

Future Vision

1993 ~ 2014

General seed production automation facilities



2015 ~ Future

Quality seedling production automation facilities



Open Paper pots laboratory

- Always welcome the visit of farming person, nursery grower, Government official, university official
- Operate permanent exhibition, promotion hall, consulting room etc.



Overseas affiliated companies



Facility horticulture robot specialized company



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Quality seedling Production automation facilities

AUTO SEEDING SYSTEM & GRAFTING ROBOT

Vegetables, onions, flowers, forest trees, specialty crops



Automatic Seeding System

“Quality raising of seedling lies in uniform raising of seedling.”

- Secure a high productivity of 400 sheets per hour(based on 128 holes)
- Precise seeding applying control apparatus of seed sowing
- Completely prepared a prevention function of clogging of seeding needle
- Fill up uniform bed soil of the method of pressing, tamping and cutting
- Installed equipment of controlling dust scattering of covering soil



01. Mixer of Medium / MX-1000L

- Use & features
It has the functions of uniformly mixing perlite, vermiculite etc on light medium, optimizing humidity of medium before seeding in parallel with irrigation during mixing and discharging automatically the mixing finished medium.
- Effect of use
As air permeability, water retention & uniformity are directly connected with uniform raising of seedling, it is recommended to go through mixer of medium before seeding.

02. Filler of Medium / FL-300W

- Use & features
It can contain all kinds of compounded medium in a tray. It can not only contain medium in the whole cells of tray evenly, but also cut as deeply as wanted.
- Effect of use
If containing medium manually, it can't avoid unevenness of the middle part and edge part. This is a disadvantage that can't be corrected during a raising of seedling period. 3-step functions of scattering widely on the tray and shaking by vibration in the bottom and sweeping the surface at the exit as deeply as wanted guarantee uniform filling.

03. Dibbler and seeder / SD-900W

- Use & features
If gauge of nozzle is changed, it can seed from the smallest tobacco to the biggest water melon in the various shapes and Dimensions widely. As it can produce 400 sheets(based on 128 holes) per hour continuously, it guarantees high productivity. It enables precise seeding to be made by suppressing the position movement by seed bouncing at the maximum in the close access method on medium of drop guide.
- Effect of use
If manpower does suppression for making seeding seat of cell-unit, the depth and shape are not so even that it is the cause of uneven seedling. What seeds fine seed by manpower is the inefficiency that can be beyond expression. Only this can start raising of seedling.

05. Irrigator / IR-900W

- Use & features
It implements fine irrigation work on the covered surface. It is necessary to irrigate enough in the range of covering soils not washing away. It is made with stainless material so that it can secure durability for the long-term use.
- Effect of use
As it is not possible to irrigate while inside germination room(72 hours), it is necessary to irrigate enough before being germinating room. As covering soils are specially light material, it can be washed away when irrigating.

04. Top dresser / CV-900W

- Use & features
The thickness of covering soil can be adjusted freely in the method of adjusting the gap of covering soil roller. It has a function of arranging the surface by sweeping the covered surface with a brush finely. It also has a collection function of reusing the excess covering soil swept away.
- Effect of use
If soil is covered by manpower, the thickness is not so even that germinating seed becomes different. When it is worked by manpower, the position of seed can be scattered. What can cover a certain thickness of soil is the prerequisite to uniform seedling.

06. Nonpowered conveyer / CV-2000

- Use & features
It is a waiting space before connecting a seeding tray being produced in a row to the next process. Its height, shape & length can be adjusted freely depending on condition of working place. It can be securely irrigated or quality-inspected while waiting.
- Effect of use
As the tray automatically rolls on the roller and comes to the place as wanted, it contributes to distribution automation. It is efficient as workers can do another work while certain quantities are waiting.

Description	Dimension (mm)			Weight (kg)	Required power (W)		Compressed air	Remarks	Use water
	L	W	H		1P	3P			
① MX-1000L	1,800	1,450	1,800	1,540		7,400			
② FL-300W	1,800	2,400	1,300	450	180	375	6kg/cm ²	vibrating	
③ SD-900W	1,400	790	920	150	40		6kg/cm ²		
④ CV-900W	900	790	1,300	150	80				
⑤ IR-900W	900	790	1,000	150	40				40l/hr
⑥ CV-2000	3,500	790	600~450	150					
⑦ Manifold	32	50	72	105	128	162	200	288	406
⑧ Aircompressor	Three-phase 5HP (Option)								

AUTO SEEDING SYSTEM

Smart Seeding System-500

- 2 times speed against the existing automatic seeding system/labor saving/clean-up system
- Developed as optimal model for specially raising onion seedling.

01. Tray Feeder TF-900

- A tray of packing 100 sheets is supplied, each sheet is divided at lower part.
- Automatically adjust supply speed, tray distance

03. Clean Conveyor CC-500

- Brushing the surface of medium filling
- Shake down excess medium of edge part
- Special technology of maintaining the shape of dibbling result

02. Smart Filler SF-500

- Expansion function of medium supply hopper 300ℓ (+ 500ℓ)
- Excess medium recovery function

04. Double Seeder DS-500

- Share seeding function of odd number row, even number row
- Only one seeder works, another seeder for spare purpose

06. Clean Top Dresser CD-500

- Function of preventing flying of covering soil, dust
- Safely recovery excess covering soils

05-1, 05-2. Seed Feeding Device SS-F15W

- Adjust supply speed in proportion to the speed of seeding line
- Raise precision by maintaining optimal waiting quantities of seeding tray



07. Clean Irrigator CI-500

- Function of preventing flying of excess irrigated water
- Maintain clean environment of collecting waste water

10. Air Compressor : 10HP

08. Tray Stacker TS-900

- Block 5 sheets tray of seeding completion(setting function)
- Form 1 block of 5 sheets, distribution margin

09. Finish Conveyor FC-500

- Distribution waiting space by block unit
- Final clean-up space for wastes

Required power (1P 220V , 3P 380V)Total: 8.4 kW

Description	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩
Smart system	Tray feeder	Smart filler	Clean conveyor	Double seeder	Seed Feeding Device	Clean top dresser	Clean irrigator	Tray stacker	Finish conveyor	Compressor
Required power	1P 40W	3P 555W	1P 105W	1P 40W	1P 30W	1P 65W	1P 40W	1P 40W	1P 40W	3P 7.4W
Compressor 10HP	○	○	○	○				○		



New Product 420 holes onion exclusive tray

Convenient Seeder

Model name : SD-1800W

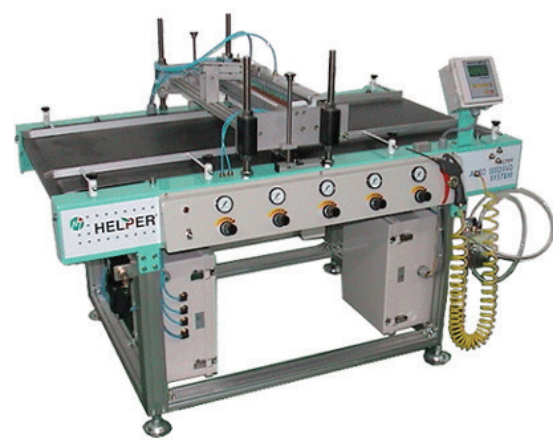


Dimension(mm)	L	1,800
	W	790
	H	1,300
Weight(kg)		200kg
Power(W)		1P 80
Compressed air		6kg/cm ²

- Dibbling + Seeding + Covering soil function
- Possible to connect & install water irrigator on the front side, on the rear side of medium filler in future.
- Manifold: Supply customer specified 1 piece set

Stepping Seeder

Model name: SD-1200S

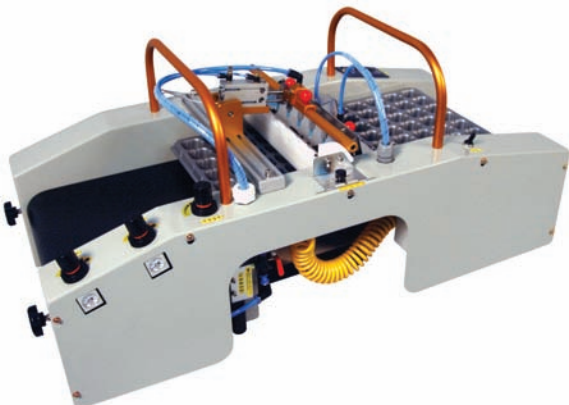


Dimension(mm)	L	1,400
	W	790
	H	920
Weight(kg)		150kg
Power(W)		1P 40
Compressed air		6kg/cm ²

- Secure private seeding by standstill seeding
- Function of seeding of multiple seeds in a cell
- Able to seed uniformly even on any kind of seeding plate
- Work by setting the distance between cells, not by optical sensor
- Stepping dibbler is separately made as a sister product.

Private Seeder

Model name: SD-600

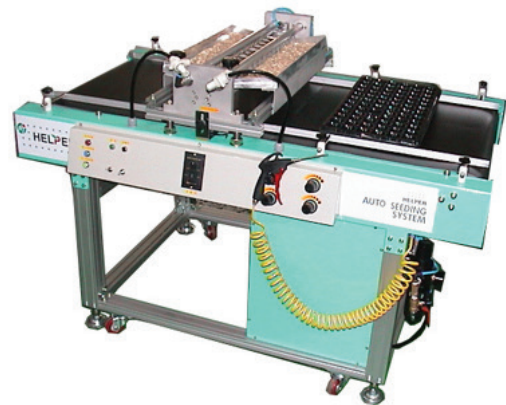


Dimension(mm)	L	920
	W	470
	H	380
Weight(kg)		30kg
Power(W)		1P 15
Compressed air		5kg/cm ²

- Private seeding by cooperative unit or farmhouse unit (lettuce, onion, flower etc)
- Easy to carry out moving tour work due to an ultra-light weight(30kg)
- Manifold: Supply customer-specified 1 piece set

Large Seed Seeder

Model name: SD-1212



Dimension(mm)	L	1,400
	W	790
	H	920
Weight(kg)		150kg
Power(W)		1P 40
Compressed air		6kg/cm ²

- Stock seeding for grafting preparation like pumpkin, gourd.
- Possible to install in the middle of the existing seeding system line
- Seeding of seed soaked is recommended after removing water.
- Seeding forest trees seed such as landscape plants, economic trees etc.



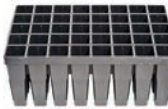

Medium Pressing Filler for Forest Nursery

Model name: PF-400



Production quantity		400Tray/hr
Dimension (mm)	L	2,500
	W	2,500
	H	1,300
Weight		900kg
Required power		990W
Compressed air		6kg/cm2
Manifolder		24L, 24H, 28, 40

Applicable forestry nursery tray

Description	24holes(L) tray	24holes(H) tray	28holes tray	40holes tray
Tray				
Use	Larch	acorn, honey oak	Cypress, Thuja	Pine tree, Korean nut pine
Cell spec.	6.4Φ×13cm(D)	6.0Φ×16cm(D)	5.7Φ×16cm(D)	4.75SQ×16cm(D)
Cell capacity	320mℓ	350mℓ	300mℓ	250mℓ
Total capacity	7.7ℓ	8.4ℓ	8.4ℓ	10ℓ

- Freely adjust the degree of compression (150%±α)
- Optional for 1 times compression or 2 times compression
- Automatically able to recovery excess medium.
- Production quantity 400Tray/hr

Pot Flower Mass Production System



- Able to fill mixed material such as polishing sand, yellow soil, medium etc
- Possible to adjust the depth of filler
- Repeated work of automatic supply-filler-collection

► Natural Soil Filler / FL-4000

Production quantity		400pot / hour
Dimension(mm)	L	3,700
	W	2,300
	H	1,800
Weight		1,800kg
Power(W)		3P 1,500 1P 310

Power transplanting robot system



FC-4000
Rigid Pot Feeder



FL-300W
Flat Filler



TP-900W
Transplanter
(Seed autotransplanting robot)

► Power transplanting robot system

System transplanting to rigid pot after seeding & cultivating flowers in the tray



Description	Pot feeder	Flat filler	Transplanter	Remarks
Specification	4,000 pot/hr	400 tray/hr	About 3,000 trees/hr	Based on 200 holes
Manpower criteria	1,000 pot/hr	100 tray/hr	250 trees/hr	
Manpower saving (A/B)	4 times	4 times	12 times	
Others	•Simple repeated work	• Even filling • Free adjust filling quantity • Saving labor of heavy material	• Selection of transplanting system • Simple repetition of bad labor	

Grafting Robot for Fruit Vegetables



World class product of Korea



Cucurbitaceae



Solanaceae

► GR-800CS

- Applicable vegetable: watermelon, melon, cucumber, melon, red pepper, tomato
- Productivity: over 800 trees (When skilled, work efficiency is highly increased)
- Main composition: grafting robot+tongs supply apparatus+air compressor(option 3HP)
- Grafting tongs: Specified plastic tongs(option)
- Dimension/Weight: 670D×1,080W×950H / 170kgs (Not included in our supply scope)
- 1Φ220V 300W (Air compressor not included)
- Manpower of Use: Rootstock supply 1 person, scion supply 1 person, assistant manpower 0.25 person
- Composition of economic operation team: When composing grafting line after installing 4 sets it can be composed of 9 persons.



Cucurbitaceae grafting process



Solanaceae grafting process



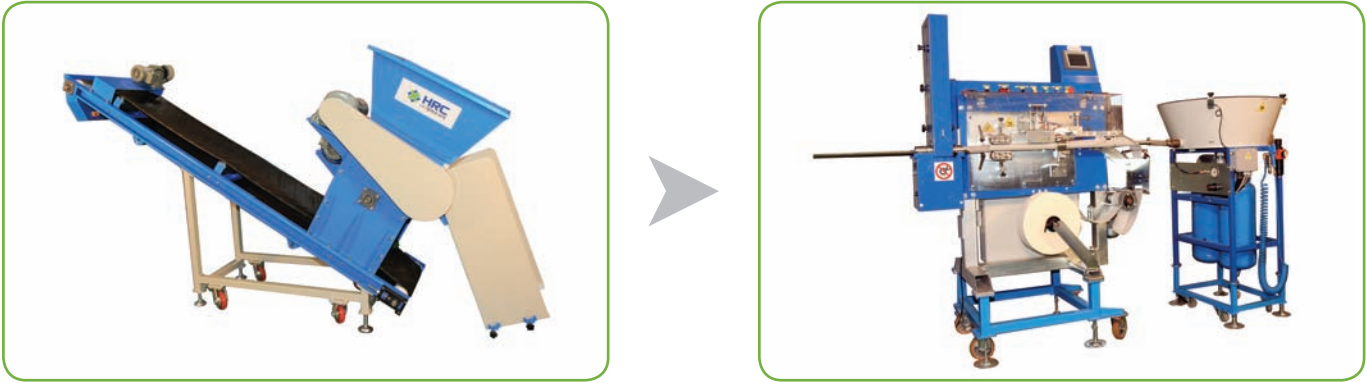
Paper pot[®]

Automatic line & Quality seed production system



PAPER POTS SYSTEM

[PP] Auto Line (1)



► Fixed quantity hopper for manufacturing paper pots

- Operate so that medium used as optimal amounts can be supplemented.

► Fixed quantity supply conveyor

- Automatically drive with a sensor of fixed quantity hopper
- Function of adding water by water content increment(50% -> 60%)

► Peatmoss block crusher

- 100ℓ, 200ℓ, 300ℓ block
- One time crushing or partial crushing

► Completed paper pot

- Basic specification: Ø40, Ø52 (Medium)
- Special order: Ø20, Ø30 (Small)
- Special order: Ø60, Ø80 (Large)

► Paper pot manufacturing machine

- Imported product from Italy techmek company
- Standard type: 5,000 ea production per hour
- Turbo type: 10,000 ea production per hour

► Peatmoss block lifter

- Peatmoss block on the bottom face.
- Easily lift by manpower(Optional for powered type)
- Weight calculation of bed soil block
100ℓ: 20Kg, 200ℓ: 40Kg, 300ℓ: 60kg

Note

- ✓ peatmoss gets dry when being laid aside in the natural condition, removal of vinyl packing just before using is desired.
- ✓ Peatmoss exposed in the air needs frequent irrigation to prevent dryness.

[PP] Auto Line (2)

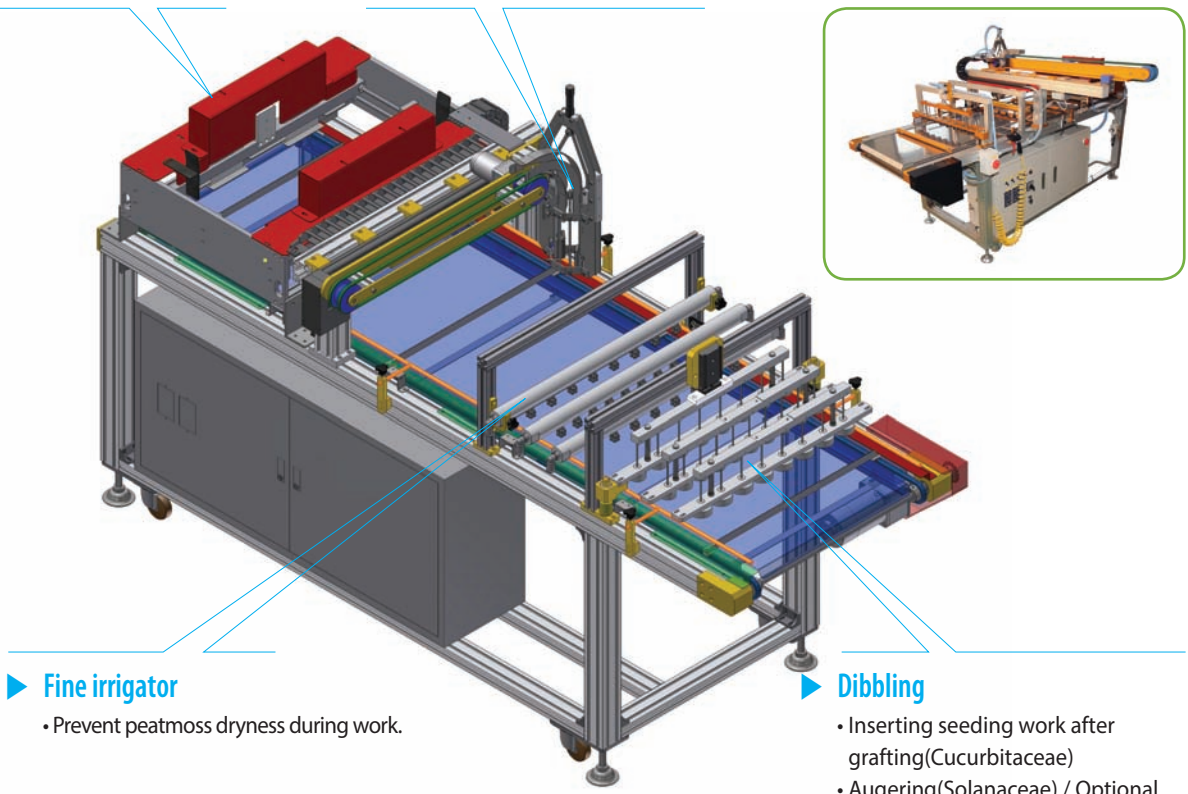


► PP tray auto feeder

- Inside structure is different from the tray for general raising of seedling
- 32 holes, 40 holes, 50 holes

► PP auto loading

- 6,000~7,000 ea per hour
- Linked with exclusive tray



► Fine irrigator

- Prevent peatmoss dryness during work.

► Dibbling

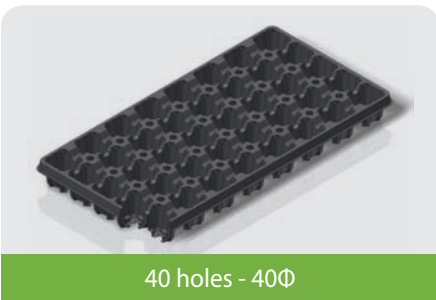
- Inserting seeding work after grafting(Cucurbitaceae)
- Augering(Solanaceae) / Optional

► Subsidiary equipment

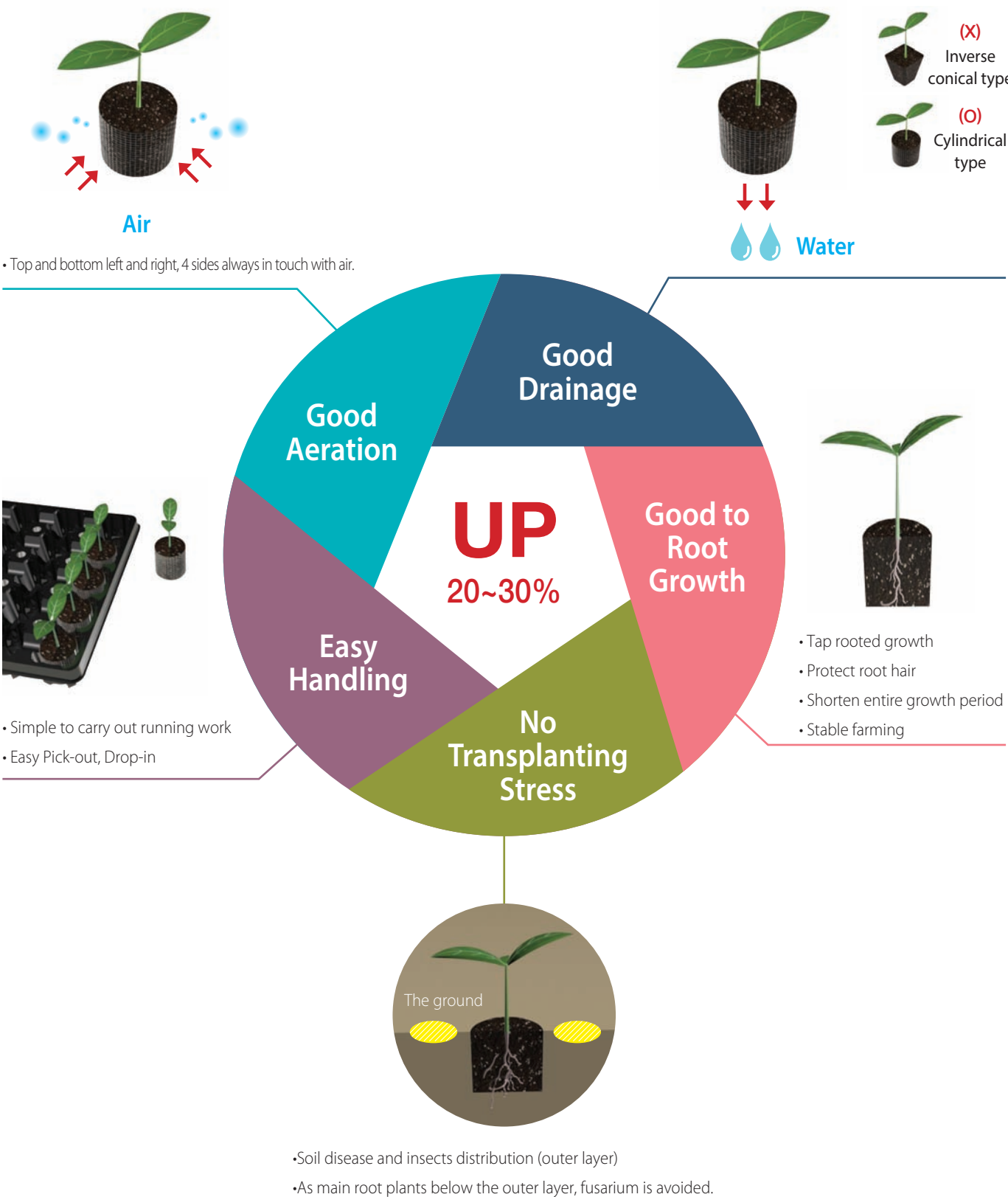
- Air compressor: 10HP (Total use power 3 phase 10kW)
- Installation space: 4m x 8m (Reserved space for stacking is separate)

► PP tray

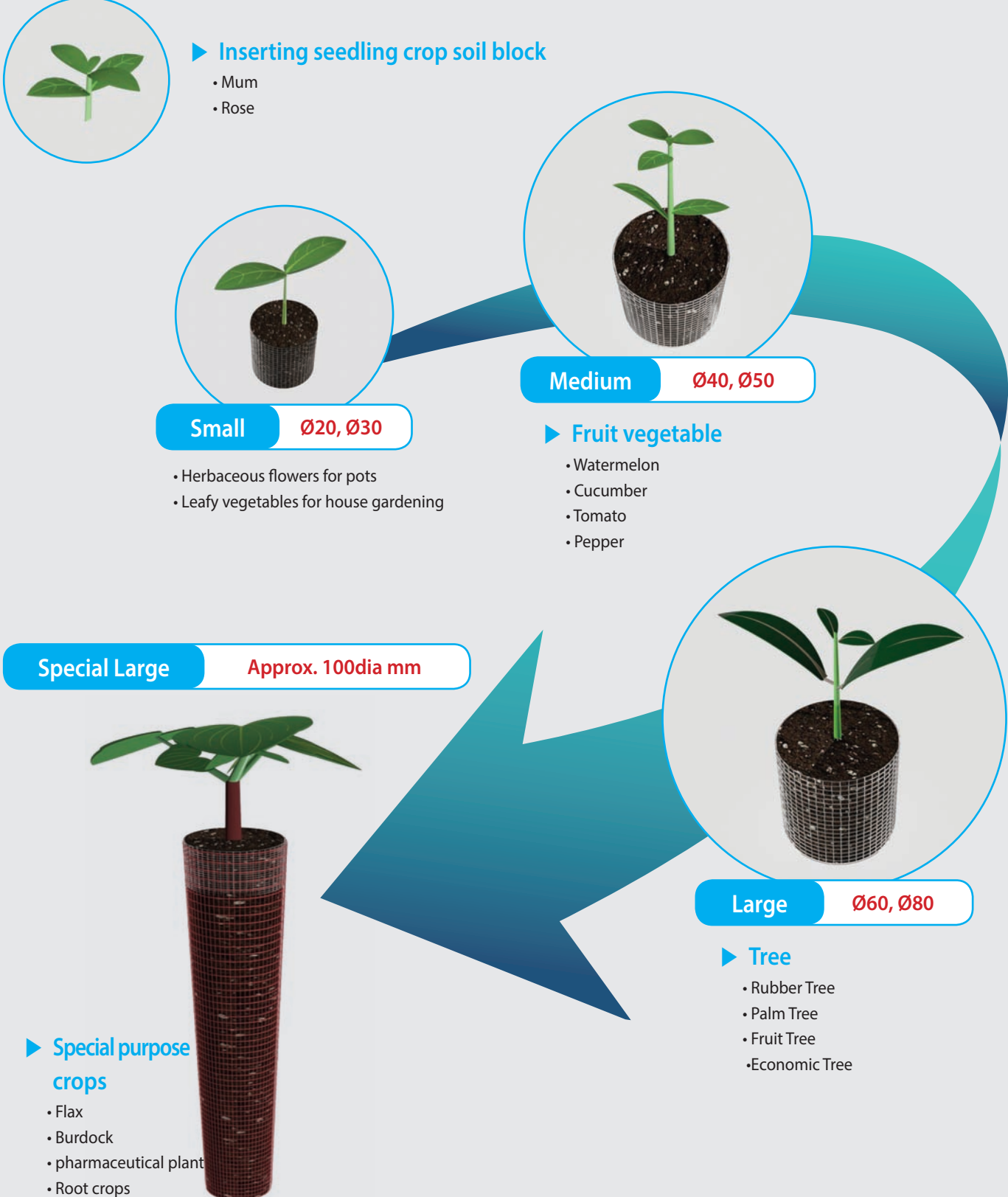
- Special inside structure for providing PP with good aeration, good drainage.
- Exclusive tray preset in accordance with auto line specification.



The Effect of Paper Pot [PP]



The Adoptable Size for its Planting

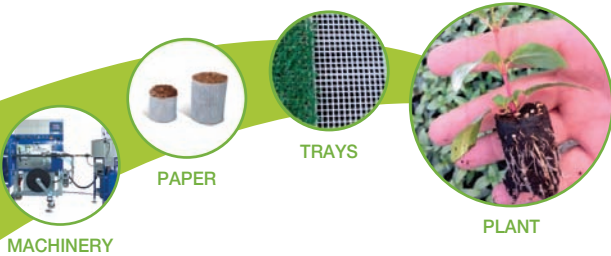


PAPER POTS SYSTEM

Paper pots manufacturing machine



Non-woven paper for propagation of cuttings and seeds for flowers, vegetable, fruits and trees



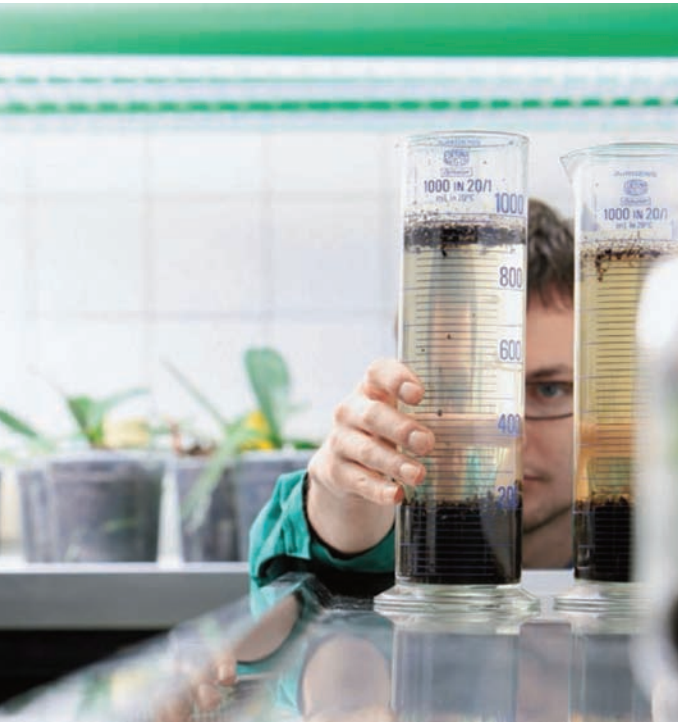
Biological paper is ECO FRIENDLY
with this system plants haven't ANY TRASPLANT SHOCK
Optimum rooting environment for the plant, thanks to
Techmek non-woven paper that FACILITATES ROOTS
PENETRATION

Length	1,450 mm
Thickness	1,150 mm
Height	1,600 mm
Weight	450 kg
Production quantity	Max 10,000 pot/hour
Paper Dimension	Min 18mm ~ Max 60mm
Power	380v 60Hz
Required power	1.75 KW 3A
Usage per min	± 1,700liter/min
Air pressure	6 bar



Length	2,000 mm
Thickness	850 mm
Height	1,600 mm
Weight	200 kg
Production quantity	Max 5,000 pot/hour
Paper Dimension	Min 28mm ~ Max 52mm
Power	220v 60Hz
Required power	2.5 KW
Usage per min	± 600liter/min
Air pressure	8 bar

Medium of paper pots is with Klasmann Peatmoss of Germany
produced under strict quality control.



Kselect® Essential for every substrate

To achieve ideal blends for substrates, black and white peat are in many cases supplemented with additional organic and mineral ingredients. Product developers in Klasmann-Deilmann are thoroughly familiar with their properties and effects. They know which admixing agent must be used and in what quantity in order to obtain a given substrate property. Admixing agents of high quality are required in this respect. Admixing agents used for the Klasmann select product line are produced and controlled according to strict RHP standards. This includes control of the suppliers of these products, who are generally also members of the RHP quality assurance system.



Proven and new admixing agents are continuously tested for their suitability for substrates and are subjected to extensive growing trials in order to guarantee and further optimise the physical, chemical and biological properties of the substrates.

Process overview of raising seeding factory



Germinating chamber GC-05 [Standard]

Dimension	4,200D×4,000L×2,300H
Power consumption	10KW (3Φ 4W 380V 60Hz)

Scope of environment control

Description	Scope	Apparatus	Remarks
Temperature	10~30℃	Cooling systems, Heating system(Bottom heating, Electric heater type)	Option
Humidity	65~95% RH	Spray binary nozzle fine particle	
Heat shield material	Panel 50~100T	Urethane form sandwich panel	Option

- Dimension can be expanded according to the Dimension of raising seeding place
- Effect of maintaining saturated humidity through bottom temperature(Option)
- It is desirable to install with two separate spaces of A, B.

Example of fruits & vegetables grafting seeding production ([] HRC supply facilities)

