The Double Tray System

A new era in propagation

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Ensuring plant quality, cost effectiveness, 100% eco-friendly approach

One of the major problems today, in our fight against pollution, is the protection of the environment from the Expanded Polystyrene waste which is created in many industry sectors.

One of them is the Greenhouse vegetable seedlings propagation, where for more than 40 years, Expanded Polystyrene trays are used extensively, despite their damaging impact on the environment (only 1% is recycled globally, most of it is damped or burned).

For many years seedling producers did not have any other cost effective alternative than the traditional method.

The "Double Tray System" invention offers the solution for more economical, more productive and 100% ecological propagation.

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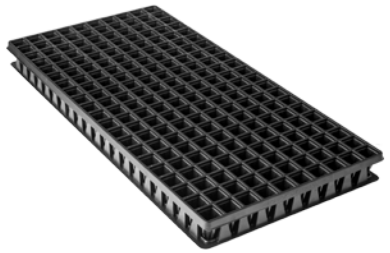
The invention



- The “Double Tray System” (DTS) is a **patented invention**, world patent number: **WO2014147250A1**, that refers to a plastic double tray system that works as one rigid object.
- It consists of one top plastic (ps) tray for sowing or transplanting and one bottom plastic (ps) tray for support.
- **DTS** is used in all kinds of seedlings (i.e. vegetables, forestry and flowers), offering better results than the EPS tray.
- The product’s smart engineering and design is the outcome of Ina Plastics’s close cooperation with skilled, experienced and successful growing companies worldwide. Thus, the DTS was quickly adopted by some of the most advanced companies of the field helping them increase their produce and at the same time provide their customers quicker with stronger, healthier, better developed plants.
- Firstly introduced in 2012, at the time, the product comes in 7 different popular configurations, in terms of size and cell count, with upcoming new ones planned for 2016.

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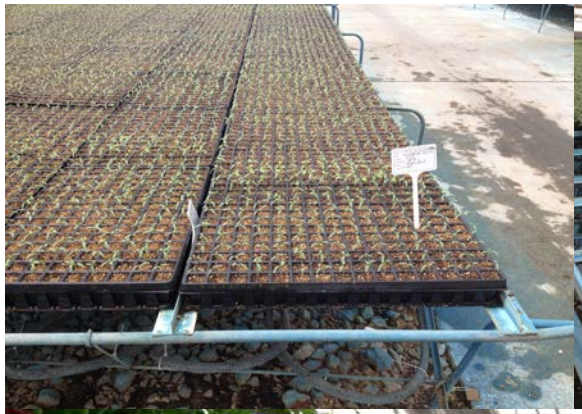
DTS on the field



Sowing the DTS

- The Double Tray System is designed to be easily adapted in the existing sowing line of the grower.
- There is no need for a new investment.
- In some cases the only thing required is a small adjustment.

Mechanical Sowing with CONIC PRO 300

www.youtube.com/InaPlastics

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Advantages in numbers

- **30% lower cost** from the traditional trays.
- **20% more plants** per square meter.
- **90% less storage space** required from the traditional trays.
- **Convenient and fast** separation of the planted tray from the base tray.
- **Does not damage the roots** of the plants.
- **The base tray** of the system can be used up to **eight times (2 years).**
- **Disinfection** of the base tray is **simple** and the most economical.
- Completely **ecological solution** as both trays are recyclable.

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Cultivating international co operations

- Since Ina's 'turn' to investments in the propagating sector, important milestones have been achieved.
- Ina Plastics is now proud to have partnered up with some of the most recognized young plant raising companies in the world and the Double Tray System played a key role.
- Ina's international partners among others:

Keithly-Wilhams Seeds

HISHTIL

GrowGroup

HortiConnect NL

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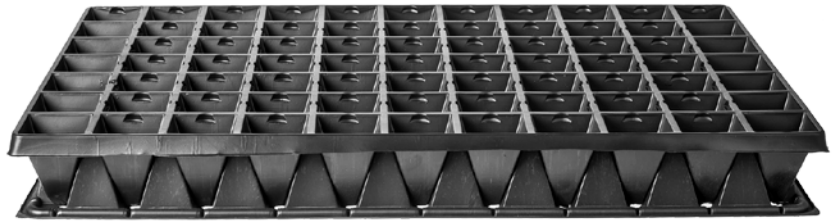
Available DTS configurations



Size (cm)	No. of Cells	Cell Dimension (mm)	Cell Volume (ml)	Items/Pallet	Pallet Size (cm)
52x32	40	52x54x65	90	2400	100x120x230
60x40	54	54x54x60	119	1650	100x120x230
60x40	77	48.4x48.4x67	80	1650	100x120x230
60x40	150	32.8x32.8x60	34	2400	100x120x230
60x40	228	24x25x55	19	1760	100x120x230
67x33	128	38x38x65	44	1665	100x120x230
67x33	210	27x28x56	24	1665	100x120x230

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Floating ability

- Nowadays, the interest in hydroponic cultivations is growing rapidly.
- By mid 2013 Ina's R&D department incorporated certain modifications on the design and the material of the base tray of the product, which **gave the "Double Tray System" its floating ability.**
- After a long research the floating characteristics of the DTS where significantly improved and the product gained the ability to carry **more than 7 kg of weight** on it while on water.
- Floating DTS was born.
- The first trials where carried out in hydroponic cultivations of tobacco and the results were very encouraging.

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Floating DTS vs. traditional tray

Visible difference in plant development

Double Tray System for tobacco

Size and quality in rooting system: the difference is obvious

Trials

- The trials were carried out by **SEKE S.A. (COOPERATIVE UNION OF THE TOBACCO GROWERS OF GREECE)**
- **SEKE SA** was founded in 1947 and is one of the most recognizable industries for tobacco processing worldwide.
- Located in the North of Greece, SEKE is the biggest and most experienced tobacco seedlings producer with its personnel being distinguished for its highly scientific and technical training.
- For this SEKE S.A. was the ideal partner for the evaluation of the floating Double Tray System.
- The variety of the tobacco seed used was NC196
- Date of sowing was the 20th of April 2014
- The DTS trays used were the 67X33 cm with 210 cell and 24 ml cell volume.

Trial timeline

May 15

May 28

Results

Trials revealed that :

- The floating DTS behaved perfectly on the water beds verifying its floating characteristics
- The plants showed premature growth vs. plants in the traditional tray.
- The roots were not damaged in any case.
- The extraction of the plants from the tray was very easy.
- The disinfection procedure for the DTS base tray, which will remain to the green house in order to be reused, is much quicker and simpler. A big number of trays can be dipped together (small volume) and the glossy finish of the tray make disinfection more effective.
- The top tray will leave with the plants for the field. After their use, they can be recycled. If the top trays will be treated with a relative care, and the grower chooses so, they can be returned to the green house to be disinfected and reused.

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Conclusion

- The *floating DTS* based on the “Double Tray System” invention will mark the new era in tobacco seedlings propagation.
- It is meeting all the demands of today:
  - **cost reduction**
  - **improvement of productivity**
  - **hygiene**
  - **reduction of carbon imprint.**
- The new innovative floating DTS is, maybe, the only case where the protection of the environment reduces the production cost of an industry.

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