

# Agroperl<sup>®</sup>

The Natural Sand that Breathes





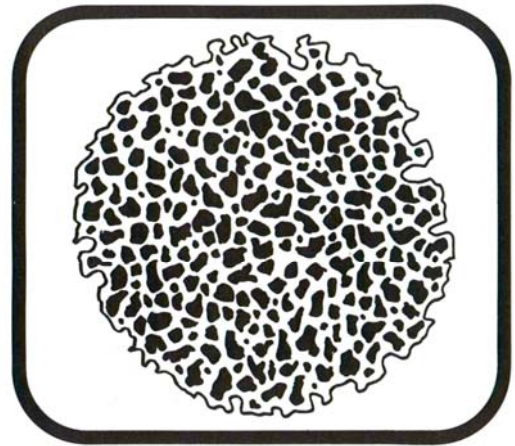
## Large-Pore Natural Sand:

Sterile, pH-neutral, and very light – **aerates** and **loosens** the soil and **holds** water (up to 50 percent by volume) – it's called **AGROPERL**

**AGROPERL** is thermally expanded volcanic rock (closely related to window glass) and has a large number of pores and capillaries, as can be seen in the cutaway drawing.

**AGROPERL** is biological, not artificial! Quite the contrary: It's pH-neutral and non-flammable and is not affected or broken down by acids, bases, bacteria, or sunlight.

**AGROPERL** reduces concentrations of salts, and also promotes the long-term effect of many fertilizers. Its bright, reflective coloration also supports photosynthesis in the UV range (important where natural light is weak!)



<b>Agroperl F:</b> approx. 0-3 mm Ø for water retention		<b>Analysis:</b>
<b>Agroperl G:</b> approx. 0-5 mm Ø for aeration		
□ – dry:	80 – 100 kg/m <sup>3</sup>	SiO <sub>2</sub> 65-80%
□ – wet:	400 – 600 kg/m <sup>3</sup>	AlO <sub>3</sub> 12-16%
pH value:	6 – 7	Na <sub>2</sub> 3-5%
λ <sub>L</sub> :	0.04W/mK	K <sub>2</sub> O 2-4%
Water uptake:	approx. 50% by vol.	CaO 0-2%
<b>Sterile – odorless – white – resistant to rot, acids, bases, bacteria, and fire – economical!</b>		Fe <sub>2</sub> O <sub>3</sub> 1-3%
		MgO 0-1%

Water Release at +20°C, 50-60% rel. humidity		
Layer depth	4 cm	10 cm
Material needed	40 l/m <sup>2</sup>	100 l/m <sup>2</sup>
Water reservoir	20 l/m <sup>2</sup>	50 l/m <sup>2</sup>
Evaporation time	816 hours, 36 days	3480 hours, 145 days

**AGROPERL** keeps pests and rodents away, since it neither satisfies their hunger (glass) nor is it a pleasant surface to walk on (loose bulk material).

When re-using the product or reinvigorating a cultivated area, steam, chemical, or flame **sterilization** can be used with no problem as needed.

## Seed Breeding:

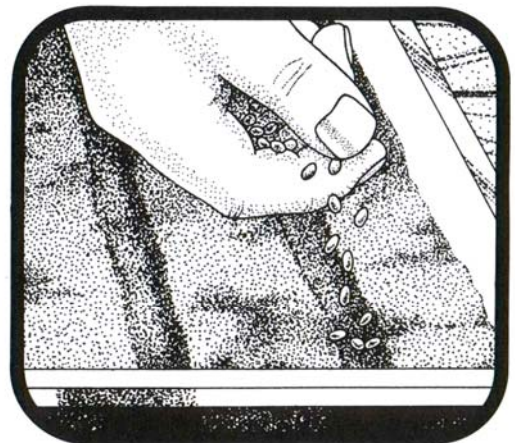
**AGROPERL** accelerates germination, promotes root formation, and growth, reduces transplant shock and damage and is sterile. In particular, fine roots are induced to grow thanks to the aerating effect and controlled moisture release. This also prevents plants from drying out and reduces temperature shock.

**AGROPERL-F** is recommended for stronger and larger seeds, as well as for plants that require well-aerated soil.

Mixtures, depending on the plant:

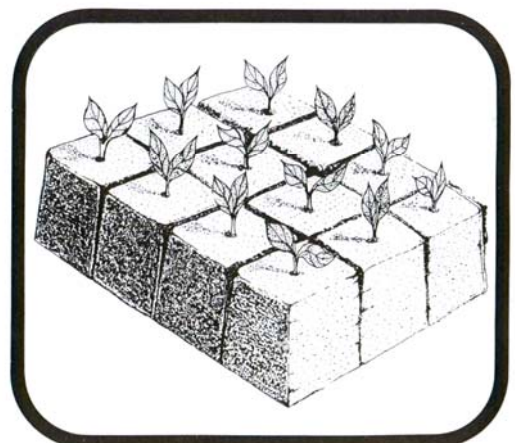
- 100% **AGROPERL**
- 50/50 **AGROPERL/peat**
- 30/70 **AGROPERL/potting soil**

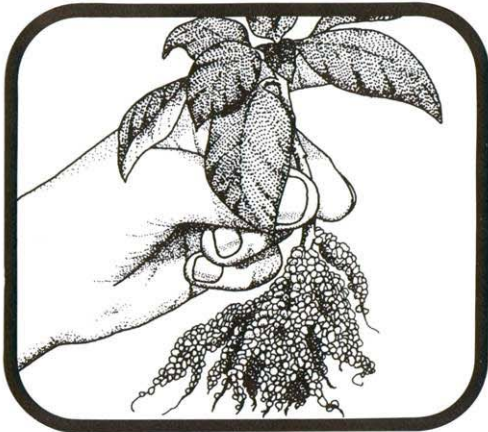
Very good success rates have been achieved with 100% **AGROPERL** and nutrients added using spraying or damming. Scatter fine peat over the seed and cover with glass or sheeting, then add nutrients after roots appear.



## Seed Cubes (pressed-earth pots):

Seed cubes benefit from **AGROPERL-F** used as a light cover (intensifies light, acts against pests) and as an admixture (15-40%) for promoting growth and improving structure. Aeration and moisture retention plus temperature stability. **AGROPERL's** ability to keep peat fibers from completely drying out is tremendously beneficial – it prevents expensive planting failure.





## Seedlings:

**AGROPERL** accelerates rooting, reduces the risk of spoilage, and creates an optimal air/water balance and makes accumulation of moisture practically impossible (don't forget the drainage!).

Inhibited growth, damage to roots or transplant shock are all reduced to a minimum.

Use **AGROPERL-F** for very fine seedlings, otherwise use **AGROPERL-G**.

**100% AGROPERL:** for filigree plants or spray irrigation.

**80/20 AGROPERL/peat:** for harder cuttings and for fragile plants.

**50/50 AGROPERL/peat:** for soft stem and leaf cuttings.

Here as well, **AGROPERL's** sterility and its ability to retain moisture are extremely helpful. Make sure drains are kept clear. Nutrients can be added immediately after roots appear. See "Sterilization" for information on reinvigorating cultivated areas.



## Potting Soils:

Aeration and drainage, insulation of root stocks, and ability to retain water are all important factors. These characteristics are met better by **AGROPERL** than by any other medium. Its enormous re-wetting capacity can prevent expensive damage (for example: If a mishap occurs with an azalea: set the pot in water for a day – and it's saved!).

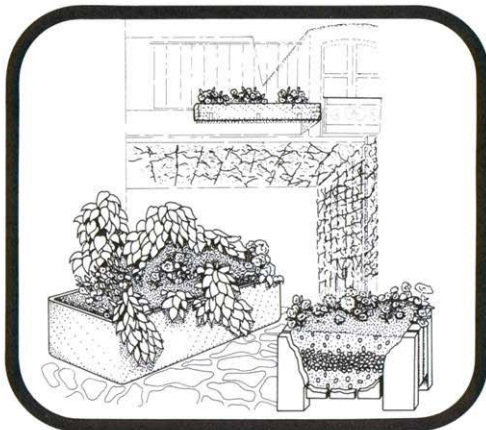
The effect of **AGROPERL** on root stock and potting soils during repotting is also tremendous. It could not be easier or more problem-free.

Non-soil substrates: **25/75 AGROPERL/peat** | +lime

Soil substrates: **33/33/33 AGROPERL/peat/soil** | + nutrients

Alternative: **25/50/25 AGROPERL/peat/soil** |

Mix well, water copiously at first and fertilize after planting as needed. For commercial applications, you can use gravity mixers, paddle mixers, and ribbon mixers as needed.



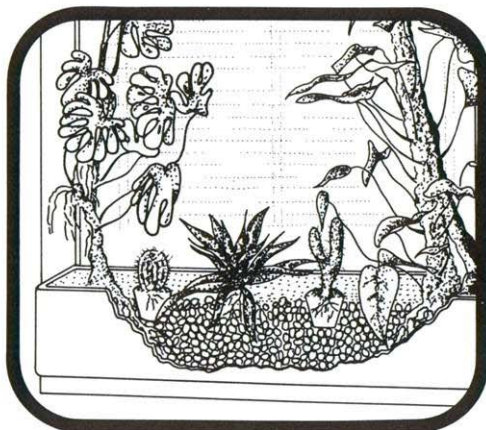
## Flower Boxes, Planters and Large Pots:

**AGROPERL** is very light – and that makes planters and pots easier to transport, mount, etc. The benefits to growth are described in the sections above.

A better-formed root stock improves a plant's hold in the pot. Watering intervals can be increased (vacation!). Literature reference: Manfred Wintgens ("Das Gartenamt 10/71" [The Garden Bureau 10/71]), or ask for AG-14 from the Perlite company. Possible **savings up to 75%**!

The first option is **AGROPERL-F**, **AGROPERL-G** is only used when there are major drainage and aeration requirements.

For plant substrates, see "Potting Soils." One proven technique is to lay down the middle layer of the layered bed with 100% **AGROPERL**. Water well after placement, lay down the last layer and then plant.



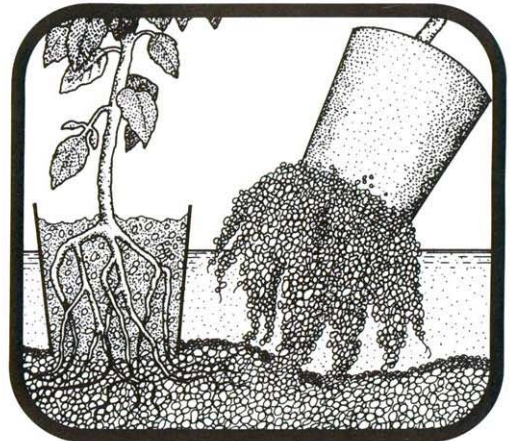


## Flower Window Boxes, Collecting Troughs, and Home Jungles:

Place potted plants with or without pot directly in **AGROPERL-G** prefilled in an appropriately sized container.

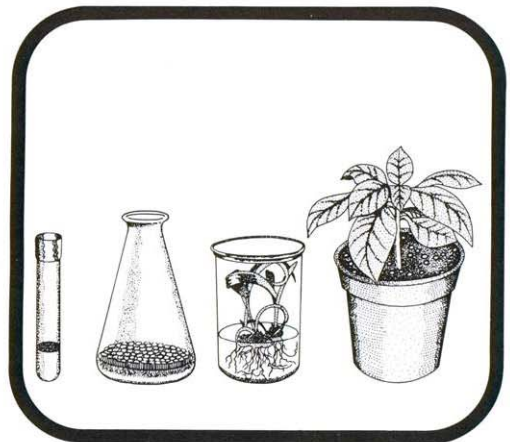
For example, for flower window boxes: Fill the planter with **AGROPERL** to just under the edge, plant the plants in it and treat similar to hydroculture. Replacing or transplanting plants is simple. Watering intervals are greatly increased (vacation!). It's the **AGROPERL** that gets watered, not each individual pot (keeps it simpler!).

You will see sharply increased growth. Weak natural light (e.g., in winter) is intensified by **AGROPERL's** white coloration.



## Capillary Watering, Irrigation, and Hydroculture:

**AGROPERL** has a higher air and water retention capacity than any other materials for hydrocultures, and above all has a better long-term effect. If you do not want a light green algae growth on the cover layer, it can be prevented by using a covering of sand, ornamental gravel, or soil. The product of choice here is generally **AGROPERL-G**. Works with ring cultures as well, e.g. for mass-produced products like tomatoes, laid out in sheeting channels with a nutrient solution flowing through them. In the case of capillary irrigation, **AGROPERL-F** is also sometimes used instead of **AGROPERL-G** in planters or in sheeted breeding beds. If electrical heating cables are being used, then add 50% sand in order to prevent overheating. See "Sterilization" for information on reinvigorating cultivated areas.



## Miniature Gardens, Bottle Gardens, Microbreeding:

Its sterility, unusual rooting capacity, and suitability for critical growth sectors make **AGROPERL** ideal for this application. Thanks to its neutrality, experiment results can be obtained quickly and reliably.

**AGROPERL-F** yields outstanding results in spacing of onions, table cultures, and meristem systems (**100% AGROPERL** + liquid nutrient or added Agrar-Agar). Works with "bottle gardens" as well, and plastic-covered or domed systems. Mixtures of **50/50 AGROPERL-F/G** with peat have achieved good results for planting.



## Soil Improvement:

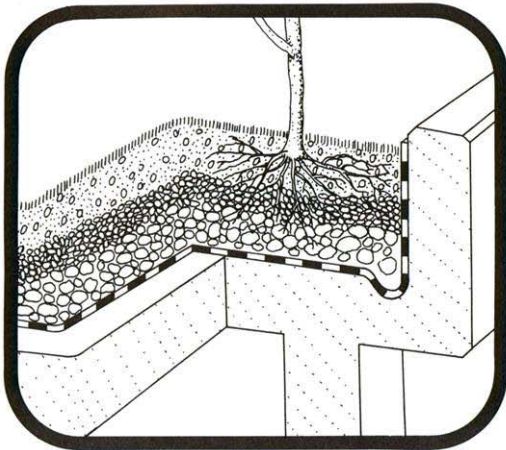
**AGROPERL** improves the soil structure (loosens, aerates), prevents surface encrustation, and promotes seed winding. It also keeps things from drying out. For problem beds, work in about **25% AGROPERL** to a depth of 5-10 cm.

Use **AGROPERL-G** to loosen and improve drainage of heavy soils and for general agricultural use.

Use **AGROPERL-F** for dry and sandy soils. To optimize the moisture budget: work in **20-30%**. Do the same for greenhouse vegetables, for seeding done to prevent "cap formation," as well as for quicker and more economical emergence of seeds.



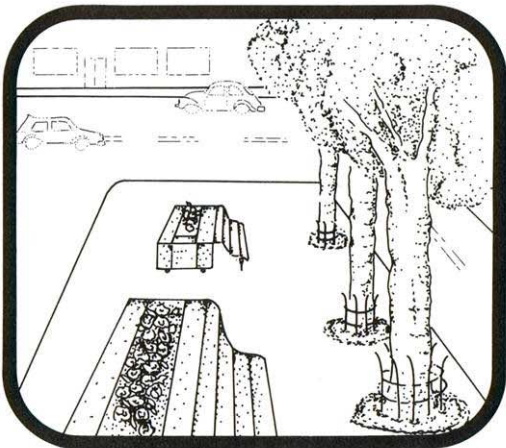
## Green Buildings:



For roof gardens, garages, etc., place a 4-6 cm deep drainage layer of **AGROPERL-G** on the sealant of the underlying surface (at least 1.5% grade). Place a liner over that to prevent material from washing down from above and place a 10-20 cm retention layer of **AGROPERL-G** on that. The 20 to 100 cm deep plant layer that follows next consists of, depending on the planting, **AGROPERL-F** (20-30%) and soil (ask for Technical Data Sheet AG-11).

Advantages: low weight = deeper layers possible = better hold for root stock. Growth and watering benefits.

## Urban Areas, Roadways, Cemeteries, etc.:



As seen above, the benefits for these applications are quite clear.

**AGROPERL** counteracts the often harsh environmental effects and increases cost-effectiveness. That's because **AGROPERL** provides lawns, flowers, bushes, and trees with better living conditions. Also note the remarks for use in "planters" (Technical Data Sheet AG-14).

## Bushes and Trees:



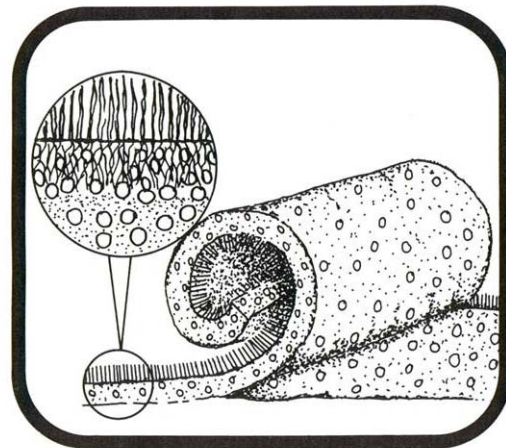
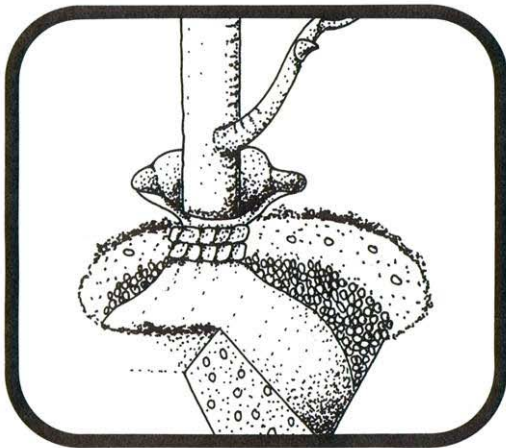
Breeding: 20-30% **AGROPERL-G** in the soil promotes growth and counteracts transplantation shock.

Transplanting: Make the planting hole 10-20 cm larger and fill the lower half of the hole with **AGROPERL-G**, and the upper half with a mixture (50:50) of **AGROPERL-G** and soil or peat mix.

Reduces transplant shock and promotes root growth, which helps the tree or bush to stand independently earlier.

## Turf:

**AGROPERL-F** in a 70/100 top mixture optimizes growth. The enhanced fine-root growth enables better turf piece or carpet formation. Take-up and transport are child's play, and survival time increases drastically.





AGROPERL® improves the air/water ratio in flower soils, peat, sand, and loam.

LUFT = AIR, WASSER = WATER

AGROPERL® promotes root formation, holds root balls together ...

... and prevents damage during transplantation.

AGROPERL® FINE aerates flower soils and moistens peat ...

... retains water and nutrients: 2-5 liters for every 10 liters of soil.

AGROPERL® FINE for sowing and seedlings:

WITHOUT... WITH AGROPERL

Promotes germination and fine-root formation.

AGROPERL® FINE in dry soils ...

... retains water in the root zone.

AGROPERL® COARSE particularly improves "heavy" soils ...

... without "breaking down."

When improving surfaces, mix in 3 to 30 liters per m2 ...

... using a hoe, a tiller, or a shovel.

AGROPERL® FINE after tilling: scatter and water in.

Levels the soil and improves the air-water budget.

AGROPERL® for lawns and playing fields/pitches:

AGROPERL TOP MIXTURE 70/100  
AGROPERL

This configuration is also particularly well-suited for roof gardens.

AGROPERL® FINE for:

potted plants, nursery containers, planters and outdoor landscaping.

Important for large plants:

2-5 LITERS FOR EVERY 10 L OF SOIL

AGROPERL COARSE UP TO 1/3 OF THE HOLE

Also suitable for planting hole preparation with normal trees and bushes.

Wet down AGROPERL® ...

TORF = PEAT

... in the bag before mixing.