

dry facts

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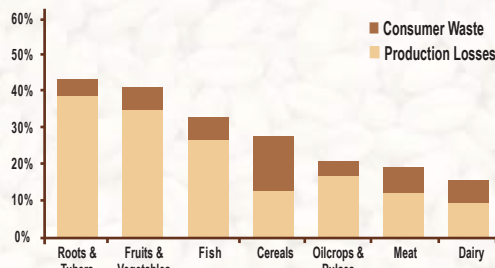
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Millions lost due to food loss



Food losses and Food waste (Share of total supply)



Source: Adapted from Gustavsson al (2011), FAO

Food losses occur mainly at every stage of food value chain. Majorly, the problem begins with seed, as healthy seeds are essential for healthy plantation. Thus, preservation of seeds are vital. One of the step in seed preservation is to store and dry seeds at recommended environmental conditions. This could help to reduce the amount of food loss. **In this newsletter, we are sharing the modern techniques to ensure proper seed drying and storage to reduce food loss.**



*In the world, every year approximately
1.3 BILLION TONNES FOOD PRODUCED
gets wasted



***FRUITS AND VEGETABLES**
along with
ROOTS AND TUBERS
has the highest wastage rate among the
various food categories



*Global quantitative food losses per year are
approx. **30%** for cereals, **40-50%** for root crops,
fruits and vegetables, **20%** for oil seeds,
35% for meat dairy & fish

*Key findings on food loss as described by Food and Organization of the United Nation (FAO).

Proud to be part of Chandrayaan 2

STOP PRESS!



We are proud to partner with Indian Space Research Organisation (ISRO) for dehumidification solutions in the mission-critical areas during assembly of Chandrayaan 2 spacecraft and launch vehicles.

Preserve for Future...

Meet and discuss with our
AIRGINEERS™
how to reduce the food losses

**30 AUGUST-
01 SEPTEMBER
2019**

India FOOD EX
Bengaluru International
Exhibition Centre
Bengaluru

**13-15
SEPTEMBER
2019**

ANUTEC
International
Food Tec
INDIA
Pragati Maidan, Delhi

**19-20-21
SEPTEMBER
2019**

**INDIAN
ICE
CREAM
EXPO**
Mahatma Mandir
Gandhinagar, Gujarat



Preserving seed for the future

Seed plays a pivotal role for human existence as it is an essential element of the food value chain. Thus, Seed Banks are developed, where seeds are preserved for sustainable future.

However, at seed bank the change in environmental conditions adversely affects the seed quality and its life. Seeds at seed bank should be stored in cool and dry conditions to survive longer because seeds stored at wet, warm environment survives for lesser duration.

Reducing Grains of moisture for seed viability

At seed banks, the relative humidity and temperature plays a crucial role in seed life. A small change in relative humidity leading to increased moisture content of seed, which has a large effect on the storage life of the seed, especially, on the vegetable and fruit seeds such as tomato, grape, mushrooms, pepper etc.

If the seed drying and storage conditions does not match with required level, the seed cannot survive for long due to fungi and mould attack.

Also, it may lose the overall quality like discolouration and loss of viability etc. Hence, seeds should be dried and stored in controlled environment

that make them survive for longer duration. Usually, the vegetable and fruit seeds are dried using a seed/tray dryer to maximize the seed life and profitability.



Dry in short time . . . store for long time . . .



Dehumidifiers

Remove moisture from seeds. Retain quality, prevent deterioration



It controls the air around the seeds so they cannot assimilate unwanted moisture that can reduce fungus growth and increase seed shelf life. The dehumidifier ensures protection of the seeds at any temperature without losing seed viability or germination potential.

Bry-Air Dehumidifier and seed/tray dryer

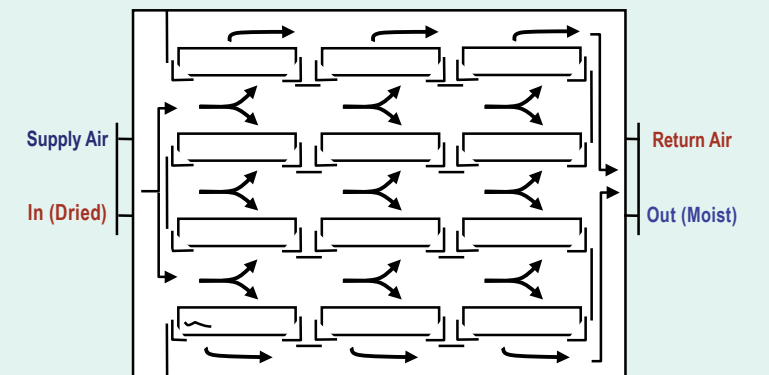
Benefits of low temperature dehumidification

- ☆ Uniform drying
- ☆ Avoid fungal growth
- ☆ Maintains germination potential
- ☆ Extends seed life, slow down seed ageing process
- ☆ Round the year production
- ☆ Reduce discolouration in seeds
- ☆ Keep insects at bay
- ☆ Improves working environment for warehousing staff

Defining the process

Bry-Air Tray Dryer consists of a chamber with shallow trays to load the seed and a desiccant dehumidifier, which continuously feeds dry air to the chamber. This unique air distribution pattern optimizes drying capacity and time. It usually reduce the moisture content down to 5-7% from maximum 12%-15%.

Tray Containing Seeds



Unique Features of Bry-Air Tray Dryer

- Built-in chamber- with perforated, SS trays for keeping the seeds for drying
- Incorporates dehumidifier with high performance, metal silicate fluted desiccant synthesized rotor, for continuously feeding dry air to the chamber
- CNC Fabricated
- Eco-friendly desiccant: non-toxic, bacteria static, non-corrosive
- Available in 4 standard models- capacity drying range from 90 kg. to 540 kg of seeds per 8 hours

Seed Storage References:

- Syngenta, Philippines
- Hefei Seed Company, China
- Food and Agriculture Organization Bangladesh
- Bayer Corp Science, Philippines
- Commodity Development Centre Negeri Sembilan, Malaysia
- Department of Horticulture, India

Seed Drying References:

- Department of Horticulture, India
- Directorate of Oil Seeds Research, India
- Bangladesh Agricultural Development Corp. Ltd., Bangladesh
- Associated Agricultural Development Foundation, India
- Central Research Institute of Jute and Allied Fibres, India
- and many more...

When *moisture* is Torture

In this column, we share our experience with you regularly in major application areas where usage of dehumidification is both extensive and essential.



Dehumidifier bridges the infrastructure gaps



We all acknowledge the world is becoming smaller due to the advances in technology and transport. Now, we can travel miles, cross the natural barriers like long rivers, mountains etc. in few minutes.

The travel time has reduced drastically. Thanks to the new roads and bridges constructed to reduce distance barriers.

These modern day bridges are made with a superstructure consisting of closed box sections backing the bridge deck.

The composite steel box girder bridges are commonly used. They generally constitute one or more U-girders attached to a concrete deck through shear connectors.

Since, the bridge girders which are located at industrial areas and water bodies are vulnerable as they are exposed to moisture and atmospheric pollutants like sulphur dioxide and nitrogen oxides. The exposure dictates the corrosion intensity and the challenges on the bridge deck.

The challenge

- Corrosion
- Reduced structural strength
- Reduced bearing and shear capacity
- Expensive repair by cutting corroded metal
- Traffic disruption

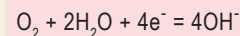
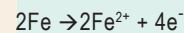
The girders, on which the tracks lay, need to be protected against this atmospheric corrosion.

The traditional method of anti-corrosion paint is expensive and demands heavy maintenance.

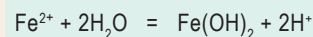
Yet, it is found to be not effective in the long run to prevent the corrosion.

Finding the cause

Since, iron is a major element in the bridge, and when it is exposed to the atmosphere, it will oxidise.



The hydrolysis of dissolving iron ions is further described by



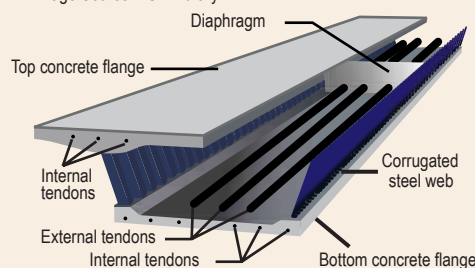
In the presence of oxygen ferrous hydroxide will form "haematite" ($\text{Fe}_2\text{O}_3 \cdot 3\text{H}_2\text{O}$) which is commonly known as rust.

The solution

When the moisture level is reduced to <40%, the corrosion rate in bridge girders will drop significantly. Dry air with < 40% RH level can be supplied through installing Bry-Air Dehumidifier.

Bry-Air Dehumidifier demands minimal maintenance and saves much time compared to personnel applying corrosion protection paint.

Image Source: ASE Library



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Enter Bry-Air... exit moisture