



**Guidelines and Good Use Practices
for the Use of Seed Applied Products
and of Treated Seed**
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Prepared by the
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Guidelines and their purpose

The commitment of the entire supply chain is crucial in providing high quality treated seed while ensuring its safe use.

The following guidelines have been developed to encourage good use practices by all stakeholders in the seed treatment industry. Detailed in the guidelines are good practices each stakeholder should promote as a responsible member of the supply chain.

These guidelines are not intended to serve as a legal reference. They are not binding on ISF members. Local and national regulations take precedent and must be complied with.

Disclaimer

This document has been developed based on the current technical state of the art. It does not discharge anybody from the responsibility to check and respect the regulatory framework of the countries where treated seed is produced, sold and used. Procedures recommended in these guidelines may differ from those specified by national regulations.

ISF cannot be held liable for any possible claims associated with the application of these guidelines

Guidelines for supply chain members

1. Role of the supplier

Suppliers develop, formulate, and register seed treatment products that meet regulatory requirements (when required) for commercial sales. Registration of a product will be specific as to the crop species, a defined geography or country/territory, and an approved seed application rate. Suppliers are also obligated to develop products which are environmentally sustainable for their intended use, crop safe, and generally seed safe including for carry-over seed. They must develop all safety and usage instructions such as Material Safety Data Sheets (MSDS) and proper instructions for use. To ensure best practices and provide guidance for the safe and qualitative use of the product suppliers should provide training and/or other knowledge transfer activities.

Examples of such guidance, while not exhaustive, should cover the following aspects. The supplier should ensure that:

- information on the compatibility with other seed treatment products is provided
- implementation of a broad registration strategy is pursued using a common brand name, formulation, and application rate for each targeted seed species to facilitate the unrestricted movement of treated seed across borders
- when the product is applied to seed it does not materially worsen seed flow characteristics in factory processes or planting equipment
- best practice information is supplied to the applicator; for example to improve the accuracy of application, troubleshooting, and the minimization of dust generation
- all information pertaining to the product use, waste disposal, safety in handling and use is provided in the MSDS or in a separate document at point of sale
- information is provided to the applicator identifying the geographies where the product is registered (if required) as well as timely notification in the case of expiration of a product registration
- supplier works with the applicator in a timely manner to resolve any issues with product or product performance

2. Role of the applicator

Professional applicators apply Seed Treatment Products to seed using proven recipes and the proper equipment. The “quality” of the treated seed is determined by the quality of the seed treatment products applied, the initial quality of the seed lot, the equipment used, and the skill/expertise of the applicator. The applicator may be an employee of a seed company or may be an independent services provider.

The applicator is responsible for the safe use of the products as they are applied to seed and for the quality of the seed after their application. The applicator is also responsible for adherence to the supplier’s label for use of the product, the MSDS, and any other information supplied pertaining to the products being applied.

The applicator should ensure that:

- the treatment facilities comply with local environmental and health and safety standards (EH&S) and that staff are trained and if required certified for the work they perform
- co-applications of the product with other products are biologically and physically compatible, if the information is not provided by the supplier
- all label requirements, MSDS precautions, and supplier instructions are adhered to
- all product usage is duly recorded
- the initial seed quality is sufficient to meet final market standards after the application of the product
- the targeted application rate is within the label rate for the crop in the destination territory; coloring of treated seed must also meet destination local standards
- application accuracy of the product is validated through sampling and testing; dust off testing of treated seed should be based on industry or governmental standards
- proper storage is available for the treated seed; special conditions may be required for seed treated with sensitive/live biological products
- unused seed treatment products, packaging, out of specification treated seed or obsolete treated seed wastes are recorded and disposed of in an approved manner according to local regulations¹
- treated seed packaging, labelling, documentation and transport comply with all local regulations as well as those of the territory of destination
- statutory regulatory phrases and advice on storage, use and disposal of waste are present on all packages and written in the language of the destination territory; in certain instances, pictorials may be useful
- timely reporting of any issues with the product or product performance to the supplier to determine a resolution is made

2.1. Guidelines for application technology

Appropriate application equipment is needed to reliably achieve accurate, uniform and safe application of seed treatment products. Standard Operating Procedures should be in place, written in version-controlled documents, and regularly updated².

Companies should have and record post processing Standard Operating Procedures pertaining to recycling and waste management to minimize the impact on hygiene and the environment.

Operators of the treatment equipment should be trained and refreshed on training at regular interval and hold certificates of competency issued by an approved official body if legally required. Voluntary training programs are advised where regulations do not require them.

Process stabilization controls, which include in-process automation of product recipes, auto-sampling of representative control samples, are highly desirable. It is recommended

¹ ISF has produced a separate guidance document *Guidelines for the Disposal of Seed Treated with Plant Protection Products*

² ISF has produced a separate guidance document *Seed Treatment Operator Safety Guidelines*

establishing a functional laboratory facility or access to an external supplier for these services, for seed quality testing, abrasion dust testing, survival of biologicals and seed treatment product application recovery analysis as part of a Quality Management system.

2.2. Guidelines for treating seed

As per the Standard Operating Procedures a work order for each individual process order should be generated stating the volume or weight of seeds, the weight or volume of product and the recipe to be used. The applicator must understand each order before treating the seed.

The seed should be cleaned to remove all dust and other debris before treating.

The product should be applied at rates covered by the registration of the products for the territory of destination. Application should be done using tested and stabilized recipes, thereby assuring best possible product efficacy, uniform application and avoidance of phytotoxicity and dust after treatment (to be measured by recognized dust test meeting the industry or governmental standards).

Seed germination levels must meet regulatory and market specification in the destination country/territory. Allowable deviations of active ingredient loading taken from representative samples of treated seed lots (and retention of samples) should be defined between the seed applicator, the supplier of the product and official bodies (where necessary). Involved parties should achieve agreed standards, which may differ depending on crop species, target pest, active ingredient, and territories of destination.

2.3. Guidelines for packaging, labelling and distribution of treated seed

Suitable materials and labels for the packaging of treated seed should be used. In some geographies tamperproof sealing mechanism may be required. Packaging should be sufficiently robust to withstand the distribution, transport, and storage of treated seed.

Labelling must meet all official regulations including detailed user instructions, warnings, risk mitigation measures and restrictions. When the treated seed is planned for export the labels *should be in the language of the country of destination* but also may need to be multilingual depending on the country of origin requirements. Pictograms, in addition to written text, may be useful³.

3. Role of the seed seller and distributor

The responsibilities of the seed marketing companies (whether they are direct sellers or distributors) are to ensure that:

- safe storage for treated seed is available prior to selling and distribution of treated seed sold to customers
- proper storage conditions are maintained to maximize treated seed shelf life while actively managing seed stocks supplies to avoid inventory obsolescence and/or minimize treated seed returned post planting
- all local environmental and health and safety standards (EH&S) throughout the

³ ISF has produced a separate guidance document *Guidelines on Labelling Treated Seed*

distribution channel are adhered to

- the seed treatment product applied is registered (where required) on the crop in the destination territory
- instructions for safe and proper seed storage are provided where seed may be carried over by the farmer or grower
- customer sales are recorded including seed lot identifiers for performance issues, possible recalls, or other traceability needs
- reputable transportation companies are used to move seed and ensure the treated seed is packaged appropriately for the type and duration of transportation required
- farmers or growers are made fully aware of all regulations, label requirements, and company guidelines regarding planting of treated seed in a safe and environmentally friendly manner
- when sellers and/or distributors collect treated seed returns from growers/producers, they must determine that such stocks still meet quality standards before releasing the seed back to the market
- any issues with product or product performance are timely reported to the supplier to determine a resolution

4. Role of the farmer or grower

The farmer or grower is accountable for the safe on-farm storage, handling, planting and waste disposal management related to the treated seed. He is also responsible that custom operators performing duties on his behalf adhere to these guidelines.

Farmers and growers should ensure that:

- on-farm seed storage, seed handling, and field planting is completed in accordance with the directions for use; correct drilling and planting practices should be achieved, including accurate planting rates per hectare, ensuring that the seed furrow is adequately covered leaving no seed above ground. Planting equipment should be calibrated prior to field operations (for example testing it on a hard surface on farm, or at the equipment dealer or service facility)
- dust abrasion of the treated seed during filling of the planter boxes and during planting is minimized by safe and proper handling of seed bags and regular maintenance and proper operation of planting equipment; when using pneumatic or vacuum planter technologies, it is important that the planter air exhaust is directed toward the ground to minimize dust drift.
- all remnant seed is collected and bagged for future use in a suitable and sealed container; storage of remnant seed should be done according to seller instructions
- any field spillages of treated seed on the soil surface are collected or buried
- seed packages are completely emptied of seed; any unusable seed should be disposed of in an approved manner

Detailed written records of field operations including field location, crop and treatment, planting information (equipment, field conditions, date), cultivation records, etc. are recommended.

Glossary of terms

Plant Protection Products (PPP)	Formulated products containing active ingredients requiring regulatory approval
Seed Applied Products	PPP, film coating products, biologicals, basic substances, colorants, polymers, etc.
Supplier	Manufacturer or its agent of Seed Applied Products
Applicator	Any facility or individual involved in applying products to seed
Other service provider	External laboratories; certification and official bodies, planting contractor, etc.
Seed sellers/distributors	Any legally established business approved and involved in the selling of commercial seed
Territory	Any physical territory, country, region where the treated seed is to be sold and planted
TKW	Thousand Kernels Weight: the weight of 1,000 seeds of the crop, measured in grams

Good practice

The following links lead to documents demonstrating good examples of implementation

3.1. The Guide to Seed Treatment Stewardship – USA and Canada

<http://seed-treatment-guide.com/guide/>

3.2. ESTA European Seed Treatment Assurance

<http://www.euroseeds.org/esta-1>

3.3. Multi-lingual seed bag label Europe

http://www.euroseeds.org/ESA_11.0544.pdf

Good Use Practices

Action	Best Practice	How to avoid problems
Selection of the Seed Applied Product	Selection should be based on biological efficacy and selectivity, worker safety and environmental impact. Other considerations would include a financial analysis and/or marketing study.	Do not guess at criteria, but request data from the supplier
Ordering the Seed Applied Product	Before ordering, check that the product has a registration for the planned use and rate of application where you intend to use and/or distribute the seed.	Do not order, use or distribute non registered or banned Seed Applied Products
Upon delivery of the Seed Applied Product	Check that the delivery is in line with your order, including commercial name, active ingredient, composition, registration number, label language, packaging type and size.	Do not delay the delivery-check as you might forgo your legal position for a claim
Storage & Handling	<p>Read the label carefully.</p> <p>Store the product according to national laws.</p> <p>Keep the product out of reach of children or unauthorized persons.</p> <p>Make sure the containers are undamaged. If leakage occurs, it should be quickly confined and collected.</p> <p>Do not store close to food or feedstuffs.</p>	<p>Do not store in outdoors or unlocked areas.</p> <p>Avoid any risk of leakage, contamination of public drains, rivers and lakes or other natural or fragile ecological areas.</p>
Use of the Seed Applied Product	<p>Make sure only qualified and trained personnel will apply the PPP product.</p> <p>Make sure these personnel understand and follow the product label and instructions.</p> <p>Make sure the machinery and operator protection systems are operable, reliable and calibrated with the PPP product.</p> <p>Make sure plant staff do not eat, drink or smoke during application and cleaning.</p> <p>Make sure applied rates are covered by the registration of the products for the territory of destination and appropriate application techniques are used.</p>	<p>Do not start application without workers' instructions, even with experienced workers.</p> <p>After use, do not leave your machinery without proper rinsing, cleaning, and maintenance.</p>
Co-application (tank -mixing) of Seed Applied Products	<p>Contact the suppliers for information.</p> <p>Always make your own test for application reliability in your own equipment.</p>	Avoid risks of unknown, untested combinations.
Unused product, rinsing water, etc.	<p>As a general rule do not recycle rinse water in the slurry preparation.</p> <p>Destroy or dispose of waste according to National Regulations.</p>	Never pour unused product or rinse water into drains or rivers.
Packaging of the Seed Applied Product	<p>Organize collection of empty packages (together with the Seed Applied Product manufacturer).</p> <p>Returnable and/or reusable containers are preferable and should be returned after use.</p>	Do not give away empty containers for inappropriate uses, such as for rainfall collection, etc.
Labeling of treated seed	<p>Indicate on each seed container the active ingredient used and rates applied (if required by local regulations).</p> <p>State on each seed container: "do not feed treated seed to animals, game or humans". Also label each seed container any additional or required safe use instructions.</p>	Do not release a seed container from your store without the correct label.
Discarding treated seed that no longer meets the quality standards	<p>Organize the seed plant processes to minimize discard of treated seed.</p> <p>Discard treated seed in an environmentally approved way.</p> <p>Follow the local laws and/or contact your supplier of Seed Applied Products.</p>	<p>Do not "wash" seed.</p> <p>Do not feed treated seed to animals, game or humans.</p> <p>Do not sell treated seed to food, feed or other processing industries.</p>