

2. Harvest & Storage Basics

Protecting Crop Quality from Paddock to Processor

Part 1 – Introduction and Planning Before Harvest

Industrial hemp harvest is the point where crop quality is either preserved or lost. Months of careful planning and crop management can be undermined by poor harvest timing, delayed drying or unsuitable storage. Conversely, careful harvesting and handling protect yield, maintain quality and maximise the value of the finished product.

Industrial hemp may be harvested for seed, fibre or biomass, with each product requiring different harvest timing, handling and storage practices. Seed quality depends on maturity, cleanliness and moisture management. Fibre production focuses on stem quality and retting, while biomass requires clean harvesting and prompt drying or processing. Understanding the intended market before harvest allows growers to select the most appropriate harvesting strategy and meet processor/buyer specifications.

Harvest is also the beginning of the supply chain. Increasingly, processors expect products that are consistent, traceable and supplied to agreed quality standards. Good harvest management protects product quality while strengthening confidence in New Zealand-grown industrial hemp.

Planning Before Harvest

Successful harvest begins well before machinery enters the paddock. Crop maturity, weather forecasts, machinery availability, drying capacity, storage facilities and transport arrangements should all be confirmed before harvesting begins.

Commercial growers commonly work to an off-take agreement that specify moisture content, cleanliness, testing requirements and delivery standards. Home growers and participants in the NZHIA Seed Project should apply the same principles by understanding how harvested material will be dried, stored and used before cutting the crop.

Harvest timing should always reflect the intended end use of the crop. Harvesting too early reduces yield and seed quality, while delaying harvest increases the risk of seed shatter, bird damage, lodging and weather losses.

Harvest equipment should be serviced and cleaned before entering the crop. Hemp fibre can wrap around moving machinery, dry conditions and dust can cause fire risk. Minor modifications to the combine and using a slower RPM speed can all help the combine to harvest without fiber wrapping around moving parts.

Storage facilities should be clean, dry, well ventilated and protected from rain, rodents, birds and insects. Drying systems should be operational before harvesting begins, ensuring harvested material can be processed immediately.

Product	Harvest Priority	Storage Priority
Seed	Mature seed with minimal losses	Rapid drying and moisture control
Food-grade seed	Clean handling and traceability	Hygienic, cool, dry storage
Fibre	Stem quality and suitable retting	Dry, ventilated storage
Biomass	Clean harvesting and prompt drying	Protection from moisture and contamination

Harvesting Hemp Seed

Unlike cereal crops, hemp seed matures progressively from the bottom of the plant upwards. The optimum harvest window occurs when most seeds have reached maturity while minimising losses from shattering or weather damage.

Mature seed is firm and generally changes from green to grey or brown. Regular crop inspection during the final weeks before harvest allows growers to balance maximum yield with optimum quality.

Small-scale growers commonly harvest seed heads by hand before drying them in a clean, well-ventilated shed. Once dry, seed can be gently threshed, cleaned and prepared for storage. Commercial crops are generally harvested using conventional combines adjusted to minimise seed damage and harvesting losses.

Freshly harvested hemp seed commonly exceeds 20 percent moisture and remains biologically active after harvest. Respiration continues within the seed, generating heat that rapidly encourages mould growth and deterioration if moisture is not removed.

Drying should begin immediately after harvest and continue until moisture has been reduced to safe storage levels, typically around 5–8 percent, depending on processor requirements. Airflow is generally more important than excessive heat, particularly where seed is intended for planting or food production.

Food-grade seed requires higher standards of hygiene throughout harvesting, drying and storage. Clean equipment, careful handling and protection from contamination are essential to maintain quality and comply with processor specifications.

If you are commercially growing, packing, transporting or wholesaling crops, for the human food market, you must have at least an NP1 (National Program 1) food plan, registration with MPI.

Did You Know?

Bird activity often increases rapidly as hemp seed matures. Significant feeding by birds usually indicates you are probably too late to harvest your seed crop.

Drying and Storage

Correct drying and storage preserve the quality developed throughout the growing season. Poor moisture management remains the most common cause of post-harvest quality loss.

Seed should only enter long-term storage after reaching the required moisture content (7-9%^C). Storage facilities should remain cool, dry, clean and well ventilated, while protecting seed from rain, condensation, rodents, birds and insects.

Storage requires regular inspection. Monitoring temperature, moisture and pest activity allows problems to be identified before significant deterioration occurs. Maintaining labelled storage areas and accurate records also supports traceability and quality assurance.

Successful storage depends on controlling four key risks:

- Heat, which accelerates deterioration and reduces germination.
- Moisture, which promotes mould, spoilage and heating.
- Light, which gradually reduces quality during long-term storage.
- Pests, which contaminate stored products and reduce marketability.

Prompt drying, clean storage and regular monitoring preserve product quality and maximise storage life.

Harvesting Fibre and Biomass

Industrial hemp is a true whole-plant crop, with valuable products obtained from seed, fibre and biomass.

Fibre crops are harvested to preserve stem quality before being left in the paddock for retting. During retting, naturally occurring microorganisms break down the pectin's and lignin's, that bind the outer bast fibre to the inner woody core. Correct retting allows efficient fibre separation while maintaining fibre strength.

Following retting, stems are baled under dry conditions and stored until processing. Consistent moisture content and minimal contamination improve processing efficiency and finished product quality.

The long outer bast fibres are used in textiles, paper, composites, insulation and other industrial products. The inner hurd is widely used for hemp-lime construction materials, animal bedding, horticultural products and emerging bio-based manufacturing applications.

Leaves, flowers and other biomass also have potential value depending on market demand and current regulations. Regardless of the intended market, biomass should be harvested cleanly, protected from contamination and dried or processed promptly to minimise quality losses.

If you are considering extraction from leaf and flower (biomass) you must be selling into the medicinal cannabis scheme, and need to be aware of their specifications

Maximising utilisation of seed, fibre and biomass supports more efficient production systems and contributes to the development of New Zealand's circular bioeconomy.

Quality Assurance and Buyer Specifications

Quality assurance extends beyond harvest. Drying, storage, transport and delivery all influence the product received by the processor.

Increasingly, buyers expect products that meet agreed specifications for moisture, cleanliness, maturity and traceability. Accurate production records support quality assurance, demonstrate professional crop management and improve confidence throughout the supply chain.

Testing is often used to provide proof and the cost and need for different testing needs to be considered and budgeted for. Good record keeping helps and often includes cultivar, seed source, paddock identification, harvest date, drying method, storage location and buyer information. These records assist future crop management while supporting traceability and market access.

Harvest Checklist

Before harvest is considered complete, confirm that:

- Harvest occurred at the correct stage of maturity.
- Seed has been dried to safe storage moisture.
- Fibre has been retted, baled and stored correctly.
- Biomass has been handled cleanly and protected from contamination.
- Storage facilities are clean, dry and pest free.
- Harvest and storage records have been completed.
- Buyer specifications have been met before delivery.

Four Keys to Successful Harvest

- Harvest at optimum maturity.
 - Remove moisture promptly.
 - Store products under clean, dry conditions.
 - Maintain accurate records from paddock to processor.
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Consumers increasingly want to know more about the products they are buying, have a great provenance story is important for your buyer, and well-kept records help provide this transparency and traceability

Industry Responsibilities

Every participant contributes to protecting the integrity and reputation of New Zealand's industrial hemp industry.

Compliance extends beyond holding a licence. It includes following good agricultural practices, maintaining product quality, protecting neighbouring crops where appropriate and contributing to a professional, trusted and sustainable industry.

Growers establish the foundation of the value chain by selecting suitable cultivars, maintaining crop records, complying with licence conditions and implementing sound crop management practices.

Processors convert harvested crops into marketable products through quality management, traceability and compliance with relevant food, manufacturing and industrial standards.

Manufacturers create value by producing foods, fibre products, construction materials, textiles, biomaterials and other innovative products while maintaining systems that build confidence in New Zealand-grown industrial hemp.

Working together, growers, processors, manufacturers and researchers strengthen an industry built on quality, innovation, integrity and continuous improvement.

Important Reminder

Industrial hemp cultivation remains the responsibility of the grower.

Growers are responsible for:

- complying with all applicable legislation and licence conditions
- maintaining THC compliance where required
- implementing appropriate crop management practices
- meeting processor and market specifications
- maintaining accurate production records.

NZHIA publications provide general educational information and do not constitute legal, regulatory, agronomic, food safety, medicinal cannabis or commercial advice.

Continue Your Learning

The remaining publications in the [NZHIA Knowledge Series](#) build progressively on this introduction:

- **Publication 1 – Introduction to Growing Industrial Hemp:** Planning, site selection and crop establishment.
- **Publication 2 – Harvesting and Storage:** Maintaining crop quality after harvest.
- **Publication 3 – Seed Integrity, genetics and pollen management,** cross pollination risk
- **Publication 4 – Growing for Food Markets:** Producing high-quality food-grade hemp seed.
- **Publication 5 – Growing for Medicinal Supply:** Understanding regulated medicinal cannabis supply chains.

Together, these publications provide a practical guide for small scale growers, NZHIA Seed Project participants and anyone interested in understanding and contributing to New Zealand's industrial hemp industry.

Disclaimer

This publication has been prepared by the **New Zealand Hemp Industries Association (NZHIA)** as general educational information for home growers, participants in the NZHIA Seed Project and members of New Zealand's industrial hemp industry.

The information is intended to support good harvesting, drying and storage practices but should not be relied upon as legal, regulatory, agronomic, food safety, medicinal cannabis or commercial advice. Requirements vary according to the intended end use of the crop, applicable legislation and individual processor specifications.

Growers remain responsible for complying with all relevant legislation, licence conditions and contractual obligations. Readers should consult the Ministry for Primary Industries (MPI), the Ministry of Health and other relevant authorities for current regulatory guidance.

NZHIA encourages all participants to contribute to a professional, innovative and trusted industrial hemp industry that delivers lasting economic, environmental, health and social benefits for Aotearoa New Zealand.
