

Coir (Coco-Peat) A Renewable and Environmentally Friendly Substrate



Comparison of Substrate Raw Materials



Peat 0-7 or 0-10 mm



Peat 0-20 or 0-40 mm



Standard Cocopeat

Peat - the most common substrate used until today. Little by little other substrates have penetrated the market: cocopeat, woodfibre, green compost, etc. Environmental impact requires alternative substrates in big volumes.

Comparison of Substrate Raw Materials



Fraction Peat (10-30)



Mixed Coir-Chip (70-30)



Coarse Coir (70-30)

Coir has different fractions and blends to cover almost all plants and pots size

Comparison of Substrate Raw Materials

Coir, like some other materials, e.g. woodfibre, can introduce more than 60% aeration



Hortifibre from Wood

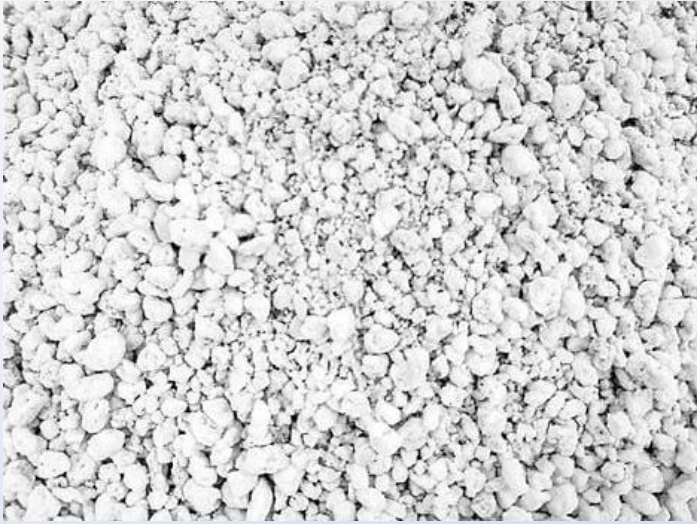


Crush or Cut Fiber from Husk Coir



Chip from Husk Coir

Other Substrate Raw Materials



Perlite

**Other raw materials used as substrates combined or alone:
Some have more difficulty with aeration and water retention**



Pine Bark



Turbofibre from wood



Black Peat

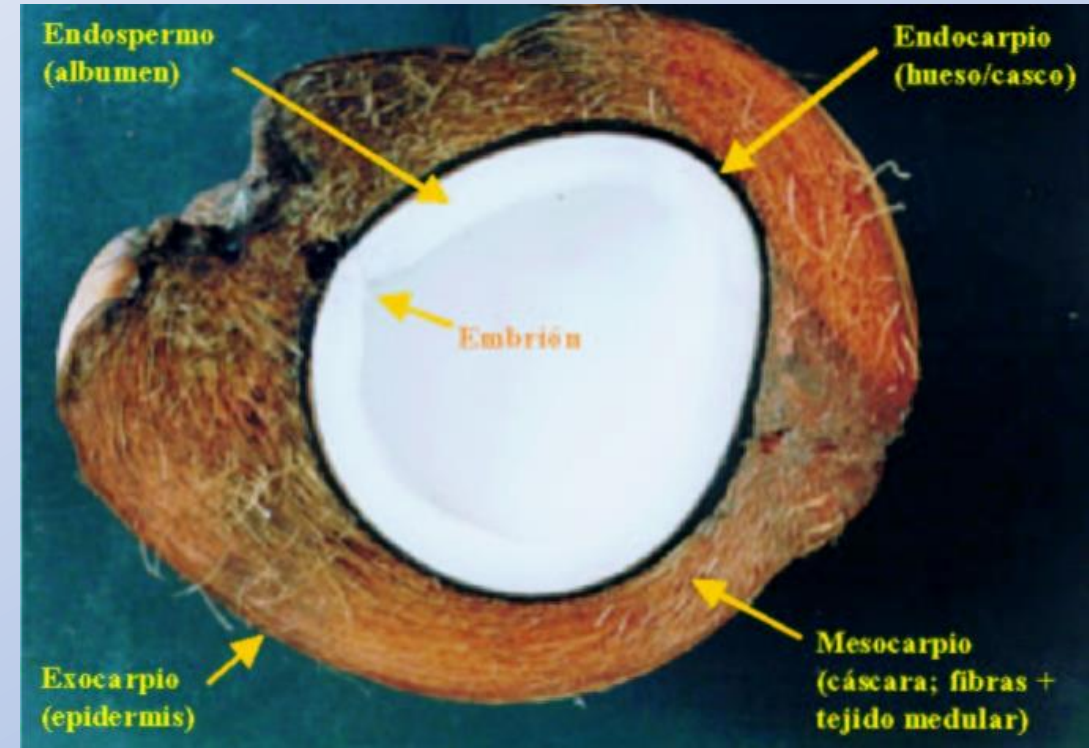
Advantages of Coir

- 1- Natural fibre and from renewable resources**
- 2- Organic product and biodegradable**
- 3- High air-filled porosity + high water retention**
- 4- High cat-ion exchange capacity - to retain nutrients**
- 5- Good stability in long-term cropping**
- 6- Anti-fungus properties**
- 7- Less compaction**



Coir - Outer husk of the coconut. Coconut trees abundant in huge numbers in Asia, Africa and tropical America. Was considered a waste product and a disposal problem.

Coconut Fruit Stages



The coconut trees are harvested 8-9 times per year. As nuts ripen, husks turn from green to an earthy brown colour. After harvest, the husks are removed from the hard shell and taken for processing for substrate.

Step 1- Decorticator (Breaking coconut husk to separate long fibres from spongy coir granules)



Raw Material for Cocopeat



Long Fibre for Mattres and Rope

Step 2- Washing the Raw Material



Washing spongy coir granules is very important to remove the excess of salts and make the material more stable.

Step 3- Drying the Raw Material



Step 4- Sieving and Mixing (washed dry material passes through several sieves to achieve ideal physical particle size mix)

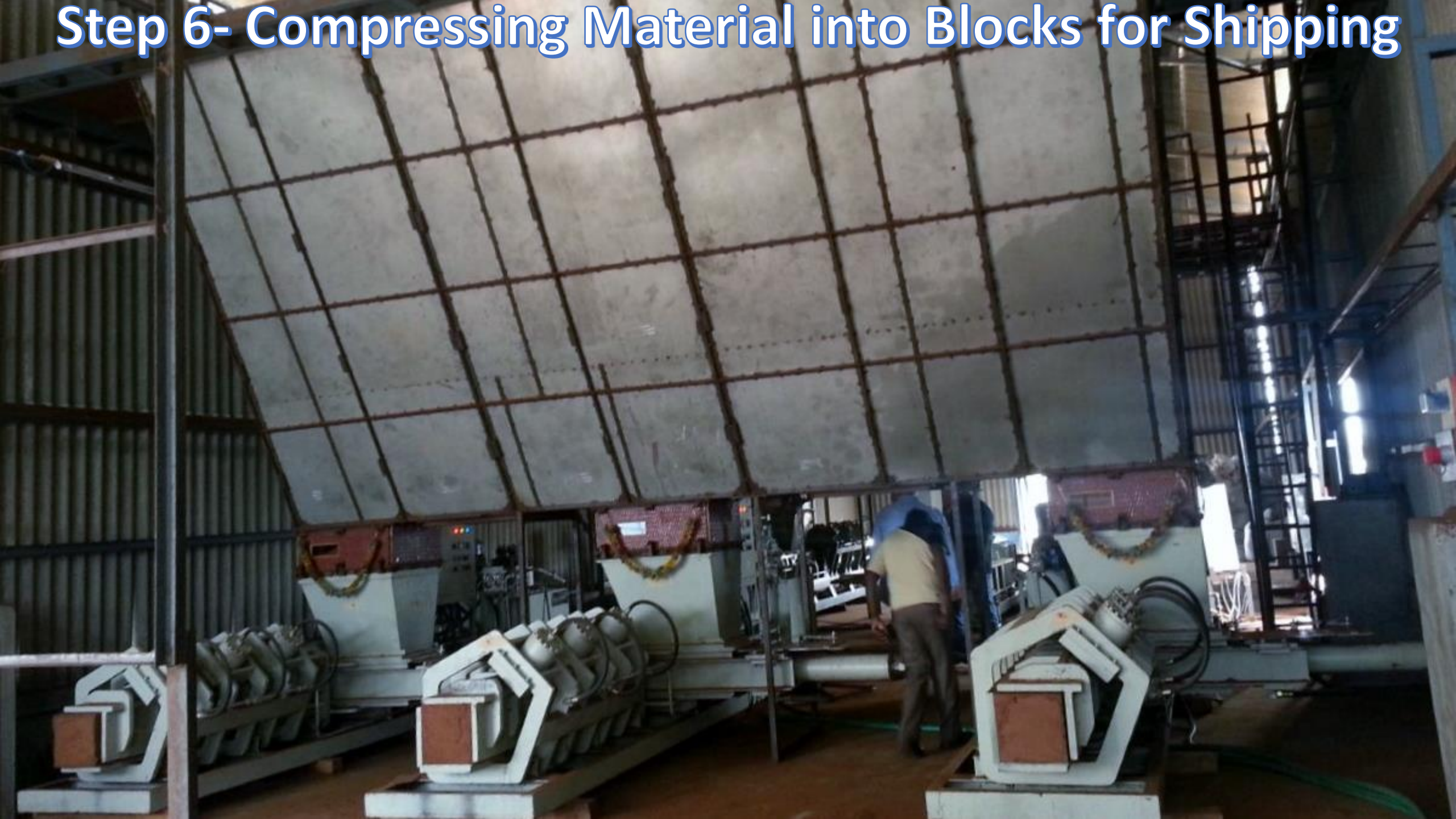


Step 5- Controlling and Monitoring the Quality

EC, pH, wetability, water retention, aeration, granulometry



Step 6- Compressing Material into Blocks for Shipping



Step 6- Pressing Material for Growbag



Step 7- Packing and Loading





Flowchart of Coir Production

① Decortication

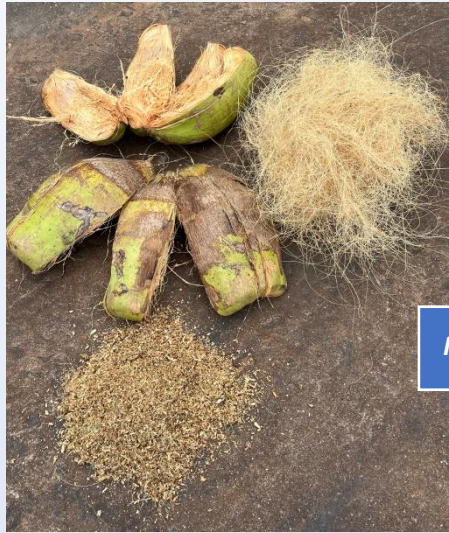
② Washing

③ Dry

④ Sieving

⑤ Packing

Key to Coir (Chemical)



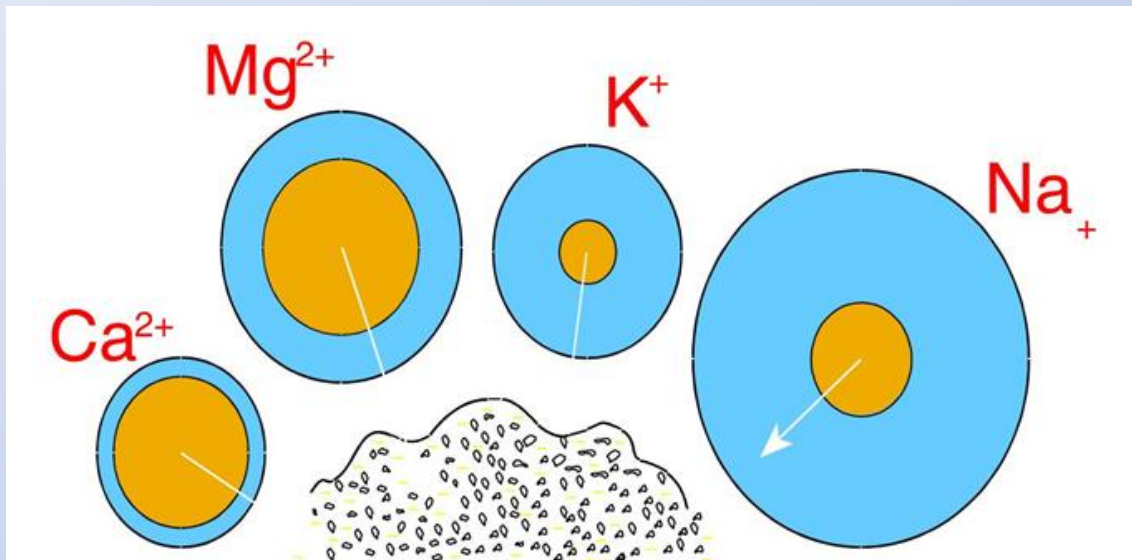
Maturation Process



Natural Coconut Plant needs a lot of potassium from the soil to produce nuts and mature from green to yellow to brown.

With Potassium comes Chloride & Sodium, Thus high EC content initially in the Husk

	EC mS/cm	pH	NO3	NH4	K	Na	Ca	Mg	Cl	SO4	HCO3	P
Unwashed Husk	2.80	5,80	0.10	0.10	7.5	6.4	0.30	0.60	8.30	1.80	0.60	0.07



Adding 1 kg of Calcium Nitrate/m3 of coir substrate, permits faster removal of excess Sodium and Chloride and opens the Exchange Capacity for added of Nutrient

	EC mS/cm	pH	NO3	NH4	K	Na	Ca	Mg	Cl	SO4	HCO3	P
Washed	0.50	5.90	0.10	0.10	2.80	1,7	1.20	0.30	1.80	0.40	0.60	0.07

Raw Material in Coir



COIR GRANULES



COIR CUT FIBRE



COIR CHIP

Like peat-moss, coir can be used with all types of plants and can be produced in different blends and particle sizes most suitable for different plants and climates.

Coir Mixing

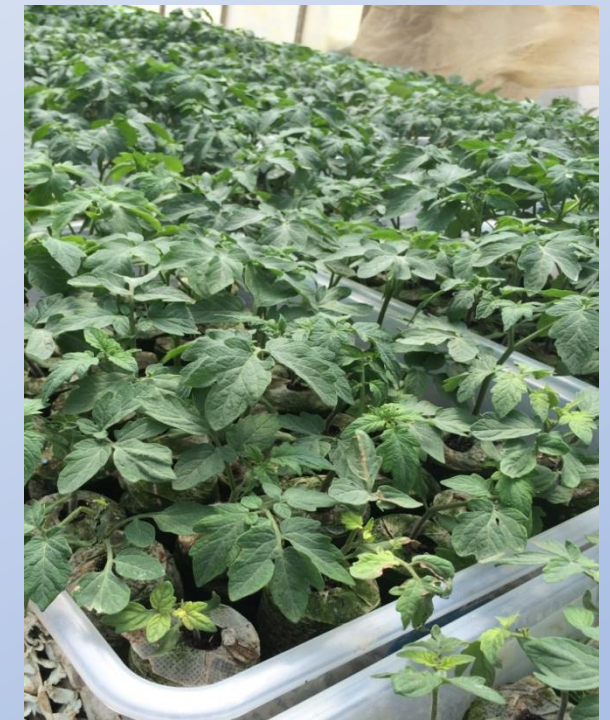


Properties	Standard	Coarse	SuperCoarse	Crash	Mix Chip 33	Chip	Cut Fiber
EC in relation 1:1,5	< 0,5	< 0,5	<0,5	<0,5	< 0,8	< 1,0	< 0,3
EC in relation 1:5	< 0,25	< 0,25	< 0,2	< 0,2	< 0,3	< 0,5	< 0,15
pH in relation 1:1,5	5,7-6,5	5,7-6,5	5,7-6,5	5,7-6,5	5,7-6,5	5,7-6,5	5,7-6,5
Yield (L/kg dry)	13,5 - 14	14 - 14,5	14,5 - 15,5	14,5 - 15,5	14,0	12,5 - 13	14,5 - 15
Total Porosity (%)	93 - 95	88 - 91	84 - 87	83 - 86	84 - 87	85 - 88	65 - 70
Air Filled Porosity (%)	18 - 20	27 - 29	35 - 38	37 - 40	36 - 39	37 - 40	55 - 60
Moisture Retention (%)	48 - 53	42 - 45	33 - 35	31 - 33	31 - 34	35 - 38	15 - 20
Bulk Density (Kg/m3)	77 - 80	70 - 73	60 - 63	57 - 60	60 - 63	55 - 58	42 - 45
Density in Wet (75 %)	310 - 320	300 - 310	255 - 265	250 - 260	260 - 270	250 - 260	130 - 140
Particles > 8 mm (%)	< 1,0	10 - 15	30 - 35	20 - 25	30 - 35	85 - 90	10 - 15
Particles 4-8 mm (%)	5 - 10	20 - 25	45 - 50	50 - 55	45 - 50	5 - 8	10 - 15
Particles 1-4 mm (%)	45 - 50	45 - 50	20 - 25	10 - 15	20 - 25	5 - 8	65 - 70
Particles 0,5-1 mm (%)	40 - 45	20 - 25	5 - 10	5 - 10	5 - 10	> 1	2,5 - 5,0
Particles < 0,5 mm (%)	< 10	< 2,5	< 2,5	0	< 2,5	0	85 - 90
Fibres (%)	5 - 10	20 - 25	50 - 55	55 - 60	30 - 35	5 - 10	90 - 95
Fibre Length (cm)	< 3	< 4	< 2	< 2,5	> 2	< 2	< 2
Chip (%)	0	0	1 - 3	< 5	30 - 33	> 90	0

Seedling



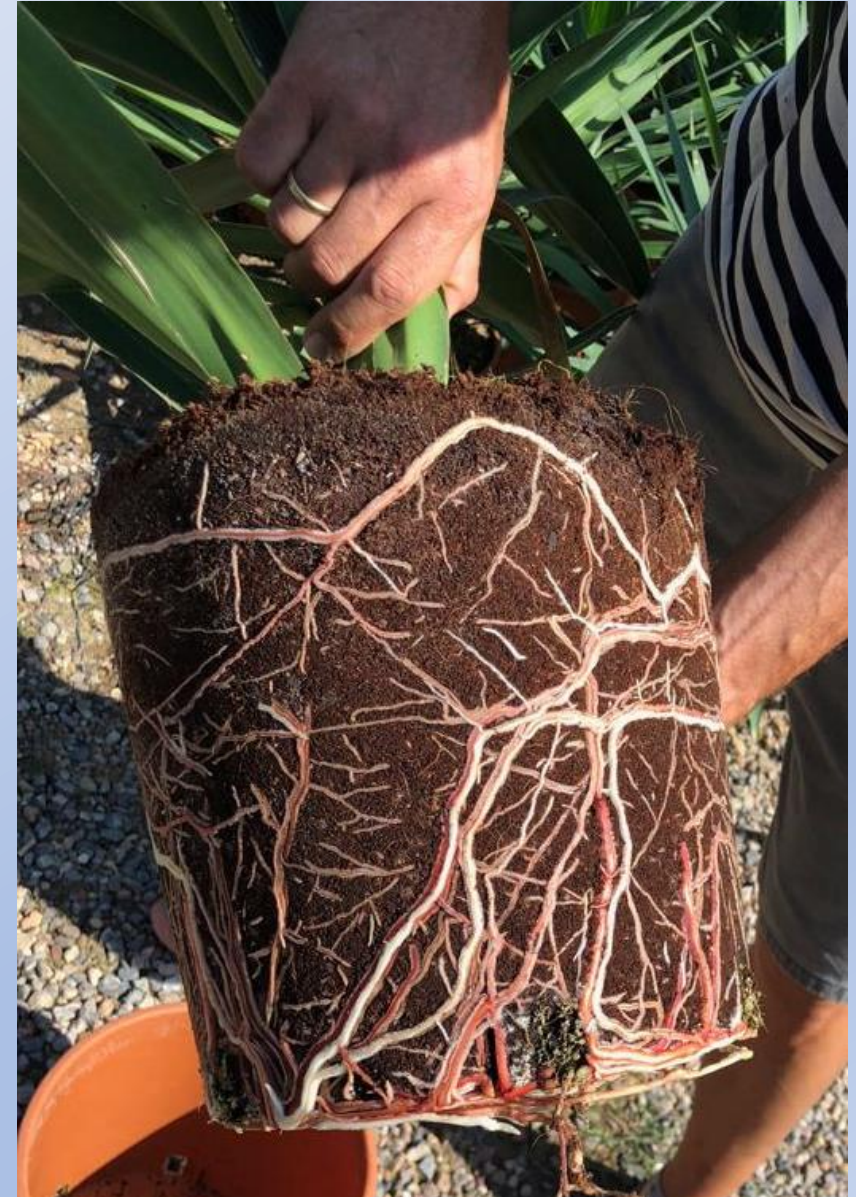
Seedling and Young Plant



Young Plant



Ornamentals



Ornamentals



The aeration and duration of the coir, permits easy cropping for difficult and demanding plants.

Ornamentals



Big Plants

