4-1/a, there were 1,719 work accidents in the agricultural and animal husbandry sectors in 2015; 1,174 involving men

and 545 involving women.⁸ The total number of workdays lost due to these accidents was 23,696. According to data published by

⁸ SGK, İstatistik Yıllıkları, www.sgk.gov.tr/wps/portal/sgk/tr/kurumsal/istatistik/sgk_istatistik_yilliklari, accessed in: 17.05.2017.

Graph 1.
RATIO OF ACCIDENTS CAUSING INJURIES



Source: Çamurcu and Seyhan, 2015: 550

TurkStat (Turkish Statistical Institute) in 2013, the mining and quarry sector scored the highest rate of work-related health problems, followed by the agriculture, forestry, and fishery sectors in the last 12 months (TÜİK Haber Bülteni 2013)⁹. Note, however, that there is limited data on work accidents and occupational disease in agriculture. The Worker Health and Occupational Safety Assembly (İşçi Sağlığı ve İş Güvenliği Meclisi reported 389 fatal work accidents in agriculture in 2016, using news sources to arrive at the tally.¹⁰

Figure 1 shows that accidents causing injuries occur mostly while working with agricultural machinery and animals. Accidents involving tractors and hand tools take third and fourth place, respectively.

9 TÜİK Haber Bülteni, İş Kazaları ve İşe Bağlı Sağlık Problemleri Araştırma Sonuçları, 2013 <http://www.tuik.gov.tr/PreHaberBultenleri.do?id=16118>

10 In 2016, of the 1,970 work accidents ending in dead, 389 (9.7 percent) were in the agricultural and forestry sectors. İşçi Sağlığı ve İş Güvenliği Meclisi, www.guvenlicalisma.org/index.php?option=com_content&view=article&id=18379:2016-yilinda-en-az-1970-isci-yasamini-yitirdi&catid=149:is-cinayetleri-raporlari&Itemid=236 (accessed in 9.10.2017).

Considering the common informal employment practices in agriculture, one can conclude that the data presented above reflects only a small fraction of the work-related accidents in agriculture. Most accidents go unreported or are treated in place without medical follow-up. Detection of occupational disease in the agricultural sector is also quite difficult.

The seasonal structure of agricultural production creates particular employment practices and working conditions (Ahioğlu, 2008:2). Paid workers form different worker groups: daily wage workers; migratory, seasonal, and temporary workers; child workers; illegal immigrant workers. Generally speaking, agricultural employment is temporary, day-to-day work conducted under unsafe conditions without social security or legal protections—there are no strict criteria regarding age, gender and legal status, no sick leave, insurance or bonuses (Ahioğlu, 2008: 6, 14-15). Work sites are often close to living quarters, so long days are common.

Agricultural work poses significant hazards and risks for all workers, but they even greater for child, young, and female workers. In developing countries, including Turkey, most agricultural work is done by women (Toksöz, Dedeoğlu, Memiş and Bahçe, 2014; Lastarria-Cornhiel, 2006). Agriculture is also the sector in Turkey with the highest number of child workers (see Chapter 1.3). The temporary and labor-intensive nature of agriculture, the high ratio of child, young, and female workers, all contribute to the vital need for occupational health and safety precautions. Risk evaluation, the applicable findings of research-and-development studies, the integration of agricultural development policies and occupational health and safety policies are crucial endeavors in the effort to reach this goal.

1.3. Current State of Occupational Health and Safety Legislation and Programs in Agriculture

Turkey regulates occupational health and safety through legislation and participation in international conventions. The most important statute is Labor Act 4857, which covers every sector in the economy, although enterprises employing 50 or fewer workers are exempt from the legislation (Article 4). Almost all agricultural enterprises in Turkey employ 50 or fewer workers. In addition, the act does not apply to temporarily workers employed fewer than 30 days (Article 10). Regulation of temporary employment falls under the Code of Obligations 6098, which by default applies to most agricultural employment in Turkey.

The Occupational Health and Safety Act 6331, enacted June 30, 2012, expanded government regulation to “all businesses and enterprises, both private or public, to employers and their deputies, to all workers including apprentices and trainees, regardless of sector and area of activity.” The new law created momentum for OHS policies and regulations in the agricultural sector as executed by the General Directorate of Occupational Health and Safety (İş Sağlığı ve Güvenliği Genel Müdürlüğü).¹¹ However, the new law has not fully taken effect: even though Act 6331 regulates all agricultural enterprises regardless of the number of employees, it is currently applied only to jobs categorized as low hazard; regulation of the act’s application to hazardous and high hazard jobs has been postponed until 2020. (Workplace Hazard Classification Declaration Regarding Occupational Health and Safety, effective December 2012, identifies three hazard classifications: “low hazard,” “hazardous” and “high hazard.” The classification system applies NACE 6 Digit Code.¹² Agricultural, forestry, and fishery activities, classified as “hazardous,”

encompass hazelnut cultivation as stated in the 2017 update to the Declaration¹³. A “hazardous” classification is key component in the effort to eradicate child labor in hazelnut production.)

Furthermore, Act 6331 does not require enterprises engaged in low-hazard work to employ occupational health and safety experts and medical doctors, and the act also excludes two types of employment common in agriculture: self-employed and unpaid family workers. In short, a significant portion of agricultural production in Turkey falls outside the coverage of legal regulations and practices.

The prime ministry of Turkey issued several memorandums in 2010 and, more recently, in April 2017 regarding regulation of the safety, transportation, and habitation of agricultural workers.¹⁴ The memorandum states “necessary actions will be taken in cooperation with related institutions and organizations in order to solve the problems seasonal migrant agricultural workers and their families face.” To this end, the office of the governors in areas attracting significant number of seasonal agricultural workers are urged to provide appropriate accommodation facilities equipped with the proper electric, water and sewage infra-

11 Çalışma ve Sosyal Güvenlik Bakanlığı Tarımda İş Sağlığı ve Güvenliği Rehberi, www.csgb.gov.tr/media/4604/rehber27.pdf, p. 110, accessed in: 18.07.2017

12 İşyeri Tehlike Sınıfları Listesi, www.mevzuat.gov.tr/MevzuatMetin/yonetmelik/9.5.16909-Ek.xls, accessed in: 14.07.2017.

13 Official Journal 29992, 27.02.2017, www.resmigazete.gov.tr/eskiler/2017/02/20170227M1-1-1.pdf

14 www.resmigazete.gov.tr/eskiler/2017/04/20170419-8.pdf



structure and common areas for social and educational activities temporarily settlement areas.

“Secure, economical, aesthetic, and functional prefabricated, ferroconcrete, or steel-framed buildings appropriate to prevailing climate conditions and providing facilities and common areas for social and educational activities, as well as temporarily settlement areas with the proper electric, water and sewage infrastructure, will be built by the office of the governors in areas attracting significant number of seasonal agricultural workers” (Başbakanlık Genelgesi, 2017/6). According to the Labor Intermediation Ordinance of 2010, intermediary agencies must be licensed by the Turkish Employment Agency and may charge only employers for their services; in reality, most intermediaries lack proper licenses and commonly demand commissions from employees. The Turkish Employment Agency must be more efficient in regulating and monitoring labor intermediaries.¹⁵

The Safe Usage of Agricultural Equipment Program is yet another program related to occupational health and safety in agriculture. In the Highway Traffic Safety Strategy and Action Plan (which aims for a 50 percent reduction in the number of

fatal traffic accidents by 2020), one of the main goals is “taking necessary precautions for safer driving during the peak seasons of agricultural activities.” In this context, educational programs such as the Safe Usage of Agricultural Equipment were established in certain regions, with contributions from the Ministry of Interior (General Directorate of Security, General Command of Gendarmerie); Ministry of Transport, Maritime Affairs and Communications; Ministry of Food, Agriculture and Livestock; Ministry of National Education; Ministry of Health; the Union of Turkish Agricultural Chambers; and Yiğit Akü Company (Safe Usage of Agricultural Equipment Workshop 2012). The project covers education on safe driving techniques, safe agricultural practices, and the familiarization of workers with equipment.¹⁶

One key development at the international level was the ILO Convention 184 on Occupational Health and Safety in Agriculture (June 2001). The convention gave agricultural workers the right to (1) obtain information on occupational health and safety; (2) participate in the application and monitoring of health and safety measures in the workplace; (3) elect representatives to occupational health and safety committees in accordance with international regulations; and (4) avoid tasks that involve severe hazard and high risk and report such when reasonable evidence suggests unsafe conditions exist. The convention assures that workers who engage in any of the above activities will not face negative consequences.¹⁷ A second important international document, the ILO Recommendation 192 on Agricultural

15 Çalışma ve Sosyal Güvenlik Bakanlığı Tarımda İş Sağlığı ve Güvenliği Rehberi, www.csgeb.gov.tr/media/4604/rehber27.pdf, p. 110, accessed in: 18.07.2017

16 Karayolu Trafik Güvenliği Stratejisi ve Eylem Planı, 2012, www.trafik.gov.tr, s.11, accessed in: 17.05.2017.

17 ILO, 2001, Tarımda İş Güvenliğine ve Sağlığına İlişkin 184 Sayılı Sözleşme, Uluslararası Çalışma Örgütü Genel Konferansı, Cenevre.

Safety and Health, stipulates minimum-age requirements and insurance against work accidents and occupational diseases.¹⁸ Turkey has not yet signed Convention 184. Signing the convention is of vital importance, as the document would establish an international legal standard by which to compare local regulations governing the occupational health and safety of agricultural workers.

Since no system exists to monitor landowners as employers, responsibility falls on

national and local governments to manage occupational health and safety services in agriculture. Unfortunately, no government on any level currently has sufficient information of the production process or conditions particular to agricultural production to create adequate regulations that will protect workers in the sector (Selek, Öz and Bulut, 2013).

18 Tarımda Güvenlik ve Sağlık-Uluslararası Çalışma Örgütü Düzenlemeleri (2013), Çalışma ve Sosyal Güvenlik Bakanlığı, Ankara, www.csgb.gov.tr/media/2073/tarimdaguvenliksaglik.pdf, accessed in: 17.07.2017.

1.4. Risk Groups in Agriculture: Child, Young, and Women Workers

Studies on paid employment in agriculture show that a significant portion of workers are children and women.¹⁹ Working conditions of children and women are regulated by the national government and international bodies, which prescribe special conditions for the employment of these groups. However, informal employment is commonplace in agriculture, and regulations often do not cover child, young, and women workers who labor as family members. This report first discusses the regulation of, then the impact of hazards and risks on, this group of workers.

CHILD AND YOUNG WORKERS

Ideally, children should not participate in the labor force, but many children are employed under extremely poor working conditions in many countries around the world. Children and young workers are at a greater risk of workplace accidents and injuries, and because they are still developing, heavy physical activity can have more severe consequences for them. Children may not have the maturity to judge the potential consequences of the tasks they undertake, and they may approach

potentially dangerous tasks without proper caution. Indeed, children are naturally curious and always ready to play, they usually are too small to use work equipment properly, and they do not understand their rights as workers. But children remain a cheap source of problem-free labor, and tradition and socioeconomic pressure continue to encourage their employment.

ILO defines **child labor** as that performed by workers under age 15 who have not completed compulsory education, according to Minimum Age Convention 138. The same convention also defines conditions that allow employment of children age 13 and up for “light duties”.²⁰ But

19 Kalkınma Atölyesi, Fındık Hasadının Oyuncuları-Batı Karadeniz İllerinde Fındık Hasadında Yer Alan Mevsimlik Gezici Tarım İşçileri, Çocuklar, Tarım Aracıları ve Bahçe Sahipleri Temel Araştırması, Ankara, 2014; Hayata Destek, Mevsimlik Gezici Tarım İşçiliği Araştırma Raporu, Hayata Destek Derneği, İstanbul, 2014; Pınar Uyan Semerci, Emre Erdoğan, Ben Kendim Büyüdüm Demiyorum-Adana’da Mevsimlik Gezici Tarım İşçilerinin Çocuklarının Yaşam Koşullarının Çocuğun iyi Olma Hali Perspektifinden İyileştirilmesi Projesi Araştırma Sonuçları, İstanbul Bilgi Üniversitesi Yayınları, İstanbul, 2017.

20 Defining “Light Duties” is quite difficult. According to the Article 7 of ILO Convention 138, light duties are those that do not intervene with the child’s education and his/her physical, psychological and social development.

according to ILOs Convention 182 Concerning the Prohibition and Immediate Action for the Elimination of the Worst Forms of Child Labor, along with Recommendation 190, and as required by the National Time Limitation Policy and Program Framework, seasonal agricultural employment is considered one of the worst types of child labor and, therefore, anyone younger than 18 should not be allowed to be employed in this sector.

Article 71 of Turkish Labor Act 4857 forbides employment of children under 15. Once again, an exception is made for children age 14 and up who have completed compulsory education and are hired for light duties that don't intervene with their education and physical, psychological and social development. Article 71 also regulates employment hours for children, allowing 10 hours or fewer per week for children continuing their education. Children who have finished compulsory education and are not actively engaged in an educational program can work up to 35 hours per week. For children aged 15 to 18, the work week is extended to 40 hours.

Young workers are workers between ages 16 and 18, according to Labor Act 4857.

Dangerous duties are duties that potentially can harm a child's physical and mental health. According to ILO Convention 182, which applies to any individual younger than 18, the worst forms of child labor are:

- the enslavement or sale of a child;
- the trafficking of children, meaning the recruitment of children to work far from home away from their families;
- debt bondage or any form of bonded labor or serfdom;
- forced or compulsory labor, including forced or compulsory recruitment of children for use in armed conflict.
- commercial sexual exploitation of children (CSEC), including the use, procurement or offering of a child for prostitution or the production of pornography;
- use, procurement, or offering of children for illegal activities, including the trafficking in or production of drugs (also known as children used by adults in the commission of crime, or CUBAC);
- work that, by its very nature, is likely to harm the health, safety or moral development of children.

ILO Recommendation 190 also draws attention to other types of dangerous duties that involve:

- physical, psychological, and sexual abuse of children;
- work underground, underwater, or extreme heights;
- dangerous machinery, tools, and equipment;
- heavy loads;
- long days under harsh conditions.

The Turkish Ministry of Labor and Social Security has prepared the second National Plan Against Child Labor in accordance with the ILO Convention 182 in 2017. According to the plan, the worst forms of child labor in Turkey are “working on the street,” “working in small- and medium-scale enterprises doing heavy and dangerous tasks,” and “paid seasonal and migrant work in agriculture, outside family enterprises” (Çalışma ve Sosyal Güvenlik Bakanlığı, 2017). The program aims to prevent seasonal employment of children in agriculture by covering all health and education needs of children who migrate with their families²¹.

21 Başbakanlık Genelgesi, 2017/6, Resmi Gazete, Konu: Mevsimlik Tarım İşçileri, www.resmigazete.gov.tr/eskiler/2017/04/20170419-8.pdf, access date: 14.07.2017.

TABLE 5. SECTORS AND ACTIVITIES IN WHICH CHILD AND YOUNG WORKERS ARE EMPLOYED

Agriculture	Cotton, hazelnuts, citrus, sugar beets, cumin, peanuts
Manufacturing	Furniture, bricks, shoes, leather apparel manufacturing, vehicle repair
Services	Street sale of paper tissues, flowers, etc., portage in bazaars, collection of recyclable waste, begging
Worst Forms of Child Labor	Commercial sexual exploitation of children (human trafficking), use or procurement of a child by armed organizations for illegal activities

Source: *Findings on the Worst Forms of Child Labor (2016) U.S. Department of Labor, Bureau of International Labor Affairs, 2015.*

The most recent data on child labor in Turkey was collected by TÜİK in 2012. The study put the number of child workers between ages 6 and 17 at 893,000, or 5.9 percent of children in that age group. Of all children in Turkey between ages 15 and 17, 15.6 percent were working; 52.6 percent of those workers were paid, and 46.2 percent were unpaid family workers. Of all working children, 44.7 percent were in agriculture, 24 percent were in manufacturing, and 31 percent were in services. No further data on child labor has been collected since 2012. While the total influence of the Syrian immigrants on the child labor force remains unknown, sector-based studies suggest that the influx of Syrian refugees is exacerbating the child labor problem in Turkey.

According to a list prepared in 2015 by the U.S. Department of Labor Bureau of International Affairs, child workers in Turkey are mostly employed in cotton and tobacco fields or citrus and hazelnut orchards.

As it will be shown in subsequent chapters of this report, children face particularly harsh working conditions in hazelnut production where long work days in extreme heat and humidity are common, and labor involves the carrying of heavy sacks, shaking of

branches, negotiation of steep, slippery terrain, and exposure to biological, chemical and ergonomic hazards.

WOMEN

Physical, biological, chemical, and ergonomic hazards can harm the reproductive health of all workers regardless of gender, but the risks are magnified for women whose reproductive system, with its complex hormonal balance, is vulnerable to external factors. Occupational and environmental factors also affect the fetus. It is doubly important that working women be protected during prenatal and postnatal periods, since occupational risks are harmful to future generations (Gökbayrak, no date)²².

Labor Act 4857 ensures gender equality in the labor market.²³ The rights of pregnant, postnatal, and nursing workers are also stipulated in Article 50 of the Turkish constitution: “No one shall be required to perform work unsuited to his/her age, sex, and capacity. Minors, women, and physically and mentally disabled individuals shall enjoy special protection with regard to working conditions.”

Article 74/1 of Labor Act 4857 grants eight weeks prenatal and eight weeks postnatal paid maternity leave to working women (18 weeks

22 Şenay Gökbayrak, Çalışan Kadınlar ve Üreme Sağlığı Üzerindeki Riskler, www.isguvenligi.net/calisan-kadınlar-ve-ureme-sagligi-uzerindeki-riskler/, access date: 06.06.2017.

23 According to Article 5 of Labor Act 4857:

- Discrimination based on language, race, sex, political opinion, philosophical belief, religion, or sex is impermissible in an employment relationship.
- Except for reasons related to the nature of the job, the employer must not discriminate against an employee, either directly or indirectly, because of the employee's sex or maternity condition, nor show discrimination in regard to the conditions, execution, or termination of his (her) employment contract.
- Different remuneration for similar jobs or for work of equal value is impermissible. Application of special protective provisions because of an employee's sex shall not justify paying him (her) a lower wage. Gender, marital status and family obligations, and pregnancy and birth cannot be reasons for cancellation of a labor contract.

total for multiple pregnancies). According to Article 76, nursing workers with babies under 12 months are allowed a total of 90 minutes per day for breastfeeding. Female government employees are allotted up to three hours a day during the first six months after birth, and 90 minutes for following six months. The Regulation Regarding Pregnant or Nursing Women's Employment Conditions, Nursing Rooms, and Day-Care Centers²⁴ introduced further legislative arrangements for work conditions, work hours, and nighttime work for pregnant and nursing women.²⁵

These regulations also seek to minimize the risks women might face during prenatal and postnatal periods and optimize a safe and

healthy work environment. If hazardous work conditions cannot be eliminated, female workers should be transferred to another job. Pregnant employees should be given lighter duties if so indicated by a health report, with no reduction in wages. If transfer is not possible, the employee has the right to an unpaid leave of absence, the duration of which cannot be counted against paid vacation days.

Women working in agriculture also face biological and chemical hazards that can threaten their reproductive health. Several studies identify chemicals used in agricultural production as high risk: One study from India (as cited by Gökbayrak, no date) reveals that the risk of miscarriage is significantly higher for women who come in contact with pesticides (44 percent) compared to those who don't (8 percent). Heavy work loads and continuous standing also has been found to cause low birth weights and/or premature births. According to a study of 30,000 female workers conducted by McDonald et al. in Montreal, Canada, factors that contribute to low birth weights or miscarriages include long working hours (more than 40 hours per week), physical overextension, and heavy loads (as cited by Gökbayrak, no date).

24 Gebe veya Emziren Kadınların Çalıştırılma Şartlarıyla Emzirme Odaları ve Çocuk Bakım Yurtlarına Dair Yönetmelik, Mevzuatı Geliştirme ve Yayın Genel Müdürlüğü, Mevzuat Bilgi Sistemi, mevzuat.basbakanlik.gov.tr/Metin.Aspx?MevzuatKod=7.5.18728&sourceXmlSearch=&Mevzuatliski=0, access date: 17.07.2017.

25 Regulation Regarding Pregnant or Nursing Women's Employment Conditions, Nursing Rooms and Day-Care Centers, Article 8:

- (1) Women workers cannot be forced to work at night during the period that begins with the certification of pregnancy by a health report and lasts until the birth.
- (2) New mothers cannot be forced to work at night in the year following the birth. At the end of this period, they cannot be forced to work during at night if any health and safety hazard has been determined by a health report.

Article 9: (1) Pregnant or nursing workers cannot be forced to work more than seven hours and 30 minutes in a work day.



CHAPTER 2

LABOR PRACTICES IN HAZELNUT PRODUCTION IN TURKEY

Hazelnuts are important agricultural products for the Turkish economy and the primary source of income for many families, not only those who own orchards but also workers employed during the harvest. These seasonal workers consist of large families and kinship groups mostly from eastern and southeastern Anatolia. Child labor is common among seasonal migrant families and women play a significant role in the harvesting process.

During the harvest, laborers work long days in hot, humid conditions on steep, slippery terrain.

Seven-day work weeks are common and few workers enjoy social insurance. The harsh work environment poses different risks for different groups of workers: accident and injury, disease, sunstroke, and miscarriage for pregnant workers are most common.

Before discussing the hazards and risks workers face during hazelnut production, this report will analyze the labor processes in hazelnut agriculture and the profile the worker groups involved.

2.1. Employment Practices in Hazelnut Production

In the past, landowners' families participated in every step of hazelnut production. But emigration has reduced rural populations and orchards have been carved up by inheritance, forcing producers to hire workers.

Before these demographic and economic changes, hazelnuts were harvested in a collective or co-op fashion: *The hazelnuts in the orchards on higher altitudes ripen late, so the owners of these orchards first help producers in the lowland orchards. After their harvests are finished, hazelnut producers from the lowlands help those on the hills. The locals call this reciprocal collaboration "imece," and usually no money changes hands. Sometimes those who had emigrated from the village return temporarily to help with the harvest. Since 1990s, this labor is not sufficient for the harvest, so paid seasonal workers from eastern and southeastern Turkey are employed* (Südwind 2012: 15).

Workers are needed to plant, prune, fertilize, lime, spray and clean out rhubarb and weeds, and to pick, dry and winnow the hazelnuts. The actual harvesting of hazelnuts requires the greatest number of paid laborers, the other tasks undertaken mostly by the owners and their families. When the need for paid labor for non-harvest tasks arises, producers prefer to hire local residents.

Harvesting starts around the first week of August, depending on the weather. Orchards along the coast peak first, with those at higher altitudes following in about 15 days. A commission of experts assigned by the provincial governor's office determines the harvest dates according to climate during the year. Under normal conditions, the harvest ends the second week of September (the harvest should take no longer than 45 days to ensure best-quality nutmeat). Because of the time constraint, orchard owners find themselves in competition

for labor. In the past, as noted above, local workers from the Black Sea region were hired for the harvest; today, because there has been an influx of seasonal migrant worker groups from eastern and southeastern Anatolia, and more recently from Georgia and Syria, producers hire foreigners and also employ children.

There are four categories of workers involved in hazelnut harvest:

- (a) family members and close relatives of orchard owners;
- (b) paid local workers from nearby provinces, counties and villages;
- (c) seasonal migrant workers from outside the hazelnut cultivating regions;

- (d) foreign nationals seeking temporary employment (Kalkınma Atölyesi, 2016).

In addition to the above, cooperative groups continue to help each other during high season (Südwind, 2012). A 2012 study by the Fair Labor Association (FLA) delineates the prevalence of each group. In the Ordu region, 83 percent of the hazelnut workers were seasonal agricultural workers, 12.7 percent were local paid workers, 3.7 percent were Georgians, and 0.5 percent were family workers. Employment of workers from Georgia is on the rise. These workers enter the country on 90-day tourist visas and work in hazelnut and tea harvests in the Black Sea region (Kalkınma Atölyesi, 2016; FLA, 2012; Çiğerci, Ulukan and Ulukan, 2011).

2.2. Risk Groups in Hazelnut Production: Child, Young, and Women Workers²⁶

The FLA recently conducted a study that provides detailed information on working conditions and local and seasonal migrant workers in hazelnut production. Researchers interviewed 407 people from 71 households who had come to the Düzce/Sakarya region from Mardin (35.6 percent), Şırnak (23.3 percent), Şanlıurfa (19.2 percent), and Diyarbakır (11 percent). Of all the workers, 60 percent were female and 40 percent were male; 40 percent fell within the 16 to 18 age group and 31 percent between 19 and 25. The 11 to 15 age group made up 7.4 percent of workers. Only 21.4 percent were older than 25. The study found that women and young workers were in the majority. Interestingly, 35 percent of the workers reported that they were attending high



²⁶ Fair Labor Association Worker Profiling Report 2017 was used while writing this part. www.fairlabor.org/report/hazelnut-workers-turkey-demographic-profiling-duzce-ordu-and-sakarya-2016

school, which means that harvesting hazelnuts and formal education can complement one another.

Seasonal work in agriculture involves long workdays, often from 7 a.m. to 7 p.m. The FLA study found that that 90 percent of hazelnut workers put in 11-hour days—and this did not include time spend commuting—and 99 percent of respondents said they worked seven days a week.

The FLA study also found that 96 percent of workers lived in assigned housing, commonly sharing accommodations with more than 10

other people. Family groups remain together and work as a team. Employment is usually found through labor mediators or middlemen, but some families use their own contacts.

Most child and young workers—96 percent—perform picking tasks during the harvest; very few carry sacks (6 percent) or help to fertilize or spray pesticides (3 percent). The study also found that child and young laborers work even longer hours than adults. Therefore, the study concluded, hazelnut harvesting is performed mainly by young workers, and the employment of child labor is generally accepted by both families and orchard owners.

CHAPTER 3

REVIEW OF LABOR PRACTICES IN HAZELNUT AGRICULTURE FROM AN OCCUPATIONAL HEALTH AND SAFETY VIEWPOINT AND RISK EVALUATION

The prominence of hazelnut agriculture in Turkey and the labor-intensive nature of hazelnut production justify a comprehensive analysis of the sector's occupational hazards and risks, with the goal of advancing more decent and humane employment conditions. Chapter 3 of this report reviews these hazards and risks throughout the production process (Part 3.1). Biological, physical, chemical, ergonomic and psychosocial hazards along

with accidents/injuries can be separated into two categories: those that occur in the work environment and those that prevail in living spaces. We also calculate the risk scores for these hazards (Part 3.2). Hazards and risks are then evaluated in light of their affects on child, young, and female workers, as well as pregnant and nursing mothers (Part 3.3), with attention to legal frameworks stipulated by employment regulations.

3.1. Review of Hazelnut Production from an Occupational Health and Safety Viewpoint

While hazelnut agriculture is a year-round enterprise, the harvest takes place during a 35-40 day period starting in

August. Pre-harvest activities, mostly tree and soil care, require minimal labor, the tasks undertaken by the orchard owners

themselves. Post-harvest activities consist of drying, winnowing and shipping of hazelnuts to warehouses, and also require little hired help. The harvest (or “*döşürmek*” as the locals call it) is, of course, the most

important period in hazelnut agriculture. In general, most harvest tasks require paid seasonal migrant workers; harvest is the production stage with the highest demand for labor.

3.1.1. Pre-harvest Tasks

Pruning and stump clearing starts in September or October after the harvest, and occurs again in May.²⁷ First the dry, broken, deformed, and unproductive branches are cleared. Sometimes whole trees are uprooted to allow striplings to grow.

Generally, pruning and stump clearing tasks are performed by orchard owners with family members and take just a few days. In cases where the orchard is large or the owner too old or busy, or a few workers might be hired and paid daily wages.

Weed clearing: Hazelnuts need a lot of water, so weed clearing is important. Also, orchards are cleared before the harvest to make it easier to pick hazelnuts from the ground.

Weeds are cleared by mowing or with herbicides. Herbicides are cheaper, faster, easier, and last longer. However, the chemicals harm the flora and fauna of the orchards, including natural predators of harmful pests.²⁸ In addition, given the steep nature of most orchard terrain, removing all vegetation from the soil intensifies erosion and can cause landslides during heavy rains.

One processor who buys only organic hazelnuts spoke about the importance of using mechanical and non-chemical methods for weed control: “*A clean orchard floor means herbicides were used, and we never buy from such orchards. Herbicides harm the ecological system. They do not kill harmful weeds selectively, they kill all vegetation including those that are beneficial, and animals, too. They also reduce hazelnut productivity and quality in the long run. We recommend using only motorized or hand scythes.*”

In mechanical clearing, weeds are removed by hand or by hand scythes or motorized scythes five to 10 days before the harvest. This method protects fallen hazelnuts and saves time and labor during picking (MEB, 2011: 63).

Chainsaws, coulters, hatchets, and motorized scythes carry the risk of accident. Working with cutting equipment and tools may cause cuts on fingers, hands and feet; wood chips and dust can injure eyes. The steep and slippery terrain of orchards can cause falls and make it difficult to maintain balance, inducing leg, back and muscle pain. Working among dense branches is a biological hazard: swinging branches can hit the workers and knock them off balance, and dense and thick branches block the flow of air and make it difficult to breathe.

Such injuries can require in- or out-patient treatment and loss of work hours. In order

27 Samsun Haber Hattı, “Dip Sürgün Temizliği Fındık Verimini Arttırıyor,” www.samsunhaberhatti.com/haber/dip-surgunu-temizligi-findik-verimini-arttiriyor/176023, access date: 28.05.2017.

28 Yığılcanın Sesi, “Fındıkta Bahçe Altı Temizliğinde Öneri,” www.yigilcaninsesi.net/icerik/haber.asp?id=761, access date: 02.05.2017.

TABLE 6. HAZARDS, IDENTIFIED RISKS, RISK SCORES, AND PREVENTIVE MEASURES FOR PRUNING, STUMP AND WEED CLEARING: RISK EVALUATION MATRIX (L-TYPE)

RANK	HAZARD CLASS	HAZARD	RISK	CONSEQUENCES	PROBABILITY	IMPACT	RISK SCORE	RISK GROUP	PREVENTIVE MEASURES
1	BIOLOGICAL HAZARDS	Hazelnut branches	Slip and fall, bruises and bone fractures from swinging branches, difficulty breathing due to dense branches Risk of burn when burning the branches	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	3	3	9 (medium)	Orchard owner, paid local worker	Safety training on pruning, stump and weed clearing, and burning brush. Protective gear (goggles, gloves and boots).
2	PHYSICAL HAZARDS	Steep terrain	Slip and fall, acute or chronic pain in legs, back and muscles.	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	4	3	12 (medium)	Orchard owner, paid local worker	Protective gear (slip-resistant work boots).
3	PHYSICAL HAZARDS	Wet and slippery terrain	Slip and fall, loss of balance, pain in legs, back and muscles.	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	4	3	12 (medium)	Orchard owner, paid local worker	Protective gear (slip-resistant work boots).
4	INJURIES AND ACCIDENTS	Motorized scythe	Cuts in fingers, hands and feet, eye injury from wood chips and dust	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	3	3	9 (medium)	Orchard owner, paid local worker	Safety training on cutting equipment and tools. Protective gear (goggles, gloves and boots).
5	INJURIES AND ACCIDENTS	Chainsaw, coultter, hatchet	Cuts in fingers, hands and feet, eye injury from branch pieces and dust	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	3	3	9 (medium)	Orchard owner, paid local worker	Safety training on cutting equipment and tools. Protective gear (goggles, gloves and boots).

to reduce and eliminate risk, workers should be well trained, apply utmost care and wear protective gear such as safety goggles, gloves and boots. Since these tasks are generally done by the orchard owners or hired experts, no accidents or injuries were reported during our interviews. That said, proper occupational health and safety training for workers involved in pre-harvest activities remains necessary.

The hazards and risks associated with pruning, stump and weed clearing tasks and their corresponding risk scores are presented in Table 6 above.

Liming, Fertilizing, and Spraying: In order to maintain a good yield and high-quality product from hazelnut trees, fertilizer should be applied at the right time using proper methods. Trace elements like iron, copper, zinc, manganese, and boron are sprayed onto leaves as needed from May to July (allowing 15 to 20 days between applications), or in granule form scaped from sacks and sprinkled over the soil (which is grubbed using picks to ensure adequate penetration). Lime is applied only if deemed necessary by soil analysis during fall or winter, as rain is needed for the lime to penetrate the soil.

TABLE 7. HAZARDS, IDENTIFIED RISKS, RISK SCORES, AND PREVENTIVE MEASURES FOR LIMING, FERTILIZING, AND SPRAYING: RISK EVALUATION MATRIX (L-TYPE)

RANK	HAZARD CLASS	HAZARD	RISK	CONSEQUENCES	PROBABILITY	IMPACT	RISK SCORE	RISK GROUP	PREVENTIVE MEASURES
1	CHEMICAL HAZARDS	Ammonium, dry fertilizers, detergents, petroleum products, solvents	Contact dermatitis,* sore throat, cough, cyanosis, poisoning	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input type="checkbox"/> Injury <input type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	2	2	4 (low)	Orchard owner, paid local worker	Workers should be warned about these chemicals and use protective gloves and masks to avoid direct contact.
2	CHEMICAL HAZARDS	Agricultural Biocides (pesticides and herbicides)	Acute poisoning, contact dermatitis, difficulty in breathing, muscle spasms, mental fog, coma	<input checked="" type="checkbox"/> Death <input type="checkbox"/> Light injury <input type="checkbox"/> Injury <input type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	2	2	4 (low)	Orchard owner, paid local worker	Workers should be warned about these chemicals, be given training on proper usage, and wear protective coveralls, goggles, gloves and masks to avoid direct contact with eyes and skin. Workers applying chemical products must have a certificate verifying such training. Chemical products that include banned substances should not be used.
4	CHEMICAL HAZARDS	Lime	Skin irritation, eye irritation, respiratory and digestive system disorders	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input type="checkbox"/> Injury <input type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	2	2	4 (low)	Orchard owner, paid local worker	Masks and gloves should be worn to prevent direct contact.

* Contact dermatitis is a rash and eruption on skin due to direct contact with a chemical substance.

Spraying and fertilizing are usually done by the orchard owners or by paid local workers, depending on the size of the orchard. The chemicals and solvents²⁹ used

for liming, fertilizing and spraying, including ammonium, detergents, and petroleum products, are considered hazardous. Direct contact can cause skin rash, irritation, and acute poisoning. Mishandling and misuse of chemicals can also cause occupational disease and even death. Orchard owners and workers should be trained in the proper use of these chemicals and they should wear coveralls, gloves and masks.

29 Solvents are agents that separate chemicals into their main components. Depending on the chemical composition, they might be hazardous during application and as chemical waste afterward. (Karadağ, Ö. K. "Solvent Nedenli Sağlık Risklerinin Yönetimi," Türk Tabipleri Birliği Mesleki Sağlık ve Güvenlik Dergisi, Ekim-Aralık, 2005:21-27. www.isgebrar.com/ebr/144.pdf).

3.1.2. Harvest Tasks

Harvest time in the Black Sea region usually starts between Aug. 1-10 along the coast, between Aug. 10-20 at middle altitudes, and after Aug. 20 at higher altitudes. A commission of experts assigned by the provincial governor's office determines the exact dates depending on climate during the year.

There are three methods of harvesting hazelnuts: picking directly from branches, picking from the ground, and vacuuming from the ground.

Picking: This is the most common method since most orchards are on steep terrain that makes it impossible to use machines. During hand picking, special attention must be given to: (1) handling branches to prevent friction and whiplash; (2) picking husks³⁰ one by one to preserve young buds (instead of stripping the whole branch); (3) separating various types of hazelnuts.

³⁰ Hazelnut husks are called "çotanak," usually containing three or four ripe cobs.

Workers place the husks in baskets tied around their waists. These baskets weigh 5 to 7 kilograms when full. The baskets are in turn emptied into sacks that can weigh 40 to 60 kilograms. The sacks are transported to the threshing floor.

Hand picking is more common in the eastern Black Sea region, where terrains are steeper. One worker can pick 70-75 kilograms of hazelnuts in their husks, which corresponds to 23-25 kilograms of dried cobs. (Hand picking must be done before cobs fully ripen and drop from trees.)

Shaking: The most effective method for harvesting hazelnuts is lightly shaking the branches and picking the fallen husks from the ground. Since the husks fall to the ground only after they are fully ripened, this method maximizes yield and quality, and the young buds and small branches are preserved to ensure future harvests. Branches are shaken either by hand or by machine, the latter



technique becoming more popular in recent years. Any husks that do not fall after shaking are picked using a long pole.

Harvesters scan the orchard at least three times, leaving three to five days between visits. The method allows a worker to pick 110-120 kilograms of husks in a day, which corresponds to 35-40 kilograms of dried cobs.

Both male and female workers participate in branch shaking, according to seasonal workers in Şanlıurfa and Mardin who travel to Ordu and Giresun Bulancak for the harvest. Owners rarely undertake this task, according to those interviewed, although some in Düzce stated that they do not allow seasonal workers to touch tree branches, preferring to do the shaking themselves so hired help can then pick husks from the ground.



Using machinery: Fallen husks can be raked up with vacuum machines. Some models include a winnowing system that separates cobs from husks. However, given the steep terrain of most orchards, machine picking is not as common as the other two methods.

Workers and owners surveyed in Düzce, which has less steep terrain than the eastern Black Sea region, estimated that only 10 percent of harvests employ machines. Also, the average price of a picking machine is 18,000 TL, making the method quite costly.

Sacking: The hazelnuts picked by the workers are collected in large bags and transported to the threshing floor. Most sackers are male and they earn 50 percent more than pickers. (The wages for pickers, sackers, and cooks are announced officially by the governor's office in July every year.³¹)

A full sack of hazelnuts can weigh up to 50 kilograms. The steep and uneven terrain of the orchards makes the task even harder. One sacker claims: *"You have to be agile and fast like a goat or you will roll all the way to the bottom of the hill with the sack."* The heavy loads and long hours (typically 12-hour days) strain workers' muscles and joints. As another worker revealed: *"If the trees allow it, I roll the sack downhill, catch up with it at the bottom of the hill. This way I don't have to carry it on my back all the way down. Running fast downhill in an orchard is no easy feat. You must catch the sack on time. It is like a very demanding sport."*

Orchards owners generally said that they do not want to hire child workers—employing children is uneconomical, as they cannot pick

31 In 2016 wages for harvest workers (regardless of age and gender) were: lunch provided, 50 TL daily, no lunch, 55 TL; sackers were paid 65 TL with lunch or 70 TL without lunch; cooks were paid 60 TL. (www.giresuntb.org.tr/haber_index.php?hbid=311&page=1, access date: 14.07.2017).

**TABLE 8. HAZARDS, IDENTIFIED RISKS, RISK SCORES, AND PREVENTIVE MEASURES FOR HAZELNUT PICKING:
RISK EVALUATION MATRIX (L-TYPE)**

RANK	HAZARD CLASS	HAZARD	RISK	CONSEQUENCES	PROBABILITY	IMPACT	RISK SCORE	RISK GROUP	PREVENTIVE MEASURES
1	BIOLOGICAL HAZARDS	Bees, snakes, scorpions, ticks, etc.	Allergies, poisoning, malaria, Lyme disease	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	4	4	16 (high)	All worker groups	Workers should be warned about risks beforehand. First aid kits should be kept both in the orchards and in worker habitation areas.
2	BIOLOGICAL HAZARDS	Dense hazelnut branches	Slip and fall, bone fractures, difficulty in breathing	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	3	3	9 (medium)	All worker groups	Information should be given to worker groups about potentially dangerous situations during picking, and training provided.
3	CHEMICAL HAZARDS	Fertilizer and pesticide containers and waste	Contact dermatitis, allergies, poisoning	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input type="checkbox"/> Injury <input type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	2	2	4 (low)	All worker groups	Workers should be warned about chemicals; protective gear such as gloves and masks should be provided.
4	PHYSICAL HAZARDS	Steep terrain	Slip and fall, back and leg pain and disease	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	4	3	12 (medium)	All worker groups	Information and training should be given to worker groups about potentially dangerous situations during picking. Nonslip boots should be encouraged.
5	PHYSICAL HAZARDS	Wet and slippery terrain	Slip and fall, strains, back and leg pain and disease	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	4	3	12 (medium)	All worker groups	Information and training should be given to worker groups about potentially dangerous situations during picking. Nonslip boots should be encouraged.
6	PHYSICAL HAZARDS	Inclement weather, rain, wet clothing	Fever, colds, rheumatoid arthritis, mycosis, muscle and joint pain	<input type="checkbox"/> Death <input type="checkbox"/> Light injury <input type="checkbox"/> Injury <input type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	4	3	12 (medium)	All worker groups	Picking should stop during rain. Weatherproof clothing should be provided.
7	ERGONOMIC HAZARDS	Bending during picking	Injuries to hands, fingers and knees.	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	4	4	16 (high)	All worker groups	Proper body position and movement should be taught to workers.

8	ERGONOMIC HAZARDS	Lifting and carrying heavy sacks	Slip and fall, muscle tear, intervertebral disk displacement, hernia	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	4	4	16 (high)	All worker groups (Sackers)	Proper lifting and carrying techniques should be taught to workers. The weight of the sacks should be lowered.
9	ERGONOMIC HAZARDS	Repetitive movements, uncomfortable wrist positions	Carpal tunnel syndrome,* muscle and joint pain, intervertebral disk displacement	<input type="checkbox"/> Death <input type="checkbox"/> Light injury <input type="checkbox"/> Injury <input type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	4	4	16 (high)	All worker groups	Proper body position and movement should be taught to workers. Information on prevention should be provided.
10	ERGONOMIC HAZARDS	Extreme effort, sustained awkward body positions	Back pain, intervertebral disk displacement, muscular and skeletal injuries	<input type="checkbox"/> Death <input type="checkbox"/> Light injury <input type="checkbox"/> Injury <input type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	4	4	16 (high)	All worker groups	Proper body position and movement should be taught to workers. Information on prevention should be provided.
11	INJURIES AND ACCIDENTS	Transportation (chugs and tractors)	Traffic accidents	<input checked="" type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	4	5	20 (high)	All worker groups	Transportation vehicles should be inspected, capacity restricted, drivers trained and monitored.
12	WORKING CONDITION HAZARDS	Improper gear	Slip and fall muscle and joint pain, intervertebral disk displacement, chemical burns	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	5	4	20 (high)	All worker groups	Proper protective gear should be provided and its use monitored.

* Carpal tunnel syndrome refers to numbness, tingling, weakness, and other problems in the hand due to pressure on the median nerve in the wrist. The median nerve and several tendons run from the forearm to the hand through a small space in the wrist called the carpal tunnel. The median nerve controls movement and feeling in the thumb and first three fingers. Pressure can come from swelling or anything that makes the carpal tunnel smaller.

as many hazelnuts as an adult but get paid the same wage. However, orchard owners are forced to employ the children lest they lose the entire family group. Producers in Düzce said that children run errands and sometimes help their parents with picking. Younger children play in the orchard. One owner said: *“We cannot claim there are no children present on the orchard—they are there. I don’t expect them to work like an*

adult, but I still pay them a full wage. Some children can work as sackers.” This means children are involved in all aspects of harvest work.

Whatever the work, laborers face hazards: steep and slippery terrain, repetitive bending and other movements, and uncomfortable body positions which can lead to back, leg and joint pain, disc displacement, and

balance problems. Workers must work regardless of heat, humidity and rain, cope with dense branches, pest stings and bites, long work days and short break periods, poor living conditions, and often the enmity of locals. The risks created by these hazards and corresponding risk scores and precautions are presented in Table 8.

Traffic accidents, however, are the most widespread hazard for seasonal workers, according to interviewees and news sources. Drivers are careless and chug engines are not suitable for human transport. Traffic accidents have monetary costs as well: damage to the vehicles, health-care expenses, and loss of work hours.

3.1.3. Post-harvest Tasks

TABLE 9. HAZARDS, IDENTIFIED RISKS, RISK SCORES, AND PREVENTIVE MEASURES DURING POST-HARVEST TASKS: RISK EVALUATION MATRIX (L-TYPE)									
RANK	HAZARD CLASS	HAZARD	RISK	CONSEQUENCES	PROBABILITY	IMPACT	RISK SCORE	RISK GROUP	PREVENTIVE MEASURES
1	INJURIES AND ACCIDENTS	Winnowing	Slits in and detachment of hands, fingers, feet and similar injuries, hearing damage	X Death X Light injury X Injury X Financial loss <input type="checkbox"/> Occupational disease	1	3	3 (low)	Orchard owner, local paid workers	Safety training on about winnowing machines, protective gear (goggles, gloves, boots), noise-reduction headphones.
3	BIOLOGICAL HAZARDS	Organic dust	Asthma, allergic rhinitis	<input type="checkbox"/> Death <input type="checkbox"/> Light injury <input type="checkbox"/> Injury <input type="checkbox"/> Financial loss X Occupational disease	3	2	6 (low)	Orchard owner, local paid workers	Protective gear (gloves, goggles and face masks).
5	BIOLOGICAL HAZARDS	Endotoxins, mycotoxins.	Myxadenitis*	<input type="checkbox"/> Death <input type="checkbox"/> Light injury <input type="checkbox"/> Injury <input type="checkbox"/> Financial loss X Occupational disease	3	2	6 (low)	Orchard owner, local paid workers	Protective gear (gloves, goggles and face masks).
7	ERGONOMIC HAZARDS	Heavy sacks	Muscle tear, hernia, intervertebral disk displacement, slip and fall	<input type="checkbox"/> Death <input type="checkbox"/> Light injury <input type="checkbox"/> Injury <input type="checkbox"/> Financial loss X Occupational disease	4	4	16 (high)	Orchard owner, local paid workers	Training in safe lifting techniques, limiting weight of sacks.

* Myxadenitis is the inflammation of mucus lining the airways and the large and medium bronchi.

Drying and withering: Harvested hazelnuts transported to the threshing floor are spread out on a clean and dry concrete floor or on sheets covering bare earth. The nuts are raked during drying and withering to ensure exposure to air.³² The process takes three to four days.

Winnowing, sacking, and storing: Hazelnuts are separated from dirt and cobs in a winnowing machine and then placed into large

32 Ünye Ticaret Borsası, Fındık Toplama- Hasat Kurutma Yöntemleri Üzerine Araştırma ve Fizibilite Çalışması, s. 13, 29.08.2013, www.unyetb.org.tr, access date: 07.06.2017

sacks weighing up to 80 kilograms for storage or transport to market.

Post-harvest tasks are performed by owners or paid local workers. According to one producer, winnowing machines are efficient and safe; almost no accidents occur and seasonal migrant workers generally are not involved in post-harvest tasks

Nevertheless, workers are subject to allergies from dust; muscle tear and strain, hernia, and slip-and-fall accidents. Orchard owners and workers should be trained in the safe operation of winnowing machines and wear protective gear; sack carriers should be trained in safe lifting techniques and the weight of the sacks should be reduced.

3.2. Hazards, Risks, and Risk Scores Identified During Field Research

This report, in accordance with OSHA standards, identifies eight hazard categories in hazelnut production. Hazards and the corresponding risks and risk scores are presented in the Risk Score Tables below. Hazards are listed in the first column; corresponding risk in the second column; consequences (or results) in the third. For example, ticks are a biological hazard; Lyme disease can result from a tick bite. A bite or disease has consequences that vary from “light injury” (outpatient treatment) to “injury” (inpatient treatment, temporary

incapacitation), to “occupational disease” (chronic condition, disability) and even death. The probability of contracting Lyme disease is multiplied by the impact of the disability to calculate the risk score for a hazard. Based on the risk score, one can claim that tick bites require special attention and immediate response. Financial losses for employers can be direct or indirect: Damages to the equipment and vehicles or the cost of medical treatments are direct financial losses, while reduction in production due to incapacitation of workers is an indirect financial loss.

TABLE 10. RISK EVALUATION MATRIX IN HAZELNUT PRODUCTION (L TYPE MATRIX)

NO.	HAZARD	RISK	CONSEQUENCES	PROBABILITY	IMPACT	RISK SCORE	PREVENTIVE MEASURES
BIOLOGICAL HAZARDS							
1	Bee, mosquito, tick, spider bites, scorpion stings, snake bites	Malaria*, Lyme disease**	X Death X Light injury X Injury X Financial loss X Occupational disease	4	4	16 (high)	Warn workers against risk, educate them regarding proper response in case of emergency, keep first aid supplies in orchards and habitation areas, require protective clothing.
2	Organic dust, animal dander, fungal antigens, mites	Asthma, Rhinitis†	□ Death □ Light injury □ Injury □ Financial loss X Occupational disease	3	2	6 (low)	Wear protective gear (goggles, gloves, boots, etc.).

* Malaria is a mosquito-borne infectious disease affecting humans and other animals caused by parasitic protozoans. Malaria causes symptoms that typically include fever, tiredness, vomiting, and headache.

** Lyme disease can be caught from tick, mosquito, fly, and flea bites, or from contact with dogs and cats. One of the first symptoms is an expanding rash called erythema chronicum migrans (EM).

† Rhinitis is irritation and inflammation of the mucous membrane inside the nose.

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3	Endotoxins, mycotoxins	Myxadenitis	<input type="checkbox"/> Death <input type="checkbox"/> Light injury <input type="checkbox"/> Injury <input type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	3	2	6 (low)	Wear protective gear (goggles, gloves, boots, etc.).
4	Dense branches	Slip and fall, bone fracture, difficulty in breathing	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	3	3	9 (medium)	Train workers on proper picking methods especially in regard to risk from swinging tree branches.
PHYSICAL HAZARDS							
5	Sunlight	Melanoma*, lip cancer**, heat cramp and stroke	<input checked="" type="checkbox"/> Death <input type="checkbox"/> Light injury <input type="checkbox"/> Injury <input type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	3	4	12 (medium)	Protective gear (hats, sunglasses, gloves).
6	Hot and humid environments	Contact dermatitis, heat cramp and heat stroke	<input type="checkbox"/> Death <input type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	3	2	6 (low)	Light cotton clothes and protective gear (hats, sunglasses, gloves).
7	Steep terrain	Slip and fall, back and leg pain and disease	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	4	3	12 (medium)	Training on proper posture and required nonslip boots.
8	Wet and slippery terrain	Slip and fall, balance problems, back and leg pain and disease	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	4	3	12 (medium)	Training on proper posture and required nonslip boots.
9	Cold and rainy weather, wet clothes	Hypothermia,† chilblains, frostbite	<input type="checkbox"/> Death <input type="checkbox"/> Light injury <input type="checkbox"/> Injury <input type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	4	3	12 (medium)	Picking forbidden during rain, weatherproof clothing.
CHEMICAL HAZARDS							
10	Ammonium, fertilizers, detergents, petroleum products, solvents	Contact dermatitis, sore throat, cough, cyanosis, poisoning	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input type="checkbox"/> Injury <input type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	2	2	4 (low)	Workers should be warned about the dangers of chemicals and use protective gloves and masks to avoid direct contact. Empty chemical containers should be disposed of properly.
11	Insecticides, arsenic	Acute poisoning, contact dermatitis, difficulty in breathing, muscle spasms, mental fog, coma	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input type="checkbox"/> Injury <input type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	2	2	4 (low)	Workers should be warned about the dangers of chemicals and use protective gloves and masks to avoid direct contact. Empty chemical containers should be disposed of properly.

* Melanoma is a type of cancer that develops from the pigment-containing cells known as melanocytes. Primary cause is exposure to UV radiation from the sun.

** Lip cancers are abnormal cells that grow out of control and form lesions or tumors on the lips, usually related to exposure to sunlight.

† Hypothermia is the falling of core body temperature below 35 degrees Celsius.

12	Lime	Skin irritation, eye irritation, respiratory and digestive system disorders	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input type="checkbox"/> Injury <input type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	2	2	4 (low)	Workers should be warned about the dangers of chemicals and use protective gloves and masks to avoid direct contact. Empty chemical containers should be disposed of properly.
13	Fertilizer and pesticide containers and waste	Contact dermatitis, allergies, poisoning	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input type="checkbox"/> Injury <input type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	2	2	4 (low)	Workers should wear protective masks and gloves to avoid direct contact with chemicals.
ERGONOMIC HAZARDS							
14	Bending, kneeling, overstretching while picking hazelnuts	Injury to hands, fingers and knees, muscle and joint pain, hernia, musculoskeletal injuries	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	4	4	16 (high)	Periodic medical screening, ergonomic training.
15	Repetitive movements, uncomfortable wrist positions	Carpal tunnel syndrome, muscle pain, cramps, neck, shoulder and back injuries	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	4	4	16 (high)	Periodic medical screening, ergonomic training.
16	Sustained awkward body positions	Muscle pain, cramps, neck, shoulder and back injuries	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	4	4	16 (high)	Periodic medical screening, ergonomic training.
17	Overexertion, awkward body positions	Degenerative disc disease, intervertebral disc displacement, musculoskeletal injuries	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	4	4	16 (high)	Periodic medical screening, ergonomic training.
18	Heavy loads (hazelnut sacks)	Slip and fall, muscle tears, intervertebral disc displacement, hernia	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	4	4	16 (high)	Lighter hazelnut sacks, periodic medical screening, ergonomic training.
INJURIES AND ACCIDENTS							
19	Transportation (commuter vehicles, chugs and tractors)	Traffic accidents, injury, death	<input checked="" type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	4	5	20 (high)	Regular inspection of vehicles, enforcement of occupancy limits.
20	Winnowing machines	Hand and finger injuries	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	1	3	3 (low)	Training on the safe operation of winnowing machines, operation by experienced workers, mandatory use of protective gear (goggles, gloves, boots).

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21	Weedwackers	Amputation, eye injuries	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	3	3	9 (medium)	Training in the safe operation of weedwackers, operation by experienced workers, mandatory use of protective gear (goggles, gloves, boots).
22	Coulters and hatchets	Cuts and injury to fingers, hands and feet, eye injuries	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	3	3	9 (medium)	Safety training, use by experienced workers. use of protective gear (goggles, gloves, boots).
WORK ENVIRONMENT HAZARDS							
23	Long work days	Exhaustion, stress, burnout	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	5	4	20 (high)	Legal limits on work periods.
24	Short breaks	Insufficient rest (leading to physical and mental impairment)	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	5	4	20 (high)	Longer breaks.
25	Seven-day work weeks	Exhaustion, stress, burnout	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	5	4	20 (high)	Full- or half-day leave every week.
26	Unreasonable work pace	Exhaustion, stress, burnout	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	5	4	20 (high)	Moderated work pace.
27	Lack of control	Stress, burnout	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	5	4	20 (high)	More worker input, greater autonomy.
28	Low wages and lack of wage safety	Low motivation, loss of efficiency, loss of self-esteem	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	5	4	20 (high)	Fair and timely compensation.
29	No health and social-security insurance	Low motivation, loss of efficiency, loss of self-esteem	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	5	4	20 (high)	Access to social-security insurance and welfare benefits.
30	Lack of occupational safety culture (working without proper gear training)	Slip and fall, balance problems	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	5	4	20 (high)	Training in first aid, training in and enforcement of occupational health and safety and the importance of proper clothing.
31	Lack of toilet facilities	Infectious diseases	<input type="checkbox"/> Death <input type="checkbox"/> Light injury <input type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	5	4	20 (high)	Provision of hygienic toilet facilities.

32	Lack of clean drinking water (in the orchards)	Weakened immune system and resistance, dehydration	<input type="checkbox"/> Death <input type="checkbox"/> Light injury <input type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	5	4	20 (high)	Provision of clean and healthy drinking water.
HABITATION ENVIRONMENT HAZARDS							
33	Lack of clean drinking water (in living quarters)	Waterborne epidemics (cholera, typhus, dysentery, infectious hepatitis), injury due to dehydration	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	5	4	20 (high)	Provision of clean and healthy drinking water.
34	Lack of toilet and bath/shower facilities	Infectious disease, social exclusion	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	5	4	20 (high)	Provision of showering/bathing areas with running cold and hot water; provision of adequate personal space and privacy, lighting, ventilation, heat; separation of showers from dining and cooking areas; provision for food and water storage (to avoid health risks).
35	Lack of proper cooking facilities	Infectious disease	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	5	4	20 (high)	Provision of proper cooking facilities and stoves should be set up.
36	Overcrowded sleeping quarters	Infectious disease, lack of sleep, anxiety, stress, exhaustion, social exclusion	<input type="checkbox"/> Death <input type="checkbox"/> Light injury <input type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	5	4	20 (high)	Separation of living quarters for men and women (including bathing and sleeping areas), and provision of clean linen and bedding for each worker.
37	Faulty electrical equipment	Electric shock	<input checked="" type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	5	4	20 (high)	Installation of safe electrical wiring.
38	Improper, overcrowded or unsafe transportation	Traffic accidents	<input checked="" type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	5	4	20 (high)	Inspection and monitoring of all vehicles and forms of transportation.
39	Insufficient infrastructure (in tent camps)	Infectious disease, anxiety, stress, exhaustion, social exclusion	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	5	4	20 (high)	Provision of decent living conditions and proper infrastructure in tent camps.
40	Insufficient access to health services	Lack of medical treatment, misdiagnosis, social exclusion	<input checked="" type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	5	4	20 (high)	Access to health services for all workers.
41	Malnutrition	Infectious disease, anxiety, stress, exhaustion, social exclusion	<input type="checkbox"/> Death <input type="checkbox"/> Light injury <input type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	5	4	20 (high)	Provision or payment for daily food expenses.

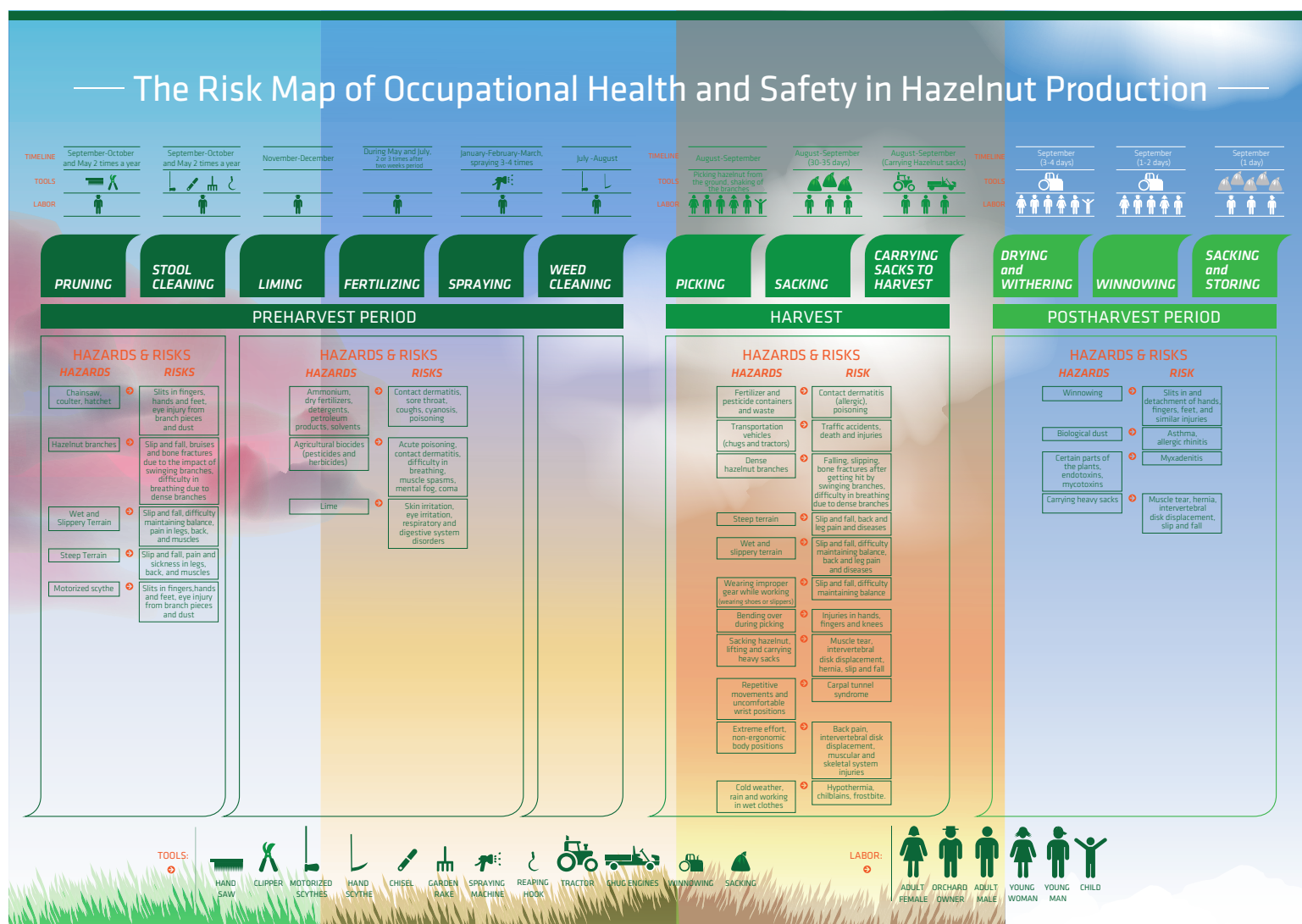
42	Ticks, mosquitos, scorpions, snakes, etc.	Pest stings and bites, poisoning, infectious disease	X Death □ Light injury □ Injury □ Financial loss X Occupational disease	5	3	15 (high)	Availability of first aid kits in orchards and living areas.
PSYCHOSOCIAL HAZARDS							
44	Discriminatory treatment, low wages, long work days, cultural and language barriers	Depression, stress, despondency, low motivation, social exclusion, burnout, psychological violence, substance abuse, alienation	□ Death □ Light injury □ Injury □ Financial loss X Occupational disease	5	4	20 (high)	Slower work pace, shorter work days, longer work breaks, fair wage payments, provision of full- or half-day leave, establishment of social programs to support cultural integration.

Risk Score: 15, 16, 20, 25 (Red—unacceptable risk (immediate action required))

Risk Score: 8, 9, 10, 12 (Blue—significant risk (action taken as soon as possible))

Risk Score: 1, 2, 3, 4, 5, 6 (Green—acceptable risk (action taken in the long run))

FIGURE 1. Occupational Health and Safety Risk Chart of Hazelnut Production



3.2.1. Biological Hazards

Biological hazards result from working in open air and encompass illness or injury due to dust, fungi and mold; viruses and bacteria; bee stings and insect bites; scorpion stings and snake bites; animal dander; dense branches of hazelnut trees; and numerous other causes. According to Regulations on Prevention of Risks from Exposure to Biological Factors 28678³² (2013), biological hazards are defined as microorganisms (including genetically modified microorganisms) that can cause infection, allergic reaction, or incapacitation. Biological hazards are significant in hazelnut production.

Women workers interviewed for this report frequently mention the danger of scorpion stings, and snake bites are common:

News Report³³ (Aug. 25, 2014): Firat Aytekin (age 21) who came to Akyazı, Sakarya, from Diyarbakır as a seasonal worker, was bitten by a snake and poisoned. Aytekin was hospitalized.

News Report³⁴ (Aug. 22, 2013): A worker who came to Kabadüz, Ordu, from Diyarbakır for the hazelnut harvest was bitten by a snake.

Said one worker: *“There were a lot of snakes and insects at the orchards. [The owners] didn’t let us kill them, claiming they are beneficial for the orchard. If the orchard is sprayed [with pesticides], there will be none, but the owners will not permit it. Said*

another: “Insect stings, bedbugs where we sleep, are quite common. We do not care about it, but the women get sick. They cannot get any work done because they are scratching constantly.”

Workers also complain that dense branches in hazelnut orchards cause breathing difficulties and claustrophobia.

Risks due to biological hazards are enumerated in the first four columns of the risk matrices. Insect stings and bites, scorpion stings and snake bites, have a high risk score, while other biological hazards fall into “acceptable” low and light impact categories. Workers should be warned about all biological hazards and taught first aid. First aid kits should be available at the orchards and workers’ living quarters. Workers should receive professional health care when necessary. Protective gear (masks, clothing, boots) should be mandatory. Finally, workers should be instructed to avoid swinging branches while picking hazelnuts.

32 28678 sayılı Biyolojik Etkenlere Maruziyet Risklerinin Önlenmesi Hakkında Yönetmelik, 2013, www.resmigazete.gov.tr/eskiler/2013/06/20130615-3.htm, access date: 14.07.2017.

33 Haberler, “Zehirli Yılanın Soktuğu Fındık İşçisi Hastanelik Oldu,” www.haberler.com/zehirli-yilanin-soktugu-findik-iscisi-hastanelik-6413580-haber/, access date: 14.07.2017.

34 Ordu Ajans, “Diyarbakırlı Fındık İşçisini Yılan Soktu,” www.ordujans.com/guncel/diyarbakirli-findik-iscisini-yilan-soktu-h2990.html, access date: 14.07.2017.

3.2.2. Physical Hazards

Physical hazards include environmental factors such as UV radiation, extreme heat or cold, and loud noise. Agricultural workers are exposed to harsh weather conditions, extreme fluctuations in

temperature, humidity, rain, and steep, slippery terrain.

Unprotected prolonged exposure to sunlight can cause sun and heat strokes, and skin

and lip cancers. Working in wet clothes, often accompanied by sharp declines in temperature, can induce a range of ailments. Steep and wet terrain carries the risk of slip-and-fall accidents and resulting injury to back and legs. The report puts risk scores for physical hazards at medium levels. Scores are higher for women and children, and for sack carriers; however, physical risks can have a negative impact on all worker groups.

Workers should wear hats to protect their faces and necks from direct sunlight, along with sunglasses and gloves. Workers should

be trained in proper techniques when picking nuts and carrying sacks, and educated about risk of injury.

Workers on slopes should wear nonslip boots; some of the women interviewed mentioned they worked in slippers. Said one: *“What boots? If you have brought them with you, you may wear them. We usually wear whatever we have handy. Girls usually wear slippers. It is already too hot. But slippers are dangerous, too, you can slip and fall many times.”* Said another: *“There are no special boots or shoes. We wear sports shoes. Some do not even have that, they wear slippers.”*

3.2.3. Chemical Hazards

Chemical hazards encompass fertilizers, biocides, and lime used for orchard care. These hazards and the risks they present are enumerated in columns 10-13 of the risk matrix. Fertilizers include phosphor, ammonium, and nitrogen.

The cleaning and storage of chemical containers and waste present their own risks, including rashes, itches, and dermatitis.³⁵ Workers interviewed do not often mention these risks, as owners and experts generally attend to tasks involving dangerous compounds; risk scores for chemical hazards are therefore acceptably low.

However, chemical-hazard risk scores are higher for child workers and pregnant and nursing women. During interviews, some workers claimed that empty chemical containers were used to transport and store drinking water, and that a pregnant worker suffered a miscarriage because of this practice. They also reported seeing children play

with empty chemical containers. While such incidents appear to be rare, they are obviously of grave concern. Fertilizer sacks should be disposed of properly or destroyed; buckets and cups used to spread fertilizer should be washed thoroughly and secured in storage. Workers should wear protective masks and gloves when handling fertilizer. They should wash hands thoroughly after handling fertilizer.

Plants should be sprayed in dry and calm weather, never during rain or strong winds. Even under slightly windy conditions, workers should adjust their spraying according to wind direction.

Orchard owners should allow enough time between fertilization, spraying, and the harvest. According to producers, two to four weeks should pass before workers come in direct contact with sprayed trees and surrounding ground.

One reported incident can serve as an example of the danger of chemicals to workers: *E.F., age 30, sprayed herbicides over his hazelnut orchard in the Akyazı-Taşburun Keçiyeağı region, and went*

35 Çalışma ve Sosyal Güvenlik Bakanlığı, Meslek Hastalıkları Rehberi, www3.csgb.gov.tr/csgbPortal/ShowProperty/WLP%20Repository/isggm/dosyalar/Meslek-Hastaliklari-Kitab%C4%B1, access date: 17.07.2017.

*straight to bed after he arrived at his home, saying he did not feel well. Afterward he went to Devlet Hastanesi, a public hospital, with high fever and severe headache. Suspecting biocide poisoning, the doctors transferred him to Eğitim ve Araştırma Hastanesi, a training and research hospital. After being treated for two days, he was transferred to Yüksek İhtisas Hastanesi, but despite all efforts, he died on Aug. 24, 2015.*³⁶

36 Kaya, Ebru (unspecified) "Yaşama Sızan Tehlikeli Kimyasallar," www.isguvenligi.net/yasama-sizan-tehlikeli-kimyasallar/, access date: 14.07.2017.

To sum up, workers should be informed about the dangers posed by chemicals, and they should wear masks and gloves while working with chemicals. This report must recognize the fact that workers complain about wearing masks in humid and hot weather among dense branches, and say protective gloves limit their dexterity and make their hands sweat. Therefore, the report strongly urges safety training that emphasizes not only best practices but addresses the need to establish a culture of safety and precaution. Needless to say, higher-quality protective gear will allow better respiration and comfort.

3.2.4. Ergonomic Hazards

Ergonomic hazards deserve special attention, given the hazelnut production process, the geographic characteristics of the region, and the preponderance of seasonal workers employed in manual labor. Bending, kneeling, overstretching, repetitive movements, sustained awkward positions, overexertion, lifting and carrying heavy loads, all pose significant risks (see risk scores for ergonomic hazards in the risk matrix). The high average risk score indicates that ergonomic risks fall into the "unacceptable" category and require immediate redress.

Carrying tasks are defined as lifting, unloading, pulling, pushing, or moving a load by one or more workers.³⁷ Such work is made more difficult by the uneven, steep and slippery character of orchard terrain. Many workers are unsuited for these tasks and undertake them without proper safety gear and insufficient experience and training.³⁸ Extensive and extended physical labor puts extra strain on workers' upper and lower backs. They often labor without adequate breaks and rarely have input into the pace and duration of the work.³⁹ The result: injuries to hands, fingers and knees;

back pain and cramps; stiffness in the neck and back; muscle tears; intervertebral disc displacement; hernia; musculoskeletal injury.

Women and young workers are affected more severely than other groups. During the interviews, workers stated that males and females perform the exact same tasks—with the exception of sack carrying. Both producers and workers said that hernia is the most common disease among the male hazelnut workers.

One woman stated: "I can pick more nuts than a man can, because women's fingers are more agile and faster on the steep terrain—women's bodies are more deft and quicker than men's." But another put her work in a different context: "Orchard

37 Elle Taşıma İşleri Yönetmeliği, Madde 4, Resmi Gazete, Sayı: 28817, 24.07.2013, www.resmigazete.gov.tr/eskiler/2013/07/20130724-24.htm, access date: 14.07.2017.

38 Elle Taşıma İşleri Yönetmeliği, Ek-2, Resmi Gazete, Sayı: 28817, 24.07.2013, www.resmigazete.gov.tr/eskiler/2013/07/20130724-24.htm, access date: 14.07.2017.

39 Elle Taşıma İşleri Yönetmeliği, Madde 4, Resmi Gazete, Sayı: 28817, 24.07.2013, www.resmigazete.gov.tr/eskiler/2013/07/20130724-24.htm, access date: 14.07.2017.

owners tell us to work continuously. Even if we occasionally stand up straight to catch a breath, they warn us to keep picking. They want us to work nonstop. According to them we are not worth the nuts we pick. I learned how to pick from more experienced workers, not the owners. Our aching feet and backs do not concern the owner. When we get sick, we tell our dayıbaşı, he finds us pills or ointments from somewhere or sends us to the doctor in case of emergencies.”

In Turkey, traditional harvesting methods (picking directly from the branches or from the ground by hand) will be difficult to change.

Ergonomic risk scores can be lowered more easily by changing behavior and establishing safer work habits. This report recommends that all workers have a health examination to determine if they are fit for the job. Owners should educate workers in proper picking techniques, body posture and movement; lifting and carrying methods should be monitored to avoid unsafe behavior; and owners should adjust work hours and provide adequate work and living conditions. As one woman stated: *“I frequently could not get any sleep because of my aching back and feet. We could not get any rest and had to go to the orchard once again in the morning.”*

3.2.5. Injuries and Accidents

Weedwackers, coulter and hatchets, and winnowing machines pose dangers to workers. But the most frequent cause of injury to hazelnut workers are transport accidents—either during the commute to and from the orchards or when operating or riding tractors or chugs. Within this category, traffic accidents are most common (Çamurcu and Seyhan, 2015:550). Below, some examples of accidents gleaned from interviews and news sources.

“Once the tractor carrying us tipped over. We were 16 workers, all of us were injured. My sister-in-law fell under the tractor, but she was OK. Nobody died.”

“They were driving the tractors real fast. The hillside was very steep, we were afraid.”

“We ride on whatever is available. The middleman decides on that. He collects vehicle rent from us later. There was a minibus accident between Adıyaman and Giresun last year. Workers were killed or injured.”

News Report⁴⁰ Hasanbükü region, Kırık village of Yıgılıca, Düzce (Aug. 6, 2009): A chug engine carrying workers to pick hazelnuts rolled down a cliff. Sixty-six died and 9 were injured in the accident.

News Report⁴¹ Niksar, Tokat (Aug. 13, 2011): A pickup truck carrying hazelnut workers tipped over, killing one and injuring 25.

News Report⁴² Karasu, Sakarya (Aug. 22, 2010): An agriculture vehicle carrying workers coming from a hazelnut orchard tipped over, injuring six.

Vehicles lack proper inspection and safety features, carry more passengers than the occupation safety limit, and travel over steep terrain. Drivers are untrained, Workers sometimes

40 İhlas Haber Ajansı, “Pat Pat Uçuruma Yuvarlandı: 1 Ölü, 9 Yaralı,” İhlas Haber Ajansı, 06.08.2009, www.ihb.com.tr/haber-pat-pat-ucuruma-yuvarlandi-1-olu-9-yarali-83651/, access date: 14.07.2017.

41 Evrensel, “Tokat’ta Fındık İşçisi Taşıyan Kamyonet Devrildi: 1 Ölü, 25 Yaralı,” 13.08.2011, www.evrensel.net/haber/11691/tokatta-findik-iscisi-tasiyan-kamyonet-devrildi-1-olu-25-yarali, access date: 14.07.2017.

42 İhlas Haber Ajansı, “Tarım Aracı Devrildi: 6 Yaralı,” www.ihb.com.tr/haber-tarim-araci-devrildi-6-yarali-134445/, access date: 14.07.2017.

ride on the cargo bed of trucks or inside tractor trailers or in overloaded minibuses jammed with bedding, blankets and luggage.⁴³ Because of all the above, transportation-related accidents have a high probability of occurrence and the impact is significant, resulting in an “unacceptable” risk score of 20. Precautions regarding these risks must be taken immediately.

Various cutting tools and equipment used for pruning and stump clearing, such as weedwackers, coulters and hatchets, in combination with the steep and slippery terrain of orchards, can cause injury, but accidents are rare (researchers found no reports of accidents in the region surveyed). Still, such tools and equipment do cause cuts to fingers, hands and feet and eye injury. In 2016, a 40-year-old orchard owner, Sevim Uçan, fell down a 50-meter cliff while caring for her orchard.⁴⁴

News Report⁴⁵ Konaköken Salıpazarı, Samsun: Sezgin Sekmen was the victim of his own momentarily carelessness. His left-hand fingers were caught in the winnowing machine he operated, and he was taken to the Samsun Training and Research Hospital via helicopter.

Winnowing tasks are usually performed by the orchard owners, their families or paid workers. One woman from Şanlıurfa said: *“I would like to work at winnowing, it pays better. But the owners do not usually want us on the threshing floor. They try to keep us away from themselves.”*

Interviews with the orchard owners confirmed this: They don’t allow seasonal workers in the winnowing area because winnowing requires more experience, attention, and technical know-how; they prefer to do them themselves or hire experienced local workers. The owners also mentioned that improvements to winnowing machines have made them much safer.

As with all equipment and machinery, operators should be trained and should wear safety gear. This is also valid for other sectors in the economy, but hazelnut workers tend to shun protective gear. One of the producers in Düzce stated: *“I gave the workers gloves to wear but none of them uses them.”* An adult worker from Mardin said: *“I do not need them.”* A young worker woman from Eyyübiye, Şanlıurfa said she worked wearing slippers, asking, *“What’s going to happen?”* then laughing. Interviewees made many similar statements. This attitude can be only changed over time through education. The hazelnut sector should work with occupational and health safety agencies to cultivate a culture of safety and precaution.

43 According to Highway Traffic Regulation article 130 paragraph 1 “It is forbidden to transport passengers in trucks, pick-up trucks, tractor trailers or half trailers.”

44 Ajans 53, “Uçuruma Yuvarlanan Kadın Öldü,” <http://ajans53.com/asayis-ve-trafik/6989-ucuruma-yuvarlanan-kadin-oldu.html>, access date: 14.07.2017.

45 Samsun Gazetesi, “Samsun’da Fındık Bahçesinde Kaza: Parmaklarını Kaptırdı,” www.samsungazetesi.com/samsun-haber/samsun-da-findik-bahcesinde-kaza-parmaklarini-kaptirdi-h716238.html, access date: 14.07.2017.



3.2.6. Work Condition Hazards

Work condition hazards range from overlong work days, inadequate breaks, seven-day work weeks, unreasonable work pace, and lack of control by the worker over the tasks he undertakes, to low pay and lack of wage security, insurance and job security, which lead to overwork and stress and contributes to low motivation and inefficiency. The lack of clean drinking water and toilet facilities in the orchards also causes stress and anxiety. These risks are evaluated as “unacceptable.”

Researchers established that workers, particularly those coming from eastern and southeastern Anatolia, have 20 to 30 days to earn money working in hazelnut orchards. They are allowed a one-hour lunch break and two 15-minute “tea breaks” during a typical 12-hour day. It is interesting that workers mostly do not complain about the length of the workdays (which exceed legal limits). However, when specifically asked about it, workers, particularly women, said longer breaks would motive them to work better and harder. One put it this way: *“We work from six o’clock in the morning ’til six o’clock in the evening. We take a break for lunch, there are also tea breaks. But if there is a lot of work to do, we skip the breaks sometimes. If we linger during the breaks, the owners or their agents warn us. If the break times were longer and we could get enough rest, we would be working better and harder. But they want the work to be done quickly. Everything is timed.”*

Labor Code 4857, Article 63, defines the normal work period as 45 hours per week⁴⁶, but agricultural work is exempt from coverage. Hazelnut picking is time sensitive and producers are under pressure to lower production costs. These factors drive the fast pace of the work. One female worker claimed: *“The owners expect us to work constantly. If we lift our heads to*

catch our breath, we are warned.” This report recognizes the need to regulate and reorganize hazelnut production to allow for daily and weekly rest and relaxation periods for the workers.

The wages for hazelnut harvest is determined by the governor’s office before the harvest begins every year. (The 2017 wages had not yet been announced when this report was written.) In 2016, the net wages for Giresun regardless of gender or age were 50 TL per day if lunch was provided, 55 TL otherwise. Sackers were paid 65 TL with lunch, 70 TL otherwise. Cooks were paid 60 TL.⁴⁷ Thus, a worker employed 30 days could earn 1,650 TL (if the owner provides lunch). Wages are paid by orchard owners to middlemen who distribute money to the workers after taking a 5 to 10 percent commission. The middlemen also charge workers for transportation to the region. After these deductions, a worker can expect 40 to 45 TL per day in take home pay.

The propensity of seasonal worker families to include children in their work is a direct result of low wages. During interviews, workers stated that they travel with their whole family regardless of age and insist on employment of children under 15—even if orchard owners do not want to employ children. One middlemen from Mardin mentioned that his granddaughter, 12 at the time, had worked for a whole season.

Finally wage security can be a problem. One middleman from Şanlıurfa claimed that some orchard owners did not pay wages last year, and still owe 13,000 TL.

46 4857 sayılı İş Kanunu, Resmi Gazete, Sayı: 25134, 10 Haziran 2003, www.resmigazete.gov.tr/eskiler/2003/06/20030610.htm, access date: 14.07.2017.

47 Giresun Ticaret Borsası, “Patoz ve Fındık İşçilerine Ödenecek Ücretler Belirlendi,” www.giresuntb.org.tr/haber_index.php?hbid=311&page=1, access date: 14.07.2017.

3.2.7. Habitational Environment Hazards

Since seasonal hazelnut workers migrate, they face habitational environment hazards. Some live in tent camps and some in housing provided by owners. In either case, workers often deal with a lack of clean drinking water; lack of toilet and bath/shower facilities; lack of proper cooking and sleeping areas or overcrowding in those areas; and poor infrastructure, including faulty electrical facilities. Many must deal with ticks, mosquitos, scorpions, snakes, etc. Few have access to health services.

“Housing” for seasonal workers are usually structures without a kitchen, bathroom/restroom facility, or separate rooms. Below are comments from workers interviewed for this report:

“We stayed in a shack, it was really difficult. There were a lot of bedbugs. But not all of the places are as bad, some workers were quite comfortable. I used to work in construction, so I repaired the shack and built an outhouse.”

“We might be considered lucky, because I am able to do some construction work, so I built a toilet outside the place we stayed, using whatever was handy. The places we stay are not houses but barns, the livestock live there during the winter. The roofs leak when it rains, the ground is just soil, insects and frogs are everywhere. After exhausting work, we are just happy to have a place to lie down. There is nothing we can do about it, we have to work.”

“The place we stay is not like a normal house, more like a garage. There is only one room, the walls are covered with planks and tin sheeting. We separate it into two rooms and a kitchen using wooden planks and two curtains.”⁴⁸

“The stove we cook on, the sink, the bathroom is far away from where we sleep. We do not have a kitchen, only a plank on the floor where we keep all our belongings. They use the building as a garage after we are gone. The roof has holes, a lot of frogs, rats and spiders come in through the holes. When it rains, water drips in.... Years ago, there were only a few seasonal workers, and bosses paid for our meals and transportation. Now we have to cover meals and transportation from our money. The dayıbaşı (the middleman) gets 4.25 TL from each of us every day we work.”⁴⁹

“A house used by hazelnut workers burned down in Ordu. The house was in the Güzelyalı neighborhood of Ünye and belonged to İbrahim İnan [who said]: ‘This house was my father’s. I live 50 meters away. I assigned it to seasonal workers during hazelnut harvest. They were using it. We noticed the fire in the evening and called the fire department. It burned down really fast because it was made of wood.’”⁵⁰

“There are some workers who stay in tents, but not us. Our middleman arranged it with the owner so that we stay in a house. There will always be problems between the owners and the workers. Health problems will always occur. Toilet and bathrooms are always insufficient. You cannot find clean water sometimes.”

48 Doğru Haber, “Mevsimlik Fındık İşçileri Çalışma Koşullarını Anlattı,” <https://dogruhaber.com.tr/haber/185236-mevsimlik-findik-iscileri-calisma-kosullarini-anlatti/>, access date: 02.05.2017.

49 Doğru Haber, “Mevsimlik Fındık İşçileri Çalışma Koşullarını Anlattı,” <https://dogruhaber.com.tr/haber/185236-mevsimlik-findik-iscileri-calisma-kosullarini-anlatti/>, access date: 02.05.2017.

50 Haber 61, “Fındık İşçilerinin Kullandığı Ev Yandı,” 19.04.2017, www.haber61.net/ordu/findik-iscilerinin-kullandigi-ev-yandi-h291484.html, access date: 14.07.2017.

As the interviewee above points out, middlemen have partial control over the living conditions of the workers. Some workers stated the middlemen looked out for them on all issues and negotiated better dwelling conditions.

Habitational hazards lead to physical, psychological and social problems ranging from lack of rest (and exhaustion), to anxiety and social exclusion, to undiagnosed and untreated illness. The probability of these risks is very high and the impact is evaluated to be significant, resulting in an “unacceptable” risk score of 20. To put it plainly as possible, workers’ living conditions must provide for basic human dignity, and currently they do not.

According to a memorandum published in the *Official Journal* in April 2012: “Secure,

economical, aesthetical, and functional prefabricated, ferroconcrete or steel-framed buildings that are fit to climate conditions providing facilities and common areas for social and educational activities as well as temporarily settlement areas with the proper electric, water and sewage infrastructure will be built by the office of the governors in areas attracting significant number of seasonal agricultural workers.”⁵¹ Partially, the tent cities are said to have better infrastructure and facilities compared to the dwellings orchard owners privately provide. Field research indicates that the government stopped the policy of arranging tent cities for the harvest after two years.

51 Başbakanlık Genelgesi, 2017/6, Konu: Mevsimlik Tarım İşçileri, www.resmigazete.gov.tr/eskiler/2017/04/20170419-8.pdf, access date: 14.07.2017.



One male worker from Şanlıurfa mentioned that his family used the common room for bathing, taking turns to wash in a plastic basin. Since often there is no electric wiring in these shacks, hot water is a privilege. One worker from Şanlıurfa noted that when housing includes electric water heaters, workers can take baths every night and feel relaxed and happier. Some workers described their bedding as dirty or moldy. A woman from Şanlıurfa said: *"Picking hazelnuts is easy. We work—we are not afraid of the work—but I wish our lodgings were cleaner and better maintained."*

Living in isolation is another problem for seasonal workers, who long work days leave little time left for anything else. But their expectations are often quite different. As a male worker from Şanlıurfa stated: *"We left Urfa and I thought I was going to see a new realm. I thought I would get a chance to do a little sightseeing. The minibus took us to the orchards, then took us back home after a month when the work was finished. The trip took 30 hours."*

A woman in Mardin spoke about her 12-year-old daughter's experience picking hazelnuts with her grandfather. The girl called her mother as soon as she arrived: *"I cannot work anymore, my whole body aches."* When asked why she allowed her daughter to go, the woman replied: *"She herself insisted on it. She was really eager to leave our village and see a new place; she also wanted to buy herself a cell phone. But when she went, she wanted to return home and cried all the time."*

Generally, the eldest woman in a group or a pregnant or nursing woman stays in the house to cook. She also takes care of the children too young to work in the orchard. These women get paid a wage determined by the governor's office.

Cooks prepare meals over firepits or use small propane tanks. Owners or middlemen do the weekly grocery shopping in town. Workers never visit the town after arriving at the orchards; they do not have the time.

Said a 60-year-old woman from Mardin: *"Everyone leaves to work in the orchard and I stay at the house cooking. We do not have enough clean water most of the time. I try my best to get by. But the orchards are far away. I spend all day by myself in a desolate place. I look forward to others returning from work, because staying in that desolate place until the evening scares me a lot."*

Said another woman: *"There is disgracefulness, suffering and helplessness here. Some bosses are kind but generally they are strict. Sometimes we stay in desolate distant places, and as the cook I am left all alone while others go to the orchard. A woman all alone is not sensible, and it is also dangerous. I am glad when we stay in a house in the village."*⁵²

News Report⁵³ (Aug. 14, 2015): In Fatsa, Ordu, hazelnuts workers were hospitalized due to food poisoning.

News Report⁵⁴ (Aug. 31, 2011): Twenty-six hazelnut workers, most of them children, were poisoned by the chickens they ate in Ardicdibi village of Gümüşova, Düzce. According to witnesses, the workers (who came from Diyarbakır for the harvest) went to the orchard to work but fell sick one by one starting

52 Doğru Haber, "Mevsimlik Fındık İşçileri Çalışma Koşullarını Anlattı," <https://dogruhaber.com.tr/haber/185236-mevsimlik-findik-iscileri-calisma-kosullarini-anlatti/>, access date: 02.05.2017.

53 Milliyet, "Fındık İşçileri Yedikleri Yemekten Zehirlendi," www.milliyet.com.tr/findik-iscileri-yedikleri-yemekten-zehirlendi-ordu-yerelhaber-925684/, access date: 14.07.2017.

54 Haberler, "Fındık İşçileri Yedikleri Tavuktan Zehirlendi," www.haberler.com/findik-iscileri-yedikleri-tavuktan-zehirlendi-2965026-haber/, access date: 14.07.2017.

around 9 a.m. The orchard owner, Şaban Kan, suspected food poisoning and sent them to Düzce Atatürk State Hospital and Düzce University Research and Application Hospital by ambulances and private vehicles. After medical analysis, the workers were treated for poisoning and discharged from the hospitals. Workers stated that it was the chickens they ate that poisoned them.

News Report (Aug 16, 2014): In Toyfanlı village, 14 people working in an orchard experienced nausea and dizziness after eating chicken and rice for dinner.⁵⁵

Among all these problems, we came across some positive aspects, too. Among these; “Good Agriculture Project”⁵⁶ by BalSu Food

Co., sustainability efforts by Olam Proğida,⁵⁷ “Responsible Sourcing Program by Nestlé,”⁵⁸ “Good Agriculture Project by Ferrero”⁵⁹ and “Happy Hazelnut Project”⁶⁰ by Işık Agriculture are the most prominent. What portion of producers has been reached by these projects is an important question that needs answering.

55 Pusula Gazetesi, “Fındık İşçileri Yemekten Zehirlendi,” www.pusulagazetesi.com.tr/findik-iscileri-yemekten-zehirlendi-43062-haberler.html, access date: 14.07.2017.

56 BalSu, <http://gobalsufarm.com/index.php/project-activities/>

57 Olam Group, Labour, <http://olamgroup.com/investor-relations/annual-report-2016/strategy-report/social/labour/>, access date: 14.07.2017.

58 www.nestle.com/csv/communities/responsible-sourcing/hazelnuts

59 Ferrero Türkiye, www.ferrero.com.tr/

60 Happy Hazelnut Project-Turkish Hazelnuts Without Child Labor, www.happyhazelnut.com/

3.2.8. Psychosocial Hazards

The constitution of the World Health Organization (WHO), signed in 1948, defines health as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.”⁶¹ The key feature in this definition is the inclusion of *social well-being*; physical and mental well-being alone are not enough to consider someone healthy. A person’s well-being is not independent from the environment he or she lives in, his or her job, and socioeconomic and cultural conditions (Akpınar, 2016).

The following definition of occupational health was adopted by the Joint ILO/WHO Committee on Occupational Health in 1950 and revised in 1995: “Occupational health should aim at: the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations; the prevention amongst workers of departures from health caused by their working conditions; the protection of workers in their

*employment from risk resulting from factors adverse to health; the placing and maintenance of workers in an environment adapted to their physiological and psychological capabilities; and, to summarize, the adaptation of work to workers and of each worker to his or her job.”*⁶²

The newest and ever-increasing category of occupational health and safety risks, psychosocial hazards encompass poor work design, organization and management that may result in negative psychological, physical and social outcomes such as stress, depression and burnout.⁶³ Since this hazard category has only recently been recognized, methods of evaluation and necessary precautions have not

61 World Health Organization, www.who.int, access date: 14.07.2017.

62 Çalışma Yaşamında Sağlık Gözetimi Rehberi, İSGİP (Türkiye’de İşyerlerinde İş Sağlığı ve Güvenliği Koşullarının İyileştirilmesi Projesi Rehberi, www.isgum.gov.tr/rsm/file/isgdoc/isgip/isgip_saglik_gozetimi_rehberi.pdf, access date: 04.05.2017.

63 “İş Sağlığı ve Güvenliğinde Psikososyal Risk Etmenleri,” <https://www.eforosgb.com/isg-psikososyal-risk-etmenleri/>, access date: 14.07.2017.

yet been fully identified (Vatansever, 2010:119). The resulting lack of awareness in turn inhibits progress.

In Turkey, the Ministry of Labor and Social Security as well as various independent researchers have lobbied for the elimination of the category. Mental and behavioral diseases were added to ILO's List of Occupational Diseases only recently (in the latest revision in 2010).⁶⁴ Psychosocial risks were not included in Turkish Occupational Health and Safety Code 6631,⁶⁵ although "psychosocial" as a concept is mentioned among physical, chemical and ergonomic risks in Risk Evaluation Code Article 8.⁶⁶

This report attempts to discuss the issue as thoroughly as possible. In today's work environment, psychological violence⁶⁷ has a more destructive impact on occupational health and safety than physical violence. Psychological violence not only affects workers mentally and physically but also causes significant socioeconomic damage for businesses and society as a whole. Psychological violence lowers workers' job satisfaction, morale and motivation; it breeds extreme stress, psychosomatic and somatic disease, and leads to the exclusion of the worker from the labor force (Özen, 2008:108).

For seasonal hazelnut workers, every aspect of work can qualify as a hazard; nevertheless,

discriminatory attitudes based on cultural and ethnic differences and related psychological violence have unique consequences. Workers who are unable or prevented from visiting the town center even to shop become isolated. They exist only for their labor; as human beings, they disappear from sight. Many workers mentioned that orchard owners avoid direct contact with them, and that they discourage social interaction between workers and their own families.

"There were a lot of snakes around and we were very afraid. We asked for pesticides from the owner to kill them, but he refused. 'Don't kill them,' he said, 'they are harmless, don't mind them, you keep working.' In their eyes, we are not as valuable as those snakes!"

"I can never forget this: when we arrived, we piled all our bedding, blankets and anything we had brought in front of the shack we were to stay in. The owner's house was right across from that shack, and his wife and children could see us. While we were trying to settle in that warehouse-like shack, they made tea and drank it while watching us—like watching a movie. They didn't even say hello, they just watched. If we traded places, we would not treat them like that, we would at least ask if they needed anything."

"The owners just tell us how they want the nuts picked, only that. They even avoid eye contact. They don't want us to go to the town. 'Don't linger around the children, stay at the house,' they say."

One of the significant findings of this field research is the existence of discrimination against seasonal workers. Social exclusion, along with other manifestations of discrimination, is common when different cultures interact. Workers testify to the marginalization of their ethnic identities, which is unwittingly verified by

64 ILO (2010) List Of Occupational Diseases, Occupational Safety and Health Series, Geneva, www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/-safework/documents/publication/wcms_150323.pdf, access date: 01.05.2017.

65 İş Sağlığı ve Güvenliği Kanunu, Resmi Gazete, 30.06.2012, www.resmigazete.gov.tr/eskiler/2012/06/20120630-1.htm, access date: 14.07.2017.

66 İş Sağlığı ve Güvenliği Risk Değerlendirmesi Yönetmeliği, Resmi Gazete, 29.12.2012, www.resmigazete.gov.tr/eskiler/2012/12/20121229-13.htm, access date: 14.07.2017.

67 Psychological violence is any hostile interaction that creates health and safety risks, or is systematically directed toward one or a group of coworkers by another coworker or a group of coworkers (Özen, 2008).

orchard owners and local workers and institution heads: “Once we get used to them, and they to us, there are no longer any problems.” The positive aspect of these attitudes is that cultural differences can be overcome—“the problem” is solved when people from different backgrounds have enough time “to get to know each other.”

“Sometimes, worker families and owner families intermarry. Some worker girls become brides and stay there. There are many like that. At first families are against these marriages: Is it appropriate? Can they marry? But in the end both sides agree. I mean, we have worker girls who end up the bride of the house and employ workers themselves.”

Workers mostly complain about the unhygienic state of their living quarters: neglected housing, insects, bedbugs and rats, the lack of proper toilet and bathing facilities, even clean water. These negative factors might be accepted as inevitable aspects of the job and the region; however, when poor living conditions are combined with negative and discriminatory attitudes, problems arise for all parties.

Collecting the I.D.s of seasonal workers is common practice. Owners and locals feel it is critical, while seasonal workers see it as proof of discrimination.

“Our IDs are collected at the beginning; the owners keep them for 20 days. They think every one of us is a terrorist—that is just wrong.”

“Sometimes it is the village head, sometimes it is the owner himself who collects our IDs. They give it to the gendarmerie. They inspect them: What kind of a family is it? Any terrorists, any wanted criminals? The government officials need to inspect them, naturally. But this is critical for us—we have to trust them with our property.”



Seasonal workers tend to hide or disguise their place or origin or cultural identities. Once the hazelnut harvest is well advanced, however, that is difficult to do: “At first, I was afraid to declare I was from Urfa. I said I came from Antep.” Seasonal workers avoid using their native languages, and in fact are warned about it by both owners and middlemen: “They warned us not to speak Kurdish to each other, both the owner and the middleman. So we didn’t. Sometimes there were elders who speak little or no Turkish with us. They didn’t speak at all in the orchards.”

Such discriminatory and excluding behaviors put a lot of stress on the seasonal workers, leading to depression, low morale, bitterness, alienation, and burnout.

3.3. Hazards and Risks Particular Risk Groups Face in Hazelnut Agriculture: Child, Young, and Women Workers

Child, young, and women workers are generally in harvesting as a part of seasonal migrant worker families. One of the goals of this report is to analyze the hazards and risks

these workers face. The risk matrix for women workers focuses on reproductive health. (Note that the risk matrix presented in Part 3.2 covers all adult workers.)

3.3.1. Child and Young Workers

Current labor regulations in Turkey have restrictions governing the legal age and type of work allowed for children. Seasonal work in hazelnut production is considered among the worst forms of child labor, so no one under 18 can be employed as a paid worker; children who work as unpaid family members can perform light tasks under their family's supervision. Local child workers between ages 16 and 18 can work legally for determined periods (see Tables 11 and 12).

That said, a significant percentage of the workforce in hazelnut orchards falls between the ages 15 and 17. Orchard owners claim that they are forced to employ children due to the insistence of their families: *"If I do not allow children in my orchard, I will lose all the labor their families provide. I cannot tell them not bring their children."* The workers also point out that they view their children as a source of income: *"The only reason people have a lot of children is to have more workers earning for the family. It is impossible to prevent this. The more family members work in the orchard, the more we earn. My father used to give me his jacket so that I would look older and the owner would employ me."*

There are various reasons behind the persistence of child labor in hazelnut production, and despite all efforts the practice continues. Child labor is cheap and children easy to control. They are

not aware of their rights and they don't cause problems. And child labor is not only culturally accepted, it is expected by parents.

Field researchers detected sensitivity among both the workers and employers regarding child labor, the result of the government and international organizations monitoring the practice. For example, producers in Düzce stated that they do not want to hire child workers, but are forced to employ them lest they lose all the labor seasonal worker families provide. The producers affirm that they are aware of the restrictions regarding child labor, they know it is "forbidden," but they employ them to do "light" work for the sake of their families.

"My 6- and 7-year-old, 10- and 12-year-old children, work alongside me in the orchard. Younger ones stay with the cook. Nobody takes children that young with them to the orchards.... The children wanted to leave school themselves. We didn't interfere."

One orchard owner confirmed that he employs children in his orchard, emphasizing that it is not possible to prevent this: *"There are 12- to 14-year-old children, they are working too. This is somehow like those educational films about red lights in traffic: They make these warnings but sometimes they are not obeyed."* Acquiescence to this reality is widespread, despite all

precautions, warnings and educational efforts. Cultural acceptance of child labor remains the most significant barrier to its elimination.

“There are 10-, 11-year-old kids picking hazelnuts from the ground. The 15-, 16-year-old ones work alongside us under same conditions. There is not enough time to rest, doing the same task continuously is exhausting.... For children working in the field, this is a hazard to their mental health and an obstacle to their education.”

The harsh working conditions of hazelnut agriculture is hard enough on adult workers; child and young workers are even more susceptible to accident and injury. The physically demanding work can have longer lasting effects on their still-developing bodies. In addition, children haven’t acquired the judgment necessary to anticipate the negative consequences of certain actions. Nevertheless, according to field research, young workers are considered more nimble, agile and athletic, thus able to better negotiate steep and uneven terrains and even carry heavy sacks.

Lack of caregivers at the living quarters is another reason young children are brought to work. Even if the children simply play in the orchard (most help their families by running errands, like carrying water), they are still exposed to UV radiation, chemicals, and slip-and-fall hazards.

For example, while chemical hazards are considered low-level risk for adults, they pose greater danger to children because of their lack of experience and judgment and their curious and playful nature. Even traces of pesticides and fertilizers can harm children more seriously than adults.

Poor housing and living conditions pose risk for both workers and the family members they bring with them, chief among them the lack of clean water, unsanitary bathroom and bathing

facilities, and faulty electrical equipment. Sleeping and working in the open air carries the risk of insect stings and vermin bites.

“There were huge rats where we lived. No toilet, no bathroom, no water. The children started to stink after some time.”

“The reality is, the child is in the orchard. Forget about the light chores they do as a game, the most important risk for children is the unsanitary conditions.”

“There are mosquitos, other insects, we have to endure. We go to Konya for sugar beet work, Malatya for apricots. The children come along, we have to take them. Younger ones stay at the house, others are in the orchards. They didn’t continue their education—we wanted them to, but they didn’t want to go to school.”

Table 11 below presents the hazards that children face as harvest workers, as well as the corresponding “unacceptable” high risk scores, which make it clear that the harsh conditions typical of hazelnut harvesting pose much greater risk for children than adults. No one younger than 18 should work in hazelnut production, and significant improvements are needed for workers 18 and above. It should be noted that children who become a source of migrant family income drop out from the educational system. Note also that Table 11 includes only suggestions regarding the improvement of habitational conditions.

This report proposes the total elimination of child labor. If a child worker is present in the orchards, he/she should be taken away to a safe environment and directed to social services. Working parents of children should be presented with full information about the hazards and risks of all aspects of hazelnut agriculture in a way that makes the dangers clearly understandable.

TABLE 11. CHILD WORKERS AS A RISK GROUP IN HAZELNUT PRODUCTION (SEASONAL MIGRANT AGRICULTURAL WORKERS): HAZARDS, RISKS, RISK SCORES, AND PREVENTIVE MEASURES: RISK EVALUATION MATRIX (L TYPE)

RANK	HAZARD CLASS	HAZARD	RISK	CONSEQUENCES	PROBABILITY	IMPACT	RISK SCORE	PREVENTIVE MEASURES
1	BIOLOGICAL HAZARDS	Dense branches	Slip and fall, trauma, bone fracture, difficulty in breathing (due to branch density)	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Respiratory disease	4	5	20 (high)	<p>Young workers should be informed about the risks and hazards of all aspects of hazelnut agriculture. The information should be presented at a level easy for young workers to understand.</p> <p>If any child worker is present in the orchards, he/she should be taken to a safe environment and directed to social services.</p>
2	PHYSICAL HAZARDS	Steep terrain	Slip and fall, back, leg and muscle pain/ disease	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	4	5	20 (high)	
3	PHYSICAL HAZARDS	Cold, rain and wet clothing	Hypothermia, chilblains, frostbite	<input type="checkbox"/> Light injury <input type="checkbox"/> Injury <input type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	4	5	20 (high)	
4	PHYSICAL HAZARDS	Wet and slippery terrain	Slip and fall, loss of balance, back, leg and muscle pain/ disease	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	4	5	20 (high)	
5	CHEMICAL HAZARDS	Fertilizer and biocide containers	Contact dermatitis, allergies, poisoning	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	4	5	20 (high)	
6	ERGONOMIC HAZARDS	Bending, overstretching	Finger, hand and foot injuries	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	4	5	20 (high)	
7	ERGONOMIC HAZARDS	Repeated movements, uncomfortable wrist positions	Carpal tunnel syndrome	<input type="checkbox"/> Death <input type="checkbox"/> Light injury <input type="checkbox"/> Injury <input type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	4	4	16 (high)	
8	INJURIES AND ACCIDENTS	Transport vehicles, tractors and chugs	Traffic accidents	<input checked="" type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	4	5	20 (high)	
9	WORK CONDITIONS	Inadequate gear (working in street shoes or slippers)	Slip and fall, loss of balance	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	5	5	25 (high)	
10	WORK CONDITIONS	Long work days	Lack of rest, retarded physical, mental and social development	<input checked="" type="checkbox"/> Occupational disease <input checked="" type="checkbox"/> Developmental disease <input checked="" type="checkbox"/> Insufficient leisure time <input checked="" type="checkbox"/> Mental and behavioral disease	5	5	25 (high)	

11	WORK CONDITIONS	Lifting and carrying over-heavy loads	Developmental and musculoskeletal disorders	X Occupational disease X Developmental disease	5	5	25 (high)	
12	HABITATIONAL CONDITIONS	Insufficient access to health care	Undiagnosed and untreated disease, social exclusion	X Developmental disease X Contagious disease	5	5	25 (high)	Access to health care for children, regular checkups for physical and mental health
13	HABITATIONAL CONDITIONS	Malnutrition	Disease, anxiety, fatigue, stress, social exclusion	X Developmental disease	5	5	25 (high)	Food budgets for working families (to ensure children have a healthy diet)
14	HABITATIONAL CONDITIONS	Lack of sanitary water	Waterborne epidemics* (cholera, typhus, dysentery, contagious hepatitis), injuries due to dehydration	<input type="checkbox"/> Death X Light injury X Injury X Financial loss <input type="checkbox"/> Occupational disease	5	4	20 (high)	Sanitary drinking water
15	HABITATIONAL CONDITIONS	Lack of bathrooms, toilets and sinks	Disease, social exclusion	<input type="checkbox"/> Death X Light injury X Injury X Financial loss <input type="checkbox"/> Occupational disease	5	4	20 (high)	Separate and hygienic bathroom facilities with hot and cold running water should be provided for all worker groups, particularly those with children and young workers. Showers should provide privacy and adequate ventilation and lighting. Showers, toilets and sinks should be located away from water sources and cooking areas.
16	HABITATIONAL CONDITIONS	Inadequate cooking facilities	Unhealthy diet, contagious disease	<input type="checkbox"/> Death X Light injury X Injury X Financial loss <input type="checkbox"/> Occupational disease	5	4	20 (high)	Kitchen and cooking areas should be installed in habitational areas.
17	HABITATIONAL CONDITIONS	Unsanitary sleeping and resting areas	Lack of rest, contagious disease	<input type="checkbox"/> Death <input type="checkbox"/> Financial loss X Occupational disease X Contagious disease X Social exclusion	5	4	20 (high)	Clean bedding and linen should be provided for each worker.
18	HABITATIONAL CONDITIONS	Overcrowded living areas	Disease, anxiety, fatigue, stress, etc.	<input type="checkbox"/> Death <input type="checkbox"/> Financial loss X Occupational disease X Contagious disease X Social exclusion	5	4	20 (high)	Dining, cooking and sleeping areas should be separated.

* Contagious diseases spread by water include cholera, typhus, dysentery, and infectious hepatitis.
<http://mtayar.uludag.edu.tr/suhijyeni.htm>

19	HABITATIONAL CONDITIONS	Ticks, mosquitos, scorpions, snakes	Pest stings, poisonings, Contagious Diseases	X Death X Contagious disease X Social exclusion	5	4	20 (high)	First-aid kits and ointments for pest stings and bites should be available in habitational areas.
20	PSYCHOSOCIAL HAZARDS	Culture clash, discriminatory behavior, Lack of social support, loneliness and isolation, psychological violence	Depression, stress, lethargy, lack of morale, lack of motivation, social exclusion	<input type="checkbox"/> Death <input type="checkbox"/> Financial loss X Occupational disease X Social exclusion X Mental and behavioral disease	5	5	25 (high)	Guidance and support centers should be established in the hazelnut growing regions. Children should be informed on health and safety matters. Special youth centers should be established where the children can stay while their parents work and ideally interact with local youth and participate in educational activities. Experts should provide social support and education for the children to improve their social and problem-solving skills.



TABLE 12. YOUNG WORKERS BETWEEN 16 AND 18 AS A RISK GROUP IN HAZELNUT PRODUCTION (LOCAL WORKERS): HAZARDS, RISKS, RISK SCORES, AND PREVENTIVE MEASURES: RISK EVALUATION MATRIX (L TYPE)

RANK	HAZARD CLASS	HAZARD	RISK	CONSEQUENCES	PROBABILITY	IMPACT	RISK SCORE	PREVENTIVE MEASURES
1	BIOLOGICAL HAZARDS	Dense branches	Slip and fall, trauma, bone fracture, difficulty in breathing (due to branch density)	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Respiratory disease	4	5	20 (high)	Young workers should be informed about the risks and hazards of all aspects of hazelnut agriculture. The information should be presented at a level easy for young workers to understand.
2	PHYSICAL HAZARDS	Steep terrain	Slip and fall, back, leg and muscle pain/ disease	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	4	5	20 (high)	Young workers should be informed about the risks and hazards of all aspects of hazelnut agriculture. The information should be presented at a level easy for young workers to understand.
3	PHYSICAL HAZARDS	Cold, rain and wet clothing	Hypothermia, chilblains, frostbite	<input type="checkbox"/> Light injury <input type="checkbox"/> Injury <input type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	4	5	20 (high)	Picking should be halted during rain; weatherproof clothes should be provided.
4	PHYSICAL HAZARDS	Wet and slippery terrain	Slip and fall, loss of balance, back, leg and muscle pain/ disease	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	4	5	20 (high)	Young workers should be informed about the risks and hazards of all aspects of hazelnut agriculture. The information should be presented at a level easy for young workers to understand.
5	CHEMICAL HAZARDS	Fertilizer and biocide containers	Contact dermatitis, allergies, poisoning	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	4	5	20 (high)	Young workers should be warned about hazardous chemicals, they should not be employed in tasks that involving chemicals.
6	ERGONOMIC HAZARDS	Bending	Finger, hand and foot injuries	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	4	5	20 (high)	Young workers should be trained in proper techniques for picking hazelnuts.

7	ERGONOMIC HAZARDS	Repetitious movements, uncomfortable wrist positions	Carpal tunnel syndrome	<input type="checkbox"/> Death <input type="checkbox"/> Light injury <input type="checkbox"/> Injury <input type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	4	4	16 (high)	Young workers should be trained in proper techniques for picking hazelnuts.
8	INJURIES AND ACCIDENTS	Transport vehicles, tractors and chugs	Traffic accidents	<input checked="" type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	4	5	20 (high)	Vehicles should be inspected regularly and occupancy limits enforced.
9	WORK CONDITIONS	Inadequate gear (working in street shoes or slippers)	Slip and fall, loss of balance	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	5	5	25 (high)	Proper protective gear should be provided and usage monitored.
10	WORK CONDITIONS	Overlong work days	Lack of rest, retarded physical, mental and social development	<input checked="" type="checkbox"/> Occupational disease <input checked="" type="checkbox"/> Developmental disease <input checked="" type="checkbox"/> Insufficient leisure time <input checked="" type="checkbox"/> Mental and behavioral disease	5	5	25 (high)	Producers should respect legal limits regarding age and hours of young workers. The work pace and work breaks should be modified to accommodate age. Young workers should be given a minimum of a half-day per week for rest and leisure. Young workers should undergo regular checkups at a health clinic. Authorized experts should conduct regular inspections of work environments.
11	WORK CONDITIONS	Heavy loads	Developmental and musculoskeletal disorders	<input checked="" type="checkbox"/> Occupational disease <input checked="" type="checkbox"/> Developmental disease	5	5	25 (high)	Young workers should not lift and carry heavy sacks and should be trained in proper lift and carry techniques.

3.3.2 The Impact of Hazelnut Production on Women's Reproductive Health

Because women make up a significant percentage of the migrant workforce, pregnant, postnatal and nursing workers are considered a separate risk group. The working conditions and special needs of this risk group are outlined in the *Regulations Regarding Pregnant or Nursing Women's Employment Conditions*,

*Nursing Rooms and Day-Care Centers*⁶⁸, a statute in Labor Code 4857. According to the statute, pregnant employees cannot work more

68 Gebe veya Emziren Kadınların Çalıştırılma Şartlarıyla Emzirme Odaları ve Çocuk Bakım Yurtlarına Dair Yönetmelik, Resmi Gazete, Sayı: 28737, Tarih: 16 Ağustos 2013, www.resmigazete.gov.tr/eskiler/2013/08/20130816-8.htm, access date: 17.07.2017.



than 7 hours and 30 minutes per day (Article 9). Additionally, pregnant or nursing workers cannot be given tasks (manual labor such as lifting and carry heavy loads) considered harmful to their health or their child's health.

According to interviewees, however, pregnant and nursing workers are employed in hazelnut harvest, where they are subject to long workdays, seven-day work weeks, unsafe transportation, and myriad other hazards:

"It was exhausting. I suffered mainly from back pains. I went there with my newborn, that was the toughest part.... I was breastfeeding in the morning, tried to come back during noontime. If [the worksite] was distant [from the living area], I could not come, and my mother feed the baby. They drove the tractors too fast. The hillsides were steep and we were afraid. We used to wear shalwar and sports shoes. When we got sick, the dayıbaşı took care of it. One time, ticks bit everyone. They didn't let us kill the snakes, saying they were beneficial for the soil. We picked without wearing gloves, but sometimes there were thorns between the trees, so we wore gloves."

"They often treated us poorly. There was a pregnant worker, she miscarried. Pregnant woman cannot bear to work [in the orchard], it is too hard. One time, the tractor tipped over, all 16 of us were injured. My sister-in-law fell under the tractor, but she was OK. No one died."

The risk matrix presented in Table 13 was prepared with working women in mind. Although men mostly perform fertilizing and spraying tasks, traces of chemicals and the repurposing of empty fertilizer and biocide containers can induce miscarriage and premature birth and introduce toxins into breast milk. Regulations forbid the employment of pregnant, postnatal and nursing workers where toxic chemicals are produced, processed or applied.

One adult worker with long experience in the orchards testified that women are exposed to chemical toxins during the harvest and afterward:

"I was very young at that time. I could not make the connection then, but many pregnant workers were suffering miscarriages. For example, the women used to wash the discarded fertilizer or pesticide containers and carry water with them. Now I realize, maybe the diseases and miscarriages were because of that. We work in the orchards without social security or protection. No one cares if we get sick or miscarry after the harvest."

Biological hazards also pose heightened dangers for pregnant women. Slip-and-fall accidents due to swinging branches and steep and slippery terrain, as well as breathing problems caused by dense branches, can induce miscarriage or premature birth. Regulations Regarding Pregnant or Nursing Women's Employment Conditions, Nursing

Rooms and Day-Care Centers stipulates weather and environmental conditions deemed appropriate for pregnant and nursing women, but these are not always observed. One woman argued that women make better hazelnut pickers—they are more agile—but the danger of injury is high: *“My daughter rolled down the hill with her basket—I thought she was dead. I, too, slipped on hazelnuts drying at the trashing floor and fell, breaking my arm. The owner took me to the hospital. I didn’t go to the orchard afterwards, but took care of the kids instead.”*

When workers pick nuts directly from branches, they risk overstretching and being hit by branches, which can be especially hazardous for pregnant women. Again, regulations stipulate precautions that should

be taken to protect pregnant workers from vibration and jolts, especially those that affect the lower torso and belly areas. But the primary ergonomic hazard threatening pregnant women is the continuous bending required to gather nuts from the ground.

The habitational environment also influences reproductive health. Lack of clean drinking water and unhygienic makeshift bathrooms and toilet facilities increase the risk of miscarriages. Workers are exposed to extreme heat, cold and rain while cooking in the open air. Housing is often neglected and drafty, infested by mosquitos, scorpions, snakes, and other pests. All these undesirable conditions threaten workers’ well-being, particularly children and pregnant or nursing women.

TABLE 13. PREGNANT OR NURSING WORKERS AS A RISK GROUP IN HAZELNUT PRODUCTION (SEASONAL MIGRANT AGRICULTURAL WORKERS): HAZARDS, RISKS, RISK SCORES, AND PREVENTIVE MEASURES: RISK EVALUATION MATRIX (L TYPE)

RANK	HAZARD CLASS	HAZARD	RISK	CONSEQUENCES	PROBABILITY	IMPACT	RISK SCORE	PREVENTIVE MEASURES
1	CHEMICAL HAZARDS	Fertilizer and pesticide containers and waste	Contact dermatitis, allergies	X Death □ Light injury □ Injury □ Financial loss X Occupational disease	2	5	10 (medium)	Women workers should be warned about chemical hazards and educated in about their proper application. Protective gear (masks and gloves) should be provided.
2	INJURIES AND ACCIDENTS	Transport vehicles (chugs and tractors)	Traffic accidents	X Death X Light injury X Injury X Financial loss □ Occupational disease	4	5	20 (high)	Transport vehicles should be regularly inspected and capacity limits respected.
3	BIOLOGICAL HAZARDS	Dense hazelnut branches	Slip and fall, bone fracture, difficulty in breathing (due to dense branches)	□ Death X Light injury X Injury X Financial loss □ Occupational disease	3	5	15 (high)	Women workers should be informed about potential dangers involved in picking nuts and trained in best practices.
4	PHYSICAL HAZARDS	Steep terrain	Slip and fall, back and leg pain and disease	□ Death X Light injury X Injury X Financial loss □ Occupational disease	4	5	20 (high)	Women workers should be informed about potential dangers involved in picking nuts and trained in best practices. Workers should be encouraged to wear nonslip boots.

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5	PHYSICAL HAZARDS	Wet and slippery terrain	Slip and fall, loss of balance, back and leg pain and disease	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	4	5	20 (high)	Women workers should be informed about potential dangers involved in picking nuts and trained in best practices. Workers should be encouraged to wear nonslip boots.
6	WORK CONDITIONS	Improper gear while working (wearing Street shoes or slippers)	Slip and fall, difficulty maintaining balance	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	5	4	20 (high)	Women workers should be provided with protective gear and usage monitored.
7	WORK AND HABITATIONAL CONDITIONS	Steep terrain, contant bending, heavy lifting, long work days	Deterioration of mother/child health during pregnancy; malnutrition of the fetus	<input type="checkbox"/> Premature birth <input type="checkbox"/> Miscarriage <input type="checkbox"/> Unhealthy child development	4	5	20 (high)	Pregnant workers should not be employed in the orchards. If they are, they should be permitted shorter days, reduced workload and pace, longer breaks, and at least a half-day of leisure every work week. They should be given regular checkups at a health-care facility.
8	WORK AND HABITATIONAL CONDITIONS	Insufficient access to health-care services	Undiagnosed and untreated disease, risk of epidemic, social exclusion	<input checked="" type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	4	5	20 (high)	Access to health-care services should be provided.
9	WORK AND HABITATIONAL CONDITIONS	Malnutrition	Disease, anxiety, exhaustion, stress, social exclusion	<input type="checkbox"/> Death <input type="checkbox"/> Light injury <input type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	4	5	20 (high)	Food budgets should be provided to workers to ensure a healthy, balanced diet.
10	ERGONOMIC HAZARDS	Bending	Finger, hand and foot injuries	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input checked="" type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	4	5	20 (high)	Workers should be trained in proper picking methods.
11	ERGONOMIC HAZARDS	Repetitious movements, uncomfortable wrist positions	Carpal tunnel syndrome	<input type="checkbox"/> Death <input type="checkbox"/> Light injury <input type="checkbox"/> Injury <input type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	4	5	20 (high)	Workers should be trained in proper picking methods.
12	PHYSICAL HAZARDS	Cold, rain and wet clothing	Hypothermia, chilblains, frostbite	<input type="checkbox"/> Death <input type="checkbox"/> Light injury <input type="checkbox"/> Injury <input type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	4	5	20 (high)	Picking should be halted during rain and weatherproof clothing provided.
13	HABITATIONAL CONDITIONS	Lack of clean water	Waterborne disease (cholera, typhus, dysentery, contagious hepatitis), Dehydration	<input type="checkbox"/> Death <input type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	4	5	20 (high)	Clean drinking water should be provided in the living areas.

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14	HABITATIONAL CONDITIONS	Lack of bathrooms, toilets and sinks	Social exclusion	<input type="checkbox"/> Death <input checked="" type="checkbox"/> Light injury <input type="checkbox"/> Injury <input checked="" type="checkbox"/> Financial loss <input type="checkbox"/> Occupational disease	4	5	20 (high)	Separate and hygienic bathroom facilities with hot and cold running water should be provided for all worker groups, particularly children and young workers. Showers should provide privacy, ventilation= and adequate lighting. Showers, toilets and sinks should be placed away from water sources and cooking areas.
15	HABITATIONAL CONDITIONS	Inadequate cooking facilities	Unhealthy diet, contagious disease	<input type="checkbox"/> Death <input type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease	4	5	20 (high)	Kitchen and cooking areas should be installed in living areas.
16	HABITATIONAL CONDITIONS	Unsanitary sleeping and resting areas	Lack of rest, contagious diseases	<input type="checkbox"/> Death <input type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease <input checked="" type="checkbox"/> Contagious disease <input checked="" type="checkbox"/> Social exclusion	4	5	20 (high)	Clean bedding and linen should be provided for each worker.
17	HABITATIONAL CONDITIONS	Overcrowded living areas	Disease, anxiety, fatigue, stress, etc.	<input type="checkbox"/> Death <input type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease <input checked="" type="checkbox"/> Contagious disease <input checked="" type="checkbox"/> Social exclusion	4	5	20 (high)	Dining, cooking and sleeping areas should be separated.
18	HABITATIONAL CONDITIONS	Ticks, mosquitos, scorpions, snakes	Pest stings, poisoning, contagious disease	<input checked="" type="checkbox"/> Death <input checked="" type="checkbox"/> Contagious disease <input checked="" type="checkbox"/> Social exclusion	4	5	20 (high)	First-aid kits and ointments should be made available in living areas.
19	PSYCHOSOCIAL HAZARDS	Culture clash, discriminatory behavior, Lack of social support, isolation	Depression, stress, lack of morale, lethargy, Lack of motivation, postpartum depression, social exclusion	<input type="checkbox"/> Death <input type="checkbox"/> Financial loss <input checked="" type="checkbox"/> Occupational disease <input checked="" type="checkbox"/> Social exclusion	4	5	20 (high)	Pregnant women in working families should be employed as cooks or assigned lighter tasks depending on the trimester of the pregnancy. Pregnant women should get regular health checkups before and after giving birth. Legal regulations on nursing breaks should be enforced. Postnatal support services should be provided for the new mothers. The length of workdays and break periods should be appropriate to a pregnant woman's condition.

CONCLUSIONS AND POLICY RECOMMENDATIONS

The purpose of this report is to chart the stages of hazelnut production and related tasks, and to discuss these tasks from an occupational health and safety point of view. Short- and long-term effects of hazards and risks related to working conditions and habitational environments were evaluated separately for various risk groups: child, young, and female workers as well as adults.

HAZARDS AND RISKS OF HAZELNUT AGRICULTURE

The report examined eight classes of hazards in hazelnut production in accordance with OSHA classifications and guidelines: biological hazards (insects, plants and animals), physical hazards (heat, sunlight, difficult terrains), chemical hazards (pesticides and fertilizers), ergonomic hazards (repetitious movement and sustained awkward body postures), work-related accidents and injuries, and psychosocial hazards.

Biological hazards include bee, mosquito, tick and spider bites and stings; scorpion stings and snake bites; animal dander; organic dust; moss; certain plants; dense branches. Although these hazards create a certain risk for all worker groups, scorpion stings and snake bites can be more distressing for women and children workers leading to a higher degree of risk.

Physical hazards are identified as exposure to intense sunlight, extreme heat and humidity; sharp fluctuations in temperature; and accidents caused by steep, muddy terrain (considered high risk for back and leg injury).

Chemical hazards may occur during liming, fertilizing, and the application of pesticides. Generally, these tasks are performed by the

orchard owners or experienced workers with proper protective gear and equipment, and hazelnuts are harvested long after the pesticides are applied; therefore, the risks for harvesting workers are minimized and fall within acceptable limits. Orchard owners report that harvesting begins at least three or four weeks after the last fertilization or pesticide application, although leftover pesticide cans and buckets can harm harvest workers and their children when those containers are used to carry drinking water, or as toys. Chemical hazards can pose lethal risks. Workers applying pesticides and fertilizers should have a Certificate for Applying Plant Protection Products.

Ergonomic hazards refer to bending, kneeling, reaching, repetitive movements, heavy lifting and carrying (during sacking and transportation of hazelnuts), and exhaustion. Maintaining uncomfortable body and wrist postures for long periods of time are also considered hazards that can result in hand, finger and knee injuries; muscle, joint and bone pain; stiffness in neck, lower back and shoulders; cramps; lumber pain and spinal disc herniation; prolapsed disks; muscle tears. Slip-and-fall injuries can also be listed under ergonomic hazards.

Accidents and injuries related to the use of machinery and equipment during pruning and stump clearing, or due to slippery terrain or dense branches, are considered low to medium risk and preventable through simple precautions. Traffic accidents, however, are the most common type of accident in agricultural production and carry a high risk beyond acceptable levels. Vehicles used to transport harvest workers to and from the orchards often lack necessary safety equipment. Unsafe

drivers, overcrowded vehicles, and steep terrains also contribute to the high rate of traffic accidents that result in severe injuries and death.

Work environment hazards encompass method and organization matters: overlong work days, seven-day weeks, and insufficient breaks; exhausting work pace and lack of control of work flow; limited access to clean water and hygienic facilities; low wages; lack of health and social security insurances; and lack of wage and job security. These hazards cause severe exhaustion; stress; occupational burnout; monotony; alienation; and low motivation, productivity, and self-esteem. These risks, as indicated during field interviews, are considered beyond acceptable levels.

Habitation environment hazards include insufficient access to clean water and proper restroom and bathroom facilities; lack of adequate and clean cooking, rest and sleep areas; dormitory-style accommodations without privacy; lack of sufficient infrastructure; lack of health services; malnourishment; pest stings and bites; and electric shock from faulty equipment. These hazards cause stress, lack of sleep, undiagnosed and untreated disease, and psychological and social alienation. They earn high risk scores that exceed acceptable risk levels.

Field researchers identified discrimination as a major psychosocial hazard. While discrimination may take many forms, social exclusion is common when different cultures rub up against each other. Seasonal workers describe what might be called the marginalization of their identities, while orchard owners and local producers and workers mentioned “being constrained to or being obligated to work with seasonal migrant workers.” On the other hand, interviewees said that, “When we get used to each other,

the problems disappear.” Cultural differences ranging from apparel to eating habits can be overcome—and “the problem” is solved—when members of different cultures have enough time “to get to know each other.”

RISK GROUPS

One of the main findings of this report concerns workers under age 18. In general, workers of all ages labor for well over 10 hours a day with few breaks, even though current regulation limits workdays to eight hours for workers between the ages 16 and 18. Regulations also bar the employment of young workers for tasks (such as heavy lifting) that might hinder their healthy development. Biological, chemical, physical, ergonomic and psychosocial hazards all have high risk scores and threaten children’s safety and health. In addition, habitation environment hazards negatively affect the mental, physical and psychological health and development of children.

Reproductive risks to pregnant, postnatal and nursing workers also were evaluated in light of the current regulations, which stipulate that pregnant and nursing women can work only seven-and-one-half hours days, and cannot work overtime or night shifts.

Pregnant workers are particularly susceptible to hazards such as wet and slippery terrain, swinging branches, and overstretching and vibration while picking nuts from trees, all of which can lead to accidents or injuries that induce miscarriages, premature births or stillbirths. Even though spraying or fertilizing tasks are usually performed by men, the repurposing of chemical containers to carry water has been found to induce premature births and miscarriages, or transfer toxins to the child through breastfeeding. Although the probability of such risk is small, the impact on reproductive health is significant.

Seasonal migrant workers also encounter hazards in their living areas—specifically the lack of safe drinking water and hygienic bathing and toilet facilities—that can lead to reproductive health problems and increase the risk of miscarriage. Showers and toilets often are overcrowded in tent camps, and makeshift open-air cooking areas expose workers to rain and inclement weather. All of these hazards pose special risks for pregnant and nursing women.

POLICY RECOMMENDATIONS

To eliminate or reduce the hazards and risks hazelnut workers face and create a healthy and safe work environment, this report recommends the following improvements (broken down into categories):

Adult Workers

- Employers should provide protective gear (masks, goggles, gloves), and first-aid kits (in both work and habitation areas). Workers should wear proper safety gear while operating the winnowing machine and weedwackers or using coulter or hatchets. Pickers should be warned about the hazards of dense, swinging branches and uneven and slippery terrain, and they should be trained in proper techniques and safety precautions. Decreasing the weight of hazelnut sacks will greatly reduce ergonomic risks.
- Workers should be warned about chemical hazards and should use protective gear when fertilizing and spraying. Empty chemical containers should be discarded or destroyed.
- To prevent traffic accidents, tractors and chug engines should be inspected; vehicles unsuitable for human transportation should not be used. Drivers should be trained and vehicle capacity limits respected.

- Employers must respect laws regulating work hours, breaks, rest days and leave. Workers should be covered by social security. Every measure should be taken to eliminate any loss of welfare benefits to registered workers. To cope with the widespread practice of informal employment, programs and regulations encouraging the provision of social and health insurance for workers should be intensified.
- Workers should be given health checkups and have access to health care. They should be provided with or have access to healthy, nutritional food and adequate cooking facilities.
- Habitational environments should provide at least minimum standards for hygiene, sanitation, rest and recreation.
- To reduce psychosocial risks, social programs encouraging dialogue and infusion between different cultures are needed.

Children and Young Workers

- Immediate steps should be taken to prevent employment of workers under 18 in hazelnut agriculture, including the establishment of an efficient inspection and monitoring system. Legislation banning child labor has proved insufficient; current cultural norms condoning child labor should be challenged and transformed; economic reasons driving child labor should be identified and addressed.
- Children of seasonal migrant worker families should have access to health care. To this end, ambulant health units should regularly visit workers' living areas during the harvesting season.
- Special youth centers away from orchards should be established to encourage migrant and local children to interact and participate in educational and recreational activities together.

- Children should be encouraged to continue their education at educational and social centers located near workers' living areas. Educational and care services for preschool children should be provided by child development specialists.
- Agricultural working families should have improved access to work opportunities near their permanent homes.

Women Workers

- Pregnant workers should not be assigned heavy lifting or other arduous tasks. They should work shorter days, have at least one-half day of leisure a week, and work at a reduced pace appropriate to their condition.
- Pregnant and nursing workers and their children should have regular health checkups. Postnatal support services should be provided for new mothers.
- Pregnant workers should be warned about and monitored to avoid slip-and-fall hazards and contact with trace chemicals.
- Pregnant workers should be transported in safe, inspected vehicles.
- Tasks assigned pregnant women undertaken in the orchard should be governed by the trimester of their pregnancy, and pregnant women who can't work in the orchard should be employed as cooks.
- Legal regulations governing nursing breaks should be enforced.

Regulations, Practices, and Supervision

- Informal labor practices in hazelnut agriculture in Turkey require cultural change and extensive structural legal change. Regulations should be applied to enterprises employing 50 or fewer workers (currently exempt). Self-employed and unpaid family workers should be covered by social insurance.

Labor regulations stipulated by the ILO Convention 184 should be adopted for

Turkey and their enforcement monitored. Occupational Health and Safety Code 6331 should be applied to agricultural activities classified as hazardous and highly hazardous.

Popularizing Occupational Health and Safety Practices

- Special offices or agencies dedicated to research and education about occupational health and safety hazards in agriculture should be established with coordination and cooperation between the Ministry of Labor and Social Security, İş-Kur (Official Employment Agency), the Ministry of Agriculture and Livestock, and the Ministry of Family and Social Policies.
- Farmers unions, chambers of agriculture and NGOs should provide occupational health and safety education programs to hazelnut producers and workers. Producers and workers should be taught proper procedures and techniques to prevent accident and injury and encouraged or required to wear protective gear. All parties should be well-informed regarding current work regulations. Audiovisual educational materials suited to the educational levels of various audiences should be prepared.
- Incentives such as the Conditional Monetary Support Programs should be continued in order to encourage child workers to continue their education. The monetary incentives should be large enough to deter child-labor practices.
- Former child workers who through education achieved successful professional careers should be encouraged to speak with working children to motivate them to continue their education.
- Occupational health and safety culture should be improved. Labor regulations are useful only if the employers and the workers adopt and practice them. ■

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APPENDIX 1

List of People and Institutions Interviewed in Research Field

WORKER INTERVIEWS					
RANK	GENDER	AGE	PLACE OF ACCOMODATION	INTERVIEW DATE	INTERVIEW LOCATION
1	Male	33	Şanlıurfa	May 2017	Workplace
2	Male	44	Karaköprü	May 2017	Home
3	Male	52	Eyyübiye	May 2017	Home
4	Female	20	Eyyübiye	May 2017	Home
5	Female	48	Eyyübiye	May 2017	Home
6	Male	39	Merkez	May 2017	Café
7	Male	45	Karaköprü	May 2017	Café
8	Male	26	Eyyübiye	May 2017	Home
9	Female	25	Eyyübiye	May 2017	Home
10	Female	56	Eyyübiye	May 2017	Home
11	Female	48	Eyyübiye	May 2017	Home
12	Female	54	Sırrın	May 2017	Home
13	Female	38	Sırrın	May 2017	Home
14	Female	55	Siverek	May 2017	Home
15	Female	51	Eyyübiye	May 2017	Home
16	Male	54	Sırrın	May 2017	Home
17	Male	58	Sırrın	May 2017	Home
18	Male	55	Eyyübiye	May 2017	Home
19	Male	24	Eyyübiye	May 2017	Home
20	Male	22	Siverek	May 2017	Home
21	Male	26	Eyyübiye	May 2017	Home
22	Female	21	Siverek	May 2017	Home
23	Male	43	Kızıltepe	May 2017	Café
24	Female	63	Ortaköy-Mardin	May 2017	Home
25	Female	26	Ortaköy-Mardin	May 2017	Home
26	Female	45	Mardin	May 2017	Home
27	Male	62	Ortaköy-Mardin	May 2017	Home
28	Female	27	Mardin	May 2017	Home
29	Male	48	Mardin	May 2017	Home

MIDDLEMEN/MEDIATOR INTERVIEWS

RANK	GENDER	AGE	PLACE OF ACCOMODATION	INTERVIEW DATE	INTERVIEW LOCATION
1	Male	49	Şanlıurfa	May 2017	Café
2	Male	57	Şanlıurfa	May 2017	Café

INSTITUTION INTERVIEWS

RANK	GENDER	PLACE OF ACCOMODATION	INTERVIEW DATE	INSTITUTION
1	Male	Düzce	March 2017	Düzce Directorate of Food, Agriculture and Livestock
2	Male	Düzce	March 2017	Düzce Directorate of Food, Agriculture and Livestock
3	Male	Düzce	March 2017	Ferrero Grup
4	Male	Düzce	March 2017	Ferrero Grup
5	Male	Düzce	March 2017	Düzce Chamber of Agriculture
6	Male	Düzce	March 2017	Düzce Chamber of Agriculture
7	Female	Düzce	March 2017	Balsu Gıda
8	Male	Düzce	March 2017	Balsu Gıda
9	Female	Düzce	March 2017	Değerli Tarım Projesi
10	Male	Ereğli	March 2017	Mutlu Fındık Projesi
11	Male	Ordu	May 2017	Ordu Commodity Exchange
12	Male	Ordu	May 2017	Ordu Commodity Exchange
13	Male	Ordu	May 2017	Karimex Gıda
14	Male	Ordu	May 2017	Olam Progıda
15	Female	Ordu	May 2017	Olam Progıda
16	Male	Şanlıurfa	May 2017	Foundation for Social Assistance and Solidarity
17	Female	Şanlıurfa	May 2017	Foundation for Social Assistance and Solidarity
18	Male	Ordu	May 2017	Ordu Chamber of Agriculture

EXPERT INTERVIEWS

RANK	GENDER	PLACE OF ACCOMODATION	INTERVIEW DATE	FIELD OF EXPERTISE
1	Male	Düzce	March 2017	Agricultural Engineer
2	Female	Düzce	March 2017	Social Coordinator
3	Male	Düzce	March 2017	Occupational Health and Safety
4	Male	Ordu	May 2017	Engineer
5	Female	Şanlıurfa	May 2017	Sociologist
6	Male	Ordu	May 2017	Agricultural Engineer
7	Male	Ordu	May 2017	Occupational Health and Safety
8	Female	Ordu	May 2017	Social Coordinator
9	Male	Muğla	May 2017	Occupational Health and Safety

PRODUCER INTERVIEWS					
RANK	GENDER	AGE	PLACE OF ACCOMODATION	INTERVIEW DATE	INTERVIEW LOCATION
1	Male	38	Hendek	March 2017	Hendek
2	Male	56	Kaymakçı Köy	March 2017	Düzce
3	Male	42	Eminaçma Köyü	March 2017	Düzce
4	Male	46	Düzce	March 2017	Düzce
5	Male	44	Kabalak Köyü	March 2017	Düzce
6	Male	48	Düzce	March 2017	Düzce
7	Male	51	Akçakoca	March 2017	Akçakoca
8	Male	64	Ereğli	March 2017	Ereğli
9	Male	61	Ordu	May 2017	Ordu
10	Male	54	Ordu	May 2017	Ordu
11	Male	—	Ordu	April 2017	Ordu
12	Male	—	Ordu	April 2017	Ordu
13	Male	—	Ordu	April 2017	Ordu
14	Male	—	Ordu	April 2017	Ordu
15	Female	—	Ordu	April 2017	Ordu
16	Male	—	Ordu	April 2017	Ordu
17	Male	—	Ordu	April 2017	Ordu
18	Male	—	Ordu	April 2017	Ordu
19	Male	—	Ordu	April 2017	Ordu
20	Male	—	Ordu	April 2017	Ordu

APPENDIX 2

What is Occupational Health and Safety?

Occupational health is defined as the ability of a laborer to work in a peaceful environment free of hazards due to work conditions and the equipment. Occupational safety refers to the body of technical regulations governing an employer's responsibility to reduce and eliminate occupational hazards (Demircioğlu and Centel, 2012).

One of the principle duties of the management is to determine the principles and goals of occupational health and safety supervision in the workplace, the most important being risk evaluation, which impacts all other supervision activities (Özkan, 2014: 22). Precise detection and identification of hazards and related risks is critical to establishing efficient preventive measures and regulations. Total elimination of workplace hazards is a long-term undertaking. Increasing employee awareness about occupational safety and health, and encouraging communication between employees and employers, will assure active participation by workers (Özkan, 2014: 23)

Ignorance about the hazards and risks in a work environment means turning a blind eye to occupational health and safety. As stipulated by the Occupational Health and Safety Code 6331 (İş Sağlığı ve Güvenliği Kanunu-İSGK) and related by-laws, risk evaluations and preventive measures are mandatory for all business and enterprises, both private and public. Awareness of the following concepts is the first step in risk evaluation:

Hazard: potential to cause harm or damage to the worker or the workplace (İSGK Article 3).

Risk: probability of loss, injury, or other harmful result from hazard (İSGK Article 3).

Prevention: measures planned or taken to eliminate or reduce occupational health and safety risks at all stages of work (İSGK Article 3).

Acceptable risk level: a risk level in compliance with legal standards and the prevention policies of a business enterprise (Regulation on Occupational Health and Safety Risk Evaluation, Article 4-1/b).

Near-miss incident: an incident in the workplace that potentially could have harmed the workers but did not (Regulation on Occupational Health and Safety Risk Evaluation, Article 4-1/b).

Risk evaluation: endeavors to identify existing and potential hazards in a workplace, analyze and rank corresponding risks and risk factors, and prescribe preventive measures and precautions (Regulation on Occupational Health and Safety Risk Evaluation, Article 4-1/b).

Accident: an unplanned and sudden incident that can cause injury, financial damage, or death; an incident due to a previously unknown phenomenon that harms the physical integrity of an individual or causes financial loss.

In order to take necessary occupational health and safety precautions, hazards and related risks must be identified and evaluated. To this end, risks faced by workers, their families, subcontractors and the general public should be evaluated systematically.⁶⁹

A hazard and a risk may be misconstrued as one and the same. A hazard is anything that has the potential to cause harm; risk is the real possibility of being harmed—a measure of potential danger related to an activity. To put it another way, risk is the probability of loss, injury or other harmful result arising from a hazard. For example, rain is a hazard; however, the risk of injury from rain can vary, depending on weather, geography, and precautions (wearing protective gear and clothing).

The main purpose of evaluating occupational risk is to protect employees' health and safety—risk evaluation minimizes hazards that could harm employees and the environment. It also contributes to the productivity of the business. Methods of risk evaluation vary depending on the goals and enterprise (Andaç, date unspecified: 4).

69 Açık Tarım Alanlarında İş Sağlığı ve Güvenliği Rehberi, Çalışma ve Sosyal Güvenlik Bakanlığı, İş Sağlığı ve Güvenliği Genel Müdürlüğü, s. 5.