KraftHeinz

In Our Roots

The Kraft Heinz Sustainable Agricultural Practices Manual

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About this Manual

The Kraft Heinz Company (KHC) In Our Roots Program is based on the principle of creating a long-term farm management philosophy that is equally focused on productivity, environmental stewardship, and prosperity. As the original pure food company, Kraft Heinz is a trusted leader dedicated to the sustainable health of people, the planet, and our company.

The In Our Roots Program works with suppliers to ensure that agricultural practices:

- Satisfy consumer needs for safe food, traceable to origin
- Satisfy consumer demand for reliable supply of affordable, nutritious food
- Promote and protect the health, welfare, and economic prosperity of farmers, workers, and their communities
- Minimize adverse effects on the Earth's natural resources and biodiversity

Our Approach

The In Our Roots Program has created this manual which contains the Kraft Heinz Sustainable Agriculture Practices ("these Practices" or "SAP") which have been benchmarked against globally recognized best practices. These practices are the result of more than 25 years of refining good agricultural practices which builds off KHC's more than 100-year agricultural heritage. At Kraft Heinz we continue to strictly follow Henry John Heinz's belief that "in order to improve the product on the shelf you must first improve the produce in the ground".

The objective of this manual is to provide our suppliers with a guide on how to grow more of the highest quality tomatoes while reducing our environmental footprint. For the purpose of this document, the term "supplier" is defined as an entity which supplies KHC with raw materials (e.g. tomatoes) and/or first processed materials (e.g. tomato paste). By following the best practices laid out in this document, suppliers should increase field yields, improve soil health, reduce input usage per ton produced and have a safe environment for employees. In addition, growers can expect their farming operations to become economically, environmentally and socially sustainable. This manual has been designed to inform both suppliers and growers about the agricultural practices and principals that KHC has developed under the In Our Roots Program.

Compliance with KHC Sustainable Agriculture Practices

KHC expects that its growers and suppliers will follow these Practices directly or with a similarly aligned program, as these practices enhance food safety, quality, and sustainability to achieve results that will both benefit themselves and KHC. Introducing these practices into grower practices also requires retaining records of activities and measurements, demonstrating improvement and introducing mitigation measures when deemed necessary. The true measures of success will be grower, worker, and environmental wellbeing with adherence measured by audits of a representative grower group. KHC has seen that if growers follow these practices, they will enjoy longer term overall success.

KHC, at its option and discretion, will assess suppliers within the In Our Roots program for alignment and compliance with these Practices. When KHC determines that a supplier's practices and/or procedures fall short of these Practices, the supplier will be expected to demonstrate improvement and achieve full compliance within an agreed-upon defined time period. In this instance, the supplier shall then be identified as a "Probationary Supplier" pending full approval by KHC. Supply may be permitted to continue but the receiving facility may implement tests and inspections to ensure that commodities from the grower meet KHC standards during this probationary period.

Kraft Heinz Company (KHC) Policies

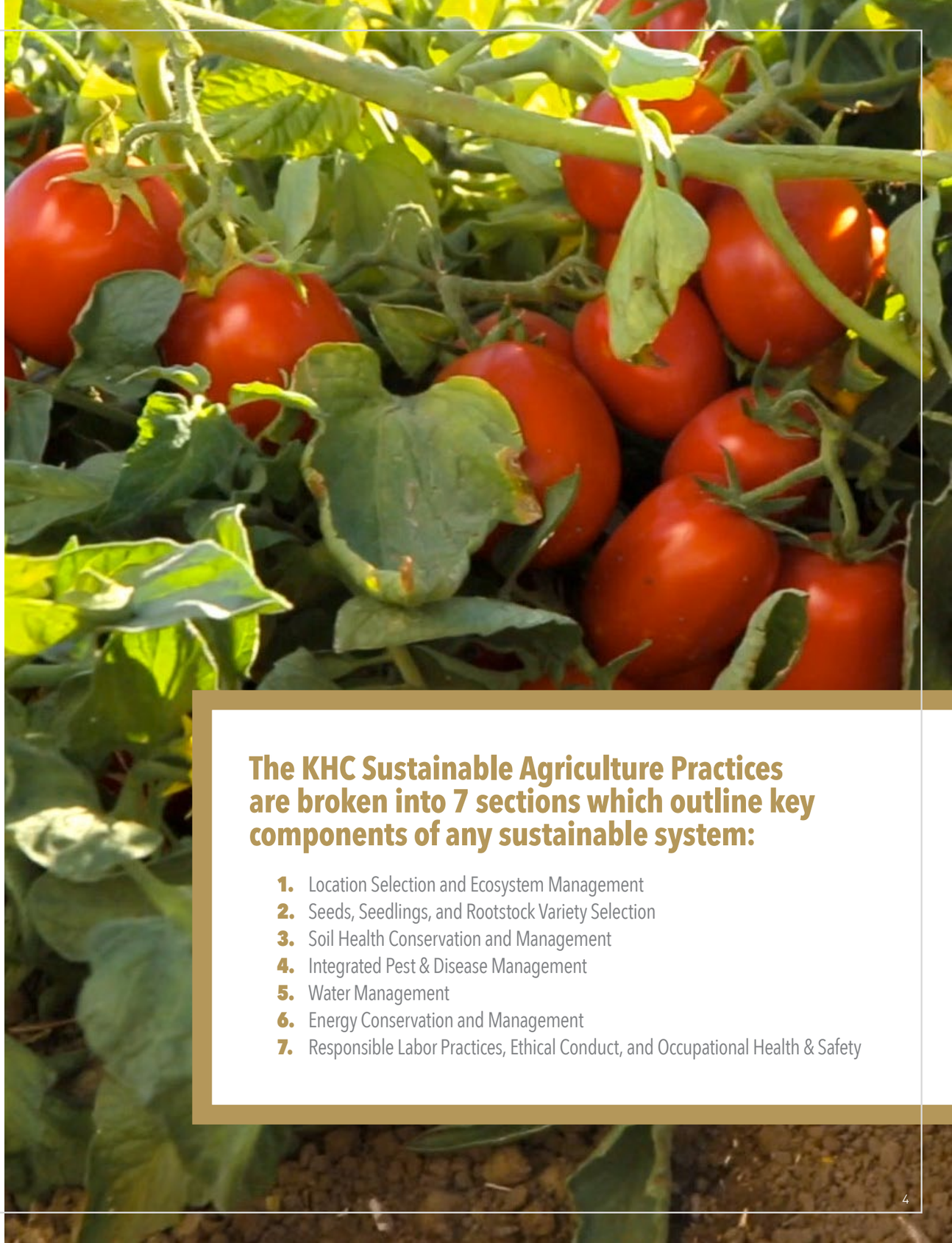
Vendor/supplier compliance with KHC policies is mandatory. These policies are translated into standards through the KHC Specifications [provided by KHC upon contract and contingent per site rules] and in this manual. Where KHC policies define specific requirements and specifications, these should be confirmed by vendor/supplier provision. Supporting documentation that verify compliance with KHC requirements shall be provided upon request. If a vendor/supplier does not have copies of relevant policies, please contact KHC. It is the responsibility of the vendor/supplier to request copies of the relevant KHC policies and keep them on hand.

How to use the SAP Manual

KHC is a trusted leader in nutrition and wellness. To help illustrate our key best practices, included in this manual are some examples of best practices for crops (e.g. tomatoes) but are intended to apply to all crops. For specific crops, optimum practices may be customized to that crop's specific needs. KHC will work with suppliers to advance agricultural practices to supply of affordable, nutritious, and sustainable food. Careful selection of growing locations and crop varieties, along with intelligent agronomy, are key factors in producing high yields of nutritious food.

Best Practices for Sustainable Agriculture Implementation

The best practices in this manual reflect a long-term farm management philosophy that is equally focused on productivity, environmental stewardship and prosperity. KHC believes that growers can partner with KHC to protect their land and livelihood by following practices that enhance a farming operation's ability to be profitable, while also maintaining and enhancing the farms overall long-term health and viability for the future.



The KHC Sustainable Agriculture Practices are broken into 7 sections which outline key components of any sustainable system:

1. Location Selection and Ecosystem Management
2. Seeds, Seedlings, and Rootstock Variety Selection
3. Soil Health Conservation and Management
4. Integrated Pest & Disease Management
5. Water Management
6. Energy Conservation and Management
7. Responsible Labor Practices, Ethical Conduct, and Occupational Health & Safety

1

Location Selection & Ecosystem Management

Choosing the location of crop production is an important first step for suppliers. This section describes three main factors that must be considered by suppliers when selecting the location for production.

Climate Smart Agriculture

- Review and select a geographic production area with a suitable climate for the crop/species/variety.
- Matching a crop to an optimal fit of temperature, precipitation, wind, humidity and solar radiation patterns increases the likelihood of repeatedly achieving satisfactory yields, quality and crop management costs.

Land

- Review and select the appropriate cropping soils and topography for the commodity to be grown.
- An assessment of the location should include the physical, chemical and biological composition of the soil.
- Consider and evaluate the potential for adverse weather conditions and natural catastrophes such as flooding, drought, frost, erosion, etc.

Local Impact

- Consider how farming operations may impact local ecosystems. Adapt farming practices to protect biodiversity and natural habitats.
- Assess the impact of facilities and activities on the local community.

The Environmental and Agronomic Stability of Region

Review the environmental and agronomic stability (historical use) in the region where a KHC ingredient may be sourced. An investigation of the historical use of the land should occur to determine suitability for the selected crop.

Negative impacts of historical use may include:

- Physical degradation of soil
- Depletion of nutrients and organic matter
- Deposits of potentially harmful materials
- Presence of weeds
- Pests and diseases
- Human rights abuses (child and/or forced labor)

Positive impacts of historical use may include:

- Site clearing
- Contouring or leveling
- Installation of site services such as irrigation
- Drainage
- Access roads
- Fencing and shelter
- Buildings
- Soil fertility inputs
- History of competent agronomy and honored agreements

Location Selection & Ecosystem Management

Checklist ✓

No.	Questions
1.1	**BASELINE PRACTICE** *Is a clear title held or valid lease agreement in place for the farm site?*
1.2	**BASELINE PRACTICE** *Has an assessment of the suitability of all the farming operation's site been carried out for its planned use, accounting for any potential impacts on the surrounding community?*
1.3	*Has farm management engaged long-term financial planning to assess any risks (e.g., economic viability, resource scarcity, etc.) to the farming operation?*
1.4	*Does farm management seek advice and support from partners and experts on more effective production techniques, new technologies, etc.?*
1.5	*Where applicable, are all primary forest, mangrove, wetland, peatland, protected grassland and legal reserves in their original condition since 2016?*
1.6	*Where applicable, have permits been secured for any cleared grassland or deforested secondary forest in accordance with relevant legislation and regulation?*
1.7	*Are measures taken to prevent illegal hunting, fishing and extraction of flora and fauna on your land, including rare, threatened and endangered species, in accordance with relevant legislation and regulation?*
1.8	*Are measures taken to protect and promote natural habitat on your land, especially areas adjacent to watercourses and protected areas?*

2

Variety (Seeds, Seedlings, and Rootstock) Selection

Choosing the right variety sets the foundation for a productive crop and paves road for success in advancing sustainability practices in agriculture.

When choosing varieties to be grown for KHC, consideration must be given to:

- Suitability for processing efficiency and characteristics for the final product
- Suitability for local growing conditions – good agronomic performances
- Quality of harvested crop – appearance, nutrition, etc.
- Optimum seed rate given location and crop

A record/certificate of the seed quality, purity, variety name, batch number and seed vendor should be retained. The farmer should be able to demonstrate that the varieties grown have disease resistance or tolerance.

Additionally, growers should avoid cultivating invasive species which may have a negative impact on the surrounding area.

Variety (Seeds, Seedlings, & Rootstock) Selection

Checklist ✓

No.	*Questions*
2.1	**BASELINE PRACTICE** *For variety selection and use, are all factors taken into account (including suitability, quality, etc.) in order to make an informed choice?*
2.2	*Does the new planting material and/or grafting material have disease resistance and is of a high quality and obtained from a trustworthy source?*
2.3	*Are records maintained for planting and/or grafting material used?*
2.4	*Is the cultivation and use of invasive species avoided?*
2.5	*Is planting genetically modified varieties in compliance with buyer requirements and all applicable regulations of the country where they are grown?*
2.6	*Is the optimum seed rate or plant population taken into account for the local situation and crop?*

3

Soil Health & Nutrient Management

KHC recognizes that the soil is the foundation of agricultural supply, and as such, should be carefully managed and improved over time, while producing affordable nutritious food. Soil must be managed so that the chemistry, structure and nutritive supply are not diminished over time.

Soil Chemistry

Soil health is dependent upon a combination of soil chemistry (fertility), soil physics (structure) and soil biology. Farmers need to have knowledge of each of these three areas and respond to them appropriately to maximize long-term, sustainable productivity from the soil and profit from their crop.

Factors to be considered include:

Physical:

- Soil erosion caused by wind or water
- Soil physical structure, pore size, water and aeration
- Some aspect of soil aggregation, clay swelling and shrinking
- Soil profile and depths
- Water retention and permeability
- Soil compaction producing a plow pan and impermeable layers
- Contamination of soils with non-biodegradable plastic mulch, soft and hard plastic, metals, etc.
- Presence of small and big stones, grit, etc.

Chemical:

- Soil pH
- Soil Electro Conductivity (EC)
- Soil Nutrients , e.g., Potassium, Phosphorus, Nitrogen, Magnesium
- High concentrations of certain ions, such as sodium, chloride, aluminum.
- Bonding potential of particles, aggregation, clay swelling and shrinking
- Healthy soil is essential for successful farming.

Biological:

- Presence of pathogens, fungi, bacteria, viruses, insects, nematodes
- Presence of hard-to-control weed species
- Measurable and increasing organic matter present in soil analyses
- Saprophytic soil activity

All these factors interact in an active, healthy soil. Disturbing any one or more of these factors can have a profound and long-lasting effect on other factors.

Production System Selection

For annual crops, intelligent crop rotation practices help prevent build-up of crop pathogens over time in production fields and introduce restorative elements that mitigate or repair damage or exploitation of the soil's physical, chemical or biological properties.

Use of machinery and equipment can greatly enhance the production system by improving efficiency and uniformity of key practices, including:

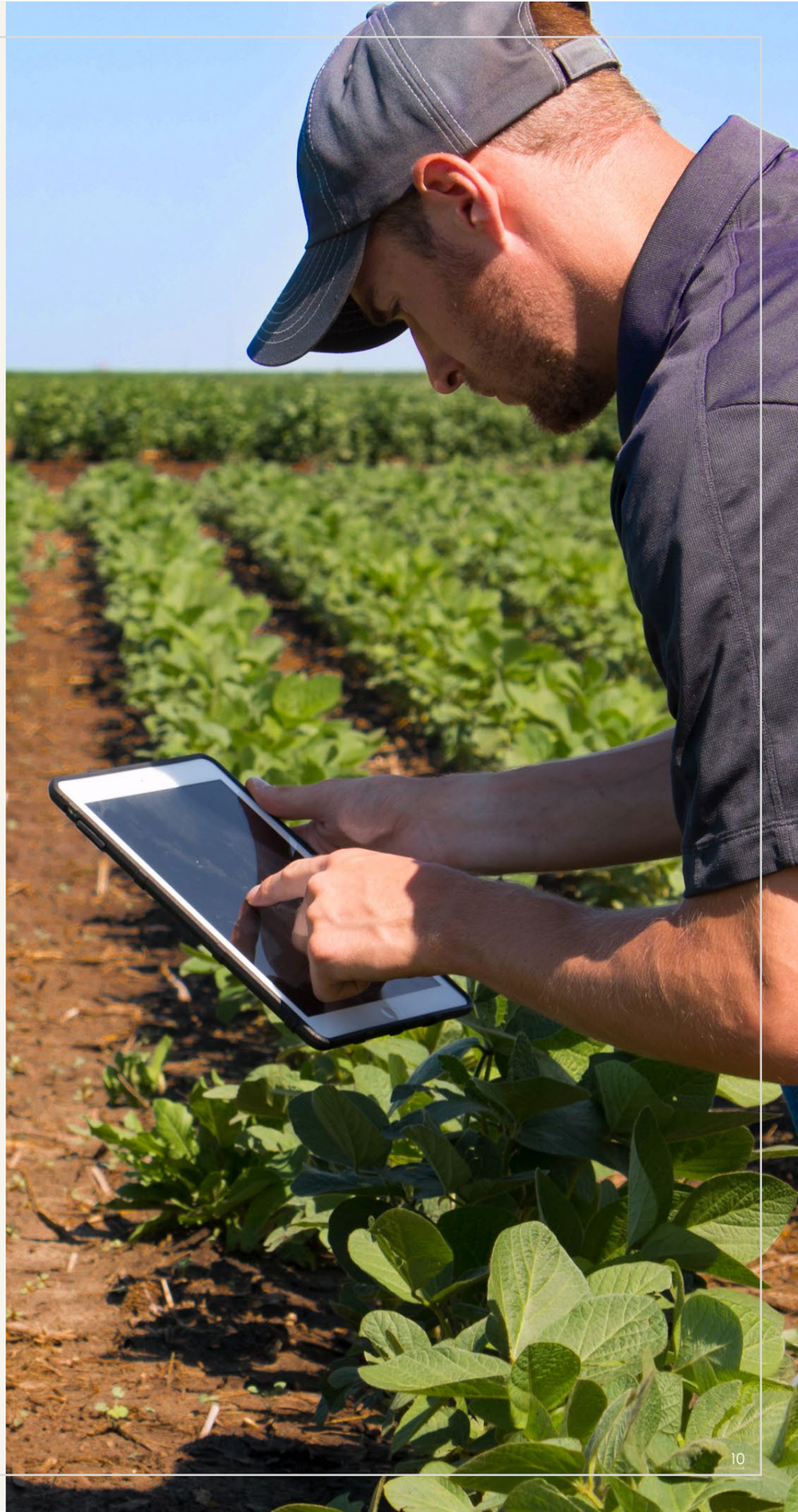
- Cultivation
- Irrigation
- Crop protection inputs
- Fertility inputs
- Crop establishment
- Harvest

Soil Erosion

Soil erosion caused by high winds or water occurs when moving water from either irrigation, rainfall, or drainage water contacts exposed soil or soil lacking structure. There can be a high risk of soil erosion even with slopes of 4% and less.

Soil erosion is dependent on:

- Soil texture, composition and aggregation
- Slope percent and length
- Rainfall
- Irrigation practices
- Vegetative cover and shelter
- Management factors, e.g., condition of the field after harvest



Soil Erosion *(cont.)*

The level of water-caused soil erosion can be minimized via several control measures.

Possible control measures include:

- Proper leveling using a laser guided system and a land plane create a controlled slope in relation to water flow
- Establishing contour drains to collect and divert water to an appropriate drainage area
- Utilizing natural contour lines
- Establishing grassed waterways to control runoff water
- Establishing cover crops and under sown crops e.g., orchards
- Zero and minimum tillage practice.
- Building up good soil structure with increased organic matter, aggregation and good pore space [1].

The level of wind-caused soil erosion can be minimized via several control measures.

Possible control measures include:

- Establishing permanent wind breaks of trees and bushes
- Establishing annual wind breaks of crops such as corn or sunflowers
- Establishing cover crops to protect the land during fallow and intercrop periods
- Zero and minimum tillage practices
- Building up good soil structure with increased organic matter, aggregation and good pore space

Soil Structure

Soil structure is an important factor in maintaining soil health.

A well-structured soil has stable soil contains:

- Particles between .002 to 2 mm in size
- Pores of different sizes to allow capillary movement of water
- Fast percolation into lower layers channels
- Good gaseous diffusion between the atmosphere and the soil

Building Healthy Soil

Soil structure also enhances the movement of water vapor within the soil. This allows water to drain freely, providing good aeration and stimulating healthy root growth. It is important to improve soil organic matter levels to maintain or improve soil structure and improve water- and air-holding capacity. Organic matter is also required to maintain beneficial soil organisms, including vast numbers of beneficial micro-organisms, (fungi, bacteria, actinomycetes), earthworms, and many types of arthropods. These organisms in turn also improve soil nutrition, bind soil particles to improve structure and help control pests and diseases.

Soil Compaction

Practice good primary tillage to allow leaching of nitrates and salts where “hard pans” exist in the soil’s structure due to shallow tillage. “Hard pan” is the compaction of soil approximately 1 to 2 feet from the surface, which creates a barrier to the drainage of water to further depths. Emphasis should be placed on the removal of nitrates through the usage of grasses or other plants to absorb the Nitrates from the soil. Secondary tillage operations should be minimized if possible, as appropriately maintained tillage implements should only be used. To limit the impact of this cultivation on soil structure, tillage should only occur under suitable soil moisture and soil conditions. If soil moisture is too great, compaction of the soil may occur. Ideal soil moisture is dependent upon the soil type and texture.

Heavy machinery or traffic can also cause soil compaction and poor soil structure. To limit compaction, traffic should be controlled and minimized, being permitted only in certain furrows during necessary field operations. All other traffic in the field should be restricted to the headlands. In many regions, poor soil management with repeated and random use of tractor tires and tillage implements over time has led to a very hard and impermeable plow pan with very little pore space. This hard-compacted layer is very detrimental to root growth and soil drainage and leeching of solutes. This plow pan must be fractured to allow proper drainage and aeration of the root zone. When roots are again encouraged to penetrate this layer, the soil can slowly recover its structure and fertility, if it is not compressed again. Annually increasing soil pH is a good indicator of a plow pan that is damaging the soil and needs fracturing.

Works Cited

[1] Mann, Liz; Rivara, Chuck; and McCaa, Pat, 2007, p.3

Tillage

Soil cultivation also impacts soil structure. Most tillage for processing tomatoes occurs prior to planting to ensure good seedbed preparation and crop establishment. As this tillage can result in the loss of organic matter from the soil, excessive primary tillage should be reduced. Tillage may be reduced in processing tomato production systems using permanent beds with appropriate precision tools to minimize disturbed soil volume. The addition of offseason cover crops in these systems is recommended.

Soil Salinity

Soil salinity refers to the presence of soluble salts, which may occur naturally or because of the use of saline irrigation water or excess amounts of mineral fertilizers. A high level of soluble salts in the soil may impact crop productivity by limiting water uptake and growth. Salinity also reduces the biodiversity of native plants, organisms and animals. It is also linked to soil degradation and deterioration of water quality. To implement appropriate management practices. It is important to under- stand the cause of the salinity [1].

Soils can naturally be either acidic or alkaline. Growers should be aware of their soil pH as this impact's nutrient availability and plant growth. Most plants grow best within the pH range from 5.5 to 7 (slightly acid to neutral). Tomatoes are tolerant of mildly alkaline conditions and grow well in soil up to pH 7.8. The soil pH may also be altered through irrigation, application of fertilizer, and crop management practices. The prolonged use of some fertilizers can cause acidification of soil; some greater than others. It is important that growers monitor soil pH changes over time and adjust management practices accordingly.

Sodic soils are those that contain sodium bound onto clay particles, which make up more than 15% of the total cation exchange capacity of the soil. In soils with such high concentrations of the sodium ion, clay particles cannot bind with other clay particles as they would normally. Therefore, when the clay becomes moist, the clay particles separate, disperse and the clay swells; filling most of the pore spaces. The result is that the soil has an unstable structure and fills the pore space when it is wet, providing a poor environment for root growth. Following irrigation or rain the pores in sodic soils almost disappear, thus impeding water and air through the soil. Because the clay particles disperse, and water percolation is impeded, heavy rain on sodic soils will result in water run-off, carrying with it dispersed clay particles, which can cause sedimentation problems. Any remaining water on the surface holding dispersed clay particles will form a hard crust that damages small plants. Sodium concentration is not the only factor behind this problem, but it is a key factor that can be controlled to carry out sustained irrigated farming [2].

Plastic mulch has been used since the 1950s to improve soil temperatures, retain soil moisture and reduce the need for weeding. The downside is that plastic mulch may have negative effects on soil structure if it becomes incorporated into soils. Once incorporated, plastic mulch hinders normal root growth and water penetration. It also takes hundreds of years to degrade when it is not exposed to sunlight. The mulch can increase run-off rates and downstream flooding while transferring PPC residues into water sources.

Given the importance for our soil, is important to secure high quality supply of fertilizer from a trustworthy source.

Soil Nutrition

Growers must have a soil management plan that includes:

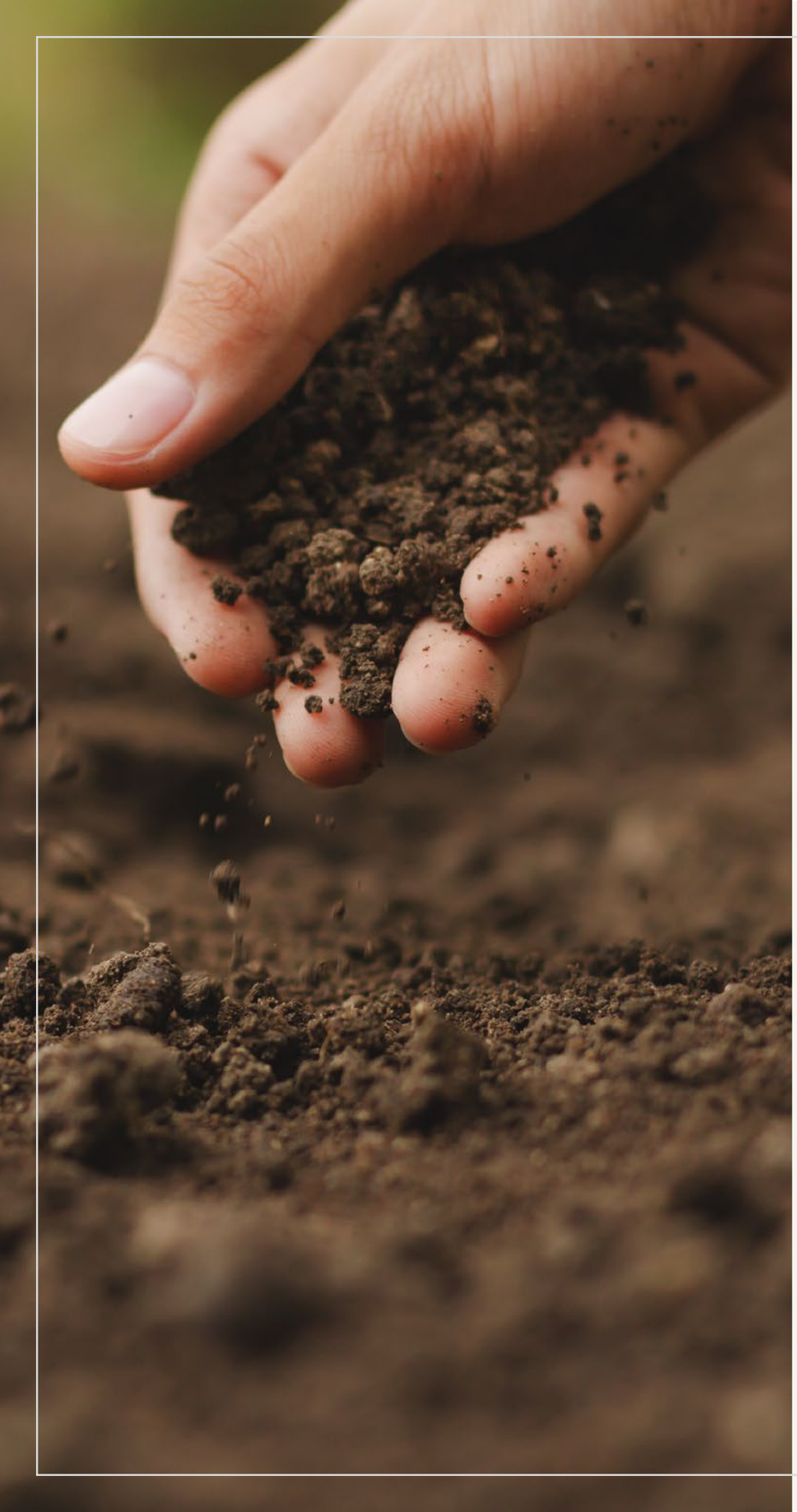
- Annual soil sampling
- Soil organic matter measured and compared over time (3-year minimum)
- Soil pH and EC data compared over time (3-year minimum)

Knowledge and understanding of soil fertility are essential to managing nutrient application and achieving optimum production while reducing negative environmental impacts. If fertilizer is not applied correctly it may result in quality degradation of ground water and waterways, an increase in soil acidity, salinity and sodicity, contamination of soil and lost crop production.

Fertilizers should be carefully selected to minimize the accumulation of heavy metals in the soil. Soil pH also affects the growth and yield of a crop through influencing nutrient availability and plant uptake. Soil nutrients utilized by plants are generally taken up through the dissolved soil solution, although some nutrients like phosphorus may be only slightly soluble.

Works Cited

[2] Mann, Liz; Rivara, Chuck; and McCaa, Pat, 2007, p.4



Soil Health & Nutrient Management *(cont.)*

The pH of the soil affects the concentration of the dissolved nutrients and may also result in some nutrients being present in toxic concentrations, which in turn may affect the uptake of other nutrients. The pH range for the most readily available nutrients is around pH 5.5 to 7. An excessive supply of fertilizer or an incorrect blend may cause lost production through plant nutrient toxicity or induced deficiencies through nutrient imbalances. For example, high soil potassium levels may reduce the plant uptake of calcium. Organic fertilizers from cover crops, composts and animal manures may also be used to supply nutrients to processing tomato crops. These also add organic matter to the soil that gradually release nutrients for plant uptake as they breakdown. They may also help to reduce the loss of nutrients to the environment.

Fertilizers may be lost to plant uptake through several methods:

- Leaching past the plant root zone
- Volatilization into the atmosphere
- Dissolving in surface run-off water
- Precipitation in insoluble forms
- Inaccurate application

Lost fertilizers may cause a negative impact on the environment, on and off the farm. For example, nitrogen is easily dissolved in water and leached through the soil, lost in runoff water or volatilized into the atmosphere. Another example is phosphorus which can dissolve in water and cause water quality concerns.

An estimate of nutrient uptake in the vine and fruit of processing tomatoes for a 50-ton/acre crop is detailed below:

	LBS/ACRE		
	VINE	FRUIT	TOTAL
N, NITROGEN	85	125	**210**
P, PHOSPHATE	20	34	**54**
K, POTASSIUM	100	260	**360**

Some farmers find it useful to perform tissue or sap analysis during the growth of the crop to enable adjustments of fertilizer applications. If tissue levels indicate adequate nutrition, future fertilizer applications may be reduced. If these tests are performed on a regular basis, nutrient uptake curves can be developed for a crop.

Good nutrient management involves soil sampling, nutrient budgets, plant tissue testing and correctly timing fertilizer applications to reduce the likelihood of adverse effects on the environment. Fields should be grid sampled and fertilizer applied at variable rates using calibrated application equipment. Records should be kept showing this has been done,

NOTE: When using organic manure, treated sludge water, and or industrial waste residue, pay close attention that it does now negatively impact soil nutrition. Avoid use of untreated sludge.

Works Cited

[3] *Mann, Liz; Rivara, Chuck; and McCaa, Pat, 2007, p.7 - 12*

Soil Health & Nutrient Management

Checklist ✓

No.	Questions
3.1	**BASELINE PRACTICE** *Has a soil management plan been developed that accounts for changing soil conditions and nutrient requirements?*
3.2	*Does the soil management plan include annual soil sampling, 3-year comparisons of soil pH, electro conductivity (EC) and organic matter, and record keeping of this data?*
3.3	*Are measures taken to avoid soil erosion and compaction?*
3.4	*Is all applicable machinery and equipment calibrated and maintained on a periodic basis to ensure proper and efficient functioning?*
3.5	*Are measures taken to enhance soil fertility and structure?*
3.6	*Is a nutrient management plan developed that takes into account soil sampling, application rates, nutrient budgets, etc., in order to optimize performance?*
3.7	*For fertilizer selection, are all factors taken into account with regards to type, quantity, application method, etc. to meet crop needs, while also minimize environmental impacts?*
3.8	*Are detailed application and storage records maintained for all organic and inorganic fertilizers in accordance with applicable regulations.*
3.9	*Are organic and inorganic fertilizers of a high quality and obtained from a trustworthy source?*
3.10	*Are fertilizers handled and stored in a safe way for humans and the environment?*
3.11	*Is the use of untreated sewage sludge prevented, and is the composition and application of organic manure and treated sludges, treated sludge water and /or industrial waste residues not harmful?*
3.12	*Is good crop rotation used, where applicable, to optimize soil health?*

4

Integrated Pest & Disease Management

KHC believes that controlling pests in the least harmful way is an important component of any sustainability program.

This is based on the idea that you can grow the crop but if you cant protect it until harvest if it can't deliver the value intended. By growing a strong and healthy root system and crop using the other practices in this manual you give the plant a resilient base which you can strengthen using a carefully designed pests and disease strategy - giving the plan only what it needs to prosper. When weed, pest and disease control interventions are necessary, KHC prefers:

- The use of biological controls
- Physical and mechanical control methods
- In the event chemical controls are necessary KHS REQUIRES:
- All applications be made by certified Plant Protection Chemical (PPC) applicator using all necessary and required safety precautions
- Full compliance with all regulatory standards including dosage, reentry period, preharvest interval among others
- Full detailed records of all chemical applications for each field and crop available upon request

PPC applicators must always follow regulated safety practices and wear all protective gear. All chemicals must be handled in a safe and documented fashion. Chemicals must be stored safely in locked storage units with containment systems that prevent leakage. It is important to ALWAYS use personal protective equipment and to always follow local regulations for chemical use and application. Heinz has a Global Approved list of chemicals for use on tomatoes and other lists of approved and banned chemicals for other crops. These lists must be reviewed and compared with local regulations to ensure that the chemicals are permitted for use in a given jurisdiction.

NOTE: For the contents of this section we encourage suppliers to use the Section 4 checklist as their implementation guide as it has been designed to mitigate key risk areas.

Integrated Pest & Disease Management

Checklist ✓

No.	Questions
4.1	**BASELINE PRACTICE** *Are plant protection chemicals used on the farm from trustworthy sources, officially registered and permitted in your country, and compliant Kraft-Heinz requirements?*
4.2	**BASELINE PRACTICE** *Are best practices are followed in relation to authorized rates of plant protection chemicals, appropriate preharvest intervals, re-entry period, according to label recommendations and plant protection chemical applicator guidance?*
4.3	**BASELINE PRACTICE** *Is appropriate personal protective equipment (PPE) provided for and used by all those who handle or are exposed to plant protection chemicals or fertilizers?*
4.4	**BASELINE PRACTICE** *When handling, mixing, and applying plant protection chemicals, are there precautionary measures in place to protect workers, neighboring communities and the environment?*
4.5	**BASELINE PRACTICE** *Are plant protection chemicals safely and securely stored, and organized in accordance with label requirements and best practices to minimize risk to humans and the environment?*
4.6	*Are detailed application and storage records maintained for plant protection chemicals, in accordance with applicable regulations?*
4.7	*Is all plant protection chemical machinery and equipment maintained and calibrated on a periodic basis to ensure proper functioning and to comply with any applicable regulations?*
4.8	*Has an integrated pest management (IPM) approach been implemented based on training, education, or advice from a qualified source?*
4.9	*Are plant protection chemicals applied only when necessary, and are alternative methods used where possible?*
4.10	*Are non-target areas and crops protected from plant protection chemicals use?*
4.11	*Are farms maintained in a clean condition to avoid sources of contamination and prevent the spread of disease and pathogen, as well as contamination of harvested produce?*

5

Water Management

Water is a critical component of all life and must be managed with conservative care and thoughtful usage. As a leading input in the Agriculture input process, KHC requires suppliers to take the following water management steps.

Growers must have a Water Management Plan that considers:

- Crop water needs throughout the development of the crop
- Moisture content of the soil (root zone) throughout the development of the crop
- Precipitation and irrigation inputs
- Losses such as evaporation, leaching, runoff
- The efficiency of the irrigation system – using methods, timing, and controlled volumes to avoid (or minimize) applying water which the crop cannot use
- Threats to sustainability of the water resource, especially where the resource is shared with other users – e.g., volume (demand exceeding supply), quality
- Legal requirements for irrigation water usage

Growers must take measurements relevant to the above and keep records to justify irrigation decisions and practices. In any successful crop production system, water management and proper, timely water availability are critical components to ensure success. Processing tomatoes require available water in enough quantities at various critical periods in the growth cycle. The availability and quality of the water are extremely important. Water must be managed in an efficient and proper way. Systems should be designed to eliminate water run- off as this can be damaging to the environment and is a sign of wasteful irrigation.

To achieve effective, efficient and sustainable water use the following need to be considered:

- Source: Surface or ground, volume and reliability
- Quality: Is the water of suitable quality for processing all crops; will the use of this water over time lead to build-up of cations and anions that will affect soil structure and fertility?

Water Management *(cont.)*

- Soil: Understanding soil water holding capacity
- Irrigation System: Pressurized versus flood/furrow irrigation, tradeoff between power consumption vs. cost and availability of water
- Irrigation Efficiency: Defines the proportion of water actually taken up and used by the crop
- Distribution Uniformity: This is the key for profitable mechanized processing tomato production. What is the cost to achieve 95% DU?

Drainage: Applied and storm water runoff. An irrigation system should deliver only the water crops need when it is needed and at the rate it is needed. An optimal water application system results in optimized water use efficiency with 95% Distribution Uniformity and minimizes the risk of pollution. An additional factor to consider when designing the irrigation system is the impact upon crop microclimate and pests and diseases.

KHC requires its suppliers' water use to adhere to all applicable regulations and laws.

Different irrigation system options include:

- Drip irrigation
- Sprinkler irrigation (via large overhead systems)
- Surface (flood or furrow) irrigation

Use an irrigation system that minimizes water loss and reduces excessive water use. Factors including crop rotation flexibility, soil nutrient cycling and salinity should also be considered when designing an irrigation system. Evaluate pressurized systems that enable more efficient and accurate irrigation, compared to surface flood or furrow irrigation systems. Consider drip rather than sprinkler irrigation to minimize evaporation of water applied to the crop and reduce negative impacts upon crop microclimate and pests and diseases. The system should be tested for water distribution uniformity, DU, and variations in flow and pressure. The irrigation system must be maintained to ensure efficient operation.

Develop a program to check, service and repair your irrigation system regularly:

- Ensure water is distributed uniformly
- Check for variation in flows and pressure.
- Check and repair cuts, blockages, and leaks
- The system may require regular flushing
- Check that sprinklers drippers, filters, and pumps are operating effectively.

It is important to apply the correct amount of water, when the crop needs it, and at the rate at which it can be absorbed by the soil:

- Apply water uniformly and only to the crop, not surrounding ground
- Apply water only so that it reaches the root zones of the crop
- Avoid over-watering because it can result in:
- Poor crop quality or reduced quality
- Waste of water and nutrients and other chemicals in runoff or seepage to groundwater
- Pollution of waterways and ground water from nutrients and other chemicals
- Rising of water tables, which can increase soil salinity
- Increased costs
- Increased root and foliar disease pressure

Schedule irrigation using objective, cost-effective monitoring methods, to supplement your experience, such as:

- Tools that measure the depth that irrigation water has reached in the soil profile or the force that a plant needs to apply to remove water from the soil, such as tension meters, soil probes and shovels
- Calibrate soil moisture monitoring equipment at least annually
- Regularly monitor and know the rooting depth of the crop
- Crop water requirements for crop growth stage are known
- Apply water to meet the evapotranspiration of the crop
- In arid growing regions, all runoff, tail, or surface water should be channeled into a holding pond for reuse, treatment and after certain Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD) and Multiple Residue Level (MRL) requirements have been met, released into the environment, either surface flows or deep-water re-charge
- Water released into the environment should always meet the local legal requirements
- Water should be monitored for pH, nutrient levels, electrical conductivity (EC) and suspended solids
- Waterways such as rivers, creeks and streams as well as their riparian areas should always be protected

NOTE: Buffer zones are an effective method to preventing erosion and pollution, while also creating space for wildlife to flourish. KHC expect all growers to employ these practices when possible.

Water Management

Checklist ✓

No.	Questions
5.1	**BASELINE PRACTICE** *Has a water management plan been developed to record, track, and optimize water use efficiency, quality, and availability, which also addresses waste water?*
5.2	*Are the water management plan and, all associated records, reviewed annually and updated as needed?*
5.3	*For irrigation systems, are all factors taken into account with respect to water source(s), soil type, etc. to optimize efficiency and minimize loss?*
5.4	*For irrigation systems, is irrigation water quality periodically analyzed and is water quality managed based on analysis of results?*
5.5	*For irrigation systems, is an optimized irrigation method/schedule used, and is all irrigation and monitoring equipment inspected and calibrated on an ongoing basis as needed?*
5.6	*Is water use in compliance with all applicable regulations including water extraction, food safety, water supply, and national legislation?*
5.7	*Are there practices in place to avoid pollution from waste water or from run off of chemicals, minerals and organic substances?*
5.8	*Are buffer zones established to control erosion, prevent pollution, create and protect wildlife?*

6

Energy & Waste Management

When assessing the carbon footprint of everyday food products, it is common for up to 80% of total emissions to originate in agricultural activities.

Climate change impacts all of us and as such it is of great important for KHC that our growers and suppliers work together to reduce the impact of the world's favorite foods and brands.

The producers/growers must perform an energy assessment to identify any areas where the use of non-renewable resources can be minimized, and renewable energy use can be maximized (e.g., organic fuels).

Growers must have an Energy Management Plan that considers the following elements:

- The farming system requirements for energy (including on-farm uses and off-farm energy requirements of relevance to the farming system – such as manufacture and transport of farm inputs
- Types of energy sources utilized
- The design of the farming system to maximize energy efficiency/optimization
- Replacement of non-renewable energy sources with renewable energy sources.
- Carbon Emissions and Climate Change

Sustainable agricultural plays an important role in adapting to and mitigating the impacts of climate change, because agriculture is:

- An important emitter of greenhouse gases
- The sector with the highest potential for the reduction of emissions
- The sector most affected by climate change, with the largest need for adaptation. KHC is committed to reducing greenhouse gas emissions and we expect growers to share our commitment.

Energy & Waste Management *(cont.)*

Although farming practices are generally very energy intensive, conserving energy intensive inputs such as Nitrogen fertilizer and tractor diesel can make a direct impact upon the bottom line without detracting from yield and quality.

The addition of GPS guiding systems to tractors can save up to 25% on diesel usage. By limiting overlap in land preparation practices, the GPS systems will save diesel while ensuring that the compaction footprint is minimized by having the tractor drive on the same section of soil with each pass. Combining GPS guided tractor utilized for pesticide application limits the number of passes through the field as well as reducing the risk of double dosing of agrochemicals.

Wherever possible, minimum or no till practices are STRONGLY encouraged to limit diesel use while developing higher levels of soil organic matter. Good soil structure through proper tillage will lead to fewer requirements for chemical fertilizer inputs, thus using less energy and creating beneficial soil strata. An additional benefit of using minimum or no-till practices is that it reduces the amount of diesel burn and associated carbon. Also, the carbon that is released when the soil is disturbed is greatly minimized, lowering the overall carbon footprint of the farming operation. The conversion of forests into agricultural land is a driver of climate change/biodiversity loss. KHC acknowledges the impact of land use change on the climate and avoids sourcing agricultural produce from recently converted forest lands.

All sites/farms must have a written Waste Management plan and map that show areas of risk and demonstrate how the risk of pollution will be addressed.

The areas that are to be addressed are listed below:

- Minimizing wastage and pollution is an important component of producing food sustainably.
- Producers and handlers should consider the negative impacts on the environment from the wastage and pollution they are responsible for.
- Regularly review practices and list all waste products and potential sources of pollutants.
- Waste products include categories such as empty packaging (for example PPC containers), used oil, paper and cardboard, materials previously used to produce crops/livestock such as irrigation components, posts, wire, building or shelter materials.

Potential pollutants would include:

- Excess fertilizer or PPCs that are carried off-farm in water or air
- Spillages of chemicals, fuel and oil
- Livestock effluent
- Noise, odor and light that can cause off-farm effects.

There should be a documented action plan setting out strategies to avoid or reduce wastage and pollution. Where wastage cannot be avoided altogether, there should be efforts to re-use, recycle and/or reduce. Waste materials should be separated into categories which need to be dealt with by alternative methods. Farmers should be aware of and observe local legal requirements for handling and disposing hazardous and non-hazardous waste. Waste material that cannot be reused or recycled should be collected and stored safely and appropriately in contained areas designated for each category of waste, then disposed of safely and responsibly using specialized waste handlers with legal approval to handle the category of waste. Litter deposited on farms should be collected, (e.g., plastic). Litter receptacles should be provided for workers to place their rubbish. Farms should be maintained in a clean and sanitary condition to reduce potential health and safety threats (e.g., vermin, disease, injury) and potential foreign material contamination of harvested produce. Consideration should be given to the soil-improvement opportunities of returning waste organic material to the land. Where pollution cannot be avoided, there should be efforts to minimize it. Measuring waste is a useful part of an action plan because comparing measurements over time can illustrate the success of improvement efforts.

Works Cited

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Energy Conservation & Management

Checklist ✓

No.	Questions
6.1	**BASELINE PRACTICE** *Has an energy assessment been completed for the farming operation(s) to quantify energy use based on energy sources (e.g., electricity, gas, fuel, etc.)?*
6.2	*Is there an energy management plan to identify opportunities for reduction in use of non-renewable energy sources and increased use of renewable energy sources to maximize energy use efficiency for the farming operation(s)?*
6.3	*Are all sources of greenhouse gas emissions identified for the farming operation(s) to support ongoing monitoring and opportunities for reduction in total GHG emissions?*
6.4	**BASELINE PRACTICE** *Is a waste management plan developed based on a review of waste streams and risk of pollution to identify opportunities for waste reduction and/or diversion, such as reducing or returning waste, recycling, reusing, etc.?*
6.5	*Are there practices in place to mitigate water or air pollution from both plant protection chemical and fertilizer spills, and livestock effluent, as well as off-farm disturbances from noise and odor?*
6.6	*Are there measures in place to reduce, reuse, and recycle waste to divert waste from landfills?*
6.7	*Are hazardous materials, such as used plant protection chemical and/or fertilizer containers, safely stored and disposed of to minimize the risk to humans and the environment, and are fuel containment and refueling sites designed and managed to be safe and secure to mitigate similar risks?*

7

Responsible Labor Practices, Ethical Conduct, and Occupational Health & Safety

At KHC, we are driven by our Vision “To Sustainably Grow by Delighting more Consumers Globally”. As a company, we do the right thing and take responsibility for contributing to improvements which protect our planet, drive responsible business practices, ensure legal compliance, meet food safety & quality requirements, and support communities where we live and work.

» Click here for the Kraft Heinz Supplier Guiding Principles

These Supplier Guiding Principles (this “Policy”) outline our requirements, standards, and expectations for all of our suppliers. This Policy is a global standard and is based upon industry best practices and internationally recognized standards.

It is the responsibility of each supplier to ensure its compliance with this Policy. Suppliers are required to manage their subcontractors and supply chains in a manner consistent with this Policy. Acceptance of these Principles and commitment to comply with the requirements contained herein is part of any supplier contractual arrangement or purchase order with Kraft Heinz. Particular supplier contracts may contain more specific provisions addressing some of these issues. Nothing in this Policy is meant to supersede any more specific provisions in any supplier contract.

The web-linked policy will remain the single source of official information as it relates to KHC Supplier Policy requirements. To support growers in translating these practices to an agricultural landscape the following checklist should be used to ensure expected practices are met.”

Responsible Labor Practices, Ethical Conduct, and Occupational Health & Safety

Pre-Checklist ✓

Please complete the pre-checklist below by confirming your understanding and compliance with The Kraft Heinz Company In Our Roots Program requirements and compliance with national, state, provincial, and/or local laws and regulations.

No.	✓	Item
1.	☐	*I confirm that to the best of my knowledge my operation complies with all national, state, provincial, and/or local laws and regulations that apply to farming operations.*
2.	☐	*I confirm that there is a mechanism to stay informed about any updates to all national, state and/or local laws and regulations that apply to farming operations.*
3.	☐	*I confirm that I am aware of Kraft Heinz Company's Supplier Guiding Principles.*
4.	☐	*I confirm safety and quality of all crops produced. If support to ensure the safety and quality of the product is needed, I will contact my processor to discuss how I can best access education and/or advice from a qualified advisor.*

Responsible Labor Practices, Ethical Conduct, and Occupational Health & Safety

Checklist ✓

No.	Questions
7.1	**BASELINE PRACTICE** *Is the employment of anyone under the legal working age prohibited in accordance with applicable law or relevant ILO Conventions, whichever is more restrictive?*
7.2	**BASELINE PRACTICE** *Are all minors of legal working who are employed, or are engaged in familial work, prohibited from carrying out hazardous work or any work that jeopardizes their physical, mental or moral well-being in accordance with applicable law and ILO Conventions?*
7.3	**BASELINE PRACTICE** *Do all minors of legal working age who work on the farm have access to education in accordance with applicable law and ILO Conventions?*
7.4	**BASELINE PRACTICE** *Is forced or bonded labor prohibited, and are efforts made to address and prevent any risk of human trafficking if recruiters are used, in accordance with applicable law and ILO Conventions?*
7.5	**BASELINE PRACTICE** *Do all workers receive equivalent pay for similar tasks and work, and are they treated equally with respect to training, recruitment and disciplinary procedures, regardless of their race, religion, disability, gender or sexual orientation?*
7.6	**BASELINE PRACTICE** *Are measures taken to prevent bribery, corruption, fraud and negative human rights impacts, in accordance with best practice and any applicable laws?*
7.7	**BASELINE PRACTICE** *Do all permanent, temporary and seasonal workers have the right to establish, join or participate in any legal association or union of their choice in accordance with applicable law and ILO Conventions?*
7.8	**BASELINE PRACTICE** *Is the effective functioning of labor organizations allowed, and are permanent, temporary and seasonal workers permitted the right to engage with workers' representatives without any opposition in accordance with applicable law and ILO Conventions?*
7.9	**BASELINE PRACTICE** *Where applicable, are any workers contracted through recruiters, farm labor contractors, or other agencies not charged recruitment fees or other costs associated with labor provision, in accordance with applicable law and ILO Conventions?*
7.10	**BASELINE PRACTICE** *Has farm management accounted for the workers' needs with regards to language, religion, sexual orientation, and cultural considerations to ensure the working environment is welcoming and free from discrimination, and any signage and work instructions are understood by all workers?*
7.11	*Has a confidential grievance mechanism been implemented for permanent, temporary and seasonal workers to report complaints, and allow any reported grievances to be investigated and appropriate action taken?*
7.12	**BASELINE PRACTICE** *Are wages, benefits, and deductions of permanent, temporary, and seasonal workers paid regularly and meet the minimum required by applicable law?*
7.13	*Are working hours and schedules set in accordance with applicable law or ILO conventions, whichever is more restrictive, and is overtime work voluntary?*

No.	Questions
7.14	*Do all workers receive paid vacation, parental leave, and sickness benefit, in accordance with applicable law or ILO Conventions, whichever is higher?*
7.15	**BASELINE PRACTICE** *Are all those who use or are in close proximity to hazardous materials (including plant protection chemicals, fuel, and other hazardous materials) provided instructions, training, and equipment to deal with accidents and spills?*
7.16	**BASELINE PRACTICE** *Are all workers who may be vulnerable or whose immune system may be compromised, not permitted to handle plant protection products (PPPs) or other hazardous materials?*
7.17	**BASELINE PRACTICE** *Have risks been identified and remedial actions implemented to safeguard the health and safety of all permanent, temporary and seasonal workers, contractors, visitors and the community?*
7.18	**BASELINE PRACTICE** *Are emergency contact details available and easily accessible at the farm to meet all reasonably foreseeable emergency medical situations?*
7.19	*Is regular Occupational Health and Safety training organized for all applicable workers?*
7.20	*Are adequate first aid supplies available and is there someone with first aid skills present on the farm?*
7.21	*Are injured or ill workers not allowed to continue performing activities that are detrimental to their health and safety or that of other workers?*
7.22	*Are all accidents reported and recorded, and is appropriate medical treatment received?*
7.23	*Are all applicable workers provided with adequate breaks and provision of potable water, shade, and sanitation during their shift, in accordance with applicable law or ILO Conventions, whichever is more restrictive?*
7.24	*Are measures adopted to promote personal hygiene and prevent diseases?*
7.25	**BASELINE PRACTICE** *Is access to water, sanitation and hygiene facilities ensured for all workers and their families, visitors and subcontractors on the farm?*
7.26	**BASELINE PRACTICE** *If workers reside on the farming operation or are provided temporary housing, are they and any family members living onsite provided access to appropriate cooking facilities, potable water, and clean, safe accommodation and sanitary facilities?*

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