



COMPANY PROFILE

I. Introduction

The forest remains one of the most important natural assets on this planet, a renewable resource representing an enormous economic value. But the forest also has a great effect on the environment such as erosion, climate and animal life. We have for many years experienced that the deforestation has accelerated alarmingly, giving the natural reforestation no chance of recovering. With this continuing even more dramatic changes for human and animal life are to be expected.

It is therefore of great importance for companies like BCC to find ways to help nature with the recovering process as well as stimulating the commercialized forest industry.

Today's technological advancements enable optimization of productivity and quality in the overall forestry sector. Similar technological improvements, specifically within forest seed centers and nurseries, allow for the successful and cost efficient growing of seedlings and cuttings for the forest. This technology lies at the heart of operations at our head office BCC AB in Sweden. Hans Björkemar founded the company in 1987, hence the name BCC: Björkemar Construction & Consulting.





2. Business Concept

BCC not only designs, manufactures and provides forest seed centers and nurseries with all necessary equipment. We strongly believe in a business concept that is comprehensive and customized to each and every client's need. A vital strength of BCC is therefore the finding of complete solutions both for small and big companies.

Since the founding BCC has established a worldwide network of specialists, cooperating with forestry consultants, seed organizations, research and development centers and forest nursery specialists. This broad network has been key for BCC in order to offer complete turnkey solutions in both reforestation program projects as well as towards the commercialized industry.

Due to the diverse market place we face in our daily work, we understand the importance of communicating closely with each and every customer. BCC constantly strives to become a co-operating partner with the customers of this industry instead of merely a sales organization supplying equipment.

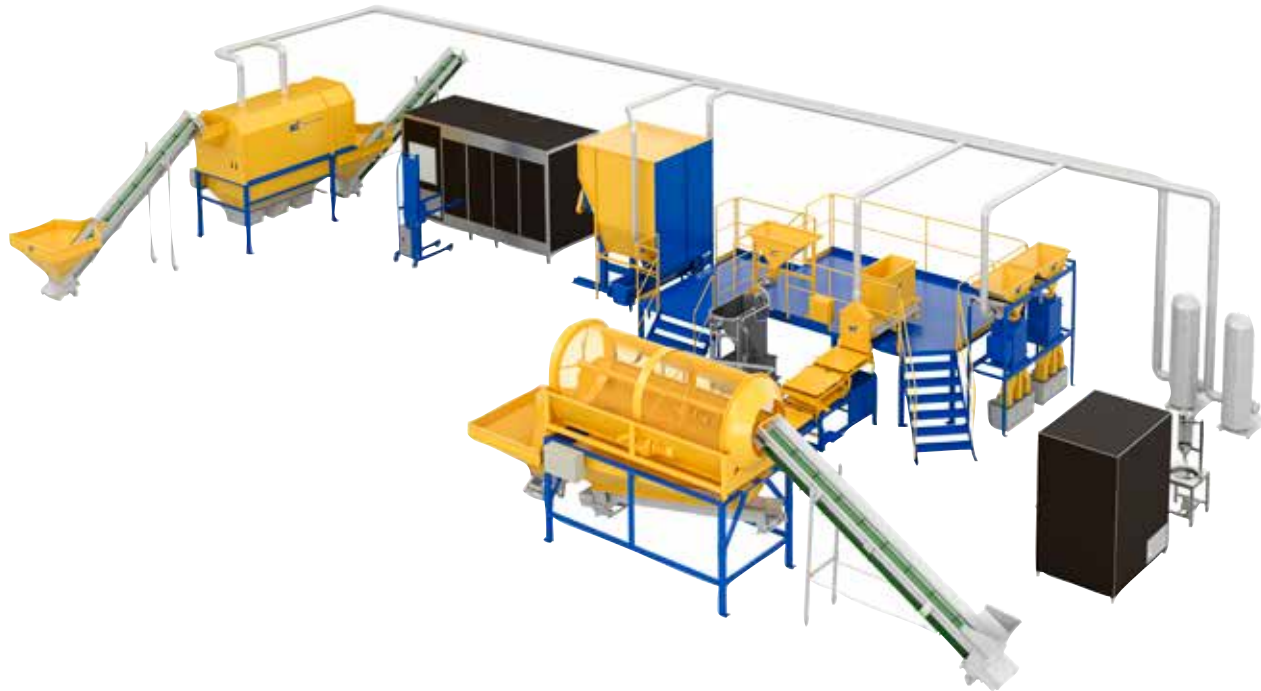
3. Cone & Seed Handling

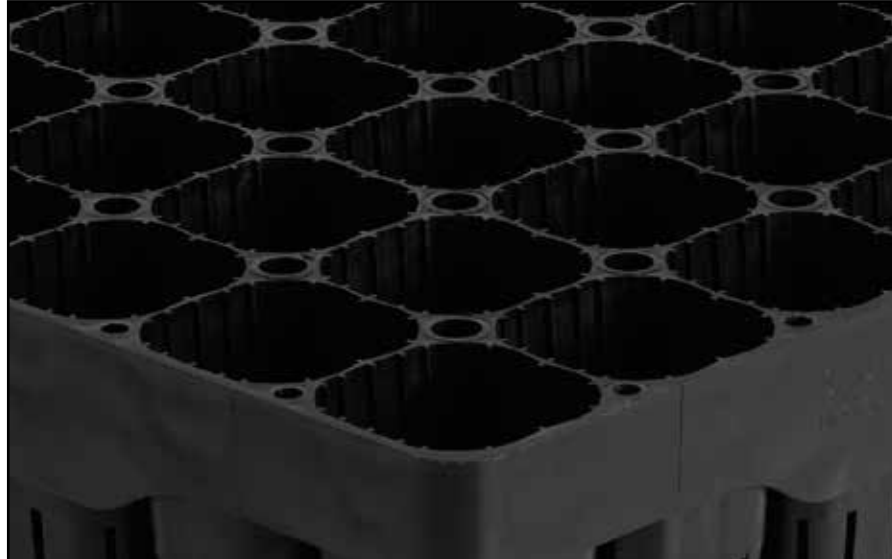
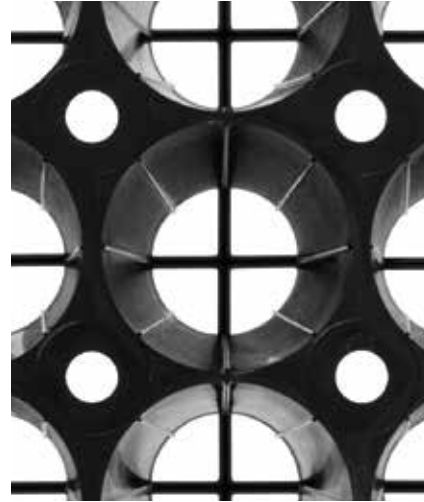
High quality seeds are vital in the process of becoming a successful grower of plants. Neglecting the importance of this stage will result in varying production and germination results, which cause great economic loss for the nursery.

Testing of seed quality includes a number of standard assessment procedures, but the aim is to quantify some of the biological or physical characteristics of the seed lot.

BCC manufacture and supply all the equipment you need for an efficient but yet careful cleaning and processing of cones, seeds, fruits, berries and nuts. The seed cleaning process is complex, but BCC's goal is to offer user-friendly and technology-advanced equipment. The customized storage systems of cones and seeds are also supplied by BCC, preserving the clean seed until sowing phase.

It is important for BCC to understand each customer's unique needs in order to present solutions that meet the different capacity and tree species requirements. Customers worldwide appreciate the versatility of our equipment. However, the demand for space and cost saving machinery is also at focus pushing BCC to deliver compact machines, which still perform their function to the fullest.





4. Growing Containers

The evolution of rigid growing containers has brought great improvements in plant propagation operations and allowed for mechanization. The crucial stage of root development has become more controllable with a variety of cell shapes, sizes and configurations.

BCC has over the last three decades been working closely with nurseries and companies involved in tree planting operations developing a wide variety of trays. The differences in propagation practices and site conditions infield in every nursery, demand BCC to continue to develop this wide product range.

The BCC collection includes multi-cell growing containers, both fixed and single cell systems, round and square cells, solid wall with ribs, side slit and the Air Cell /AirBock™ systems with Active Root Guiding. The BCC growing container systems are designed with a focus on optimizing space utilization, root system development, high quality plant production and efficient handling from nursery to field. The customized frame systems available at BCC are key to achieve all these features.

The Hiko container system has over the years become successful due to the same outer dimensions used regardless of tray type. Hiko containers are also often used as handling units from sowing through planting. This unique handling system eliminates costly packing and transporting routines.





5. Filling & Seeding

The filling and seeding process is the heart of every nursery. Millions of seeds must be sown in a short period of time, which means that the machinery must be precise, reliable, flexible and efficient.

The philosophy of BCC giving the customer a complete, customized and fully automated solution has been an ambition of BCC since the start. The operator should be able to place a stack of dirty trays on one side of the line and on the other side the tray comes out, washed, filled, sowed, covered, and placed on a frame. But, the entire system is also modular, meaning that each machine can also operate on its own.

All nurseries have different production routines. Modifications of the BCC seeding line are therefore often necessary in order to integrate the system. The flexibility gives every company, regardless of size and existing equipment, the opportunity of modernization.

By learning and understanding the demands from the industry, BCC has developed an automatic filling and seeding line, which performs accurately year after year. The line is continuously evolving due to changing demands and technical achievements, but the main features of the filling and seeding line are the same. BCC's filling and seeding line is the most prevalent in new forest nursery establishments in the world.

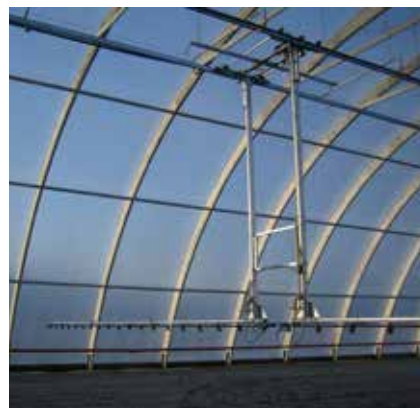
6. FiberCell System

Growing forest seedlings and cuttings in a degradable paper based system has become increasingly popular, especially in the tropical and sub-tropical regions of the world. In our quest for growing better quality rootplugs, the FiberCell system has been developed in cooperation with the forest industry with specific application to forestry and forest nurseries. This together with our know-how and experience in automated and mechanised production systems for containerised forest nurseries, ensure the customer gets the best possible solution based on forestry requirements.

The system consists of a variety of paper types in terms of degradability rate, unique holders and filling equipment. Single and Multi-row fillers are available with manual and automatic cell placing. The FiberCell Fillers are fully compatible with, and can be integrated with BCC Production Lines including Batch Mixer, Precision Seeder and Manual work stations.

The FiberCell system eliminates the use of individual inserts and thereby improves logistics within the nursery and between the nursery and the field. This reduces insert losses and breakages, the need for collecting inserts infield, return transport to nurseries, and manual labour to place inserts back into trays.





7. Irrigation

Irrigating your plants properly throughout the nursery phase is vital. BCC can offer the customers irrigation systems for both greenhouses and holding areas. As for all BCC products, customized irrigation solutions are key in order to meet the different needs and demands from customers all over the world. Reliability, flexibility and cost efficiency define the irrigation systems from BCC.

In the greenhouse, a truss is normally mounted overhead the irrigation boom system as it will give the grower a clean floor, without water hoses and rails interfering with the daily work. There are both single rail systems, for smaller greenhouses, and double rail systems, for the larger ones.

In the holding area, the irrigation system is based on a carriage on rails. The rails are connected with ties, resting on the ground. The carriage is pulled back and forth by a wire that runs between the drive unit at one end and a wire-tensioning unit on the other. The holding area boom can be equipped with a hose car that controls movement of the water-feeding tube. Advantages of hose car usage are less pulling force on tubes and an extended irrigation area.

The customer can design his own irrigation system based on the needs of his specific nursery, such as dimension, type of nozzle, fertilizing injectors, etc. The flexible control system also gives the customer the opportunity to program different modes and programs, which enables customer-automated work.



8. Conniflex

The common pine weevil, *Hyllobius abietis*, is causing the Swedish forestry major damage. Experts estimate damages cost up to nearly one billion Swedish Kronor annually! Over the past 150 years, scientists have developed various protection methods to reduce pine weevil attacks in our forests.

The Swedish Chemical Inspectorate, Keml, and Forest Stewardship Council, FSC, have long regulated the use of insecticides and actively worked for a forestry industry free from insecticides. The decisions and guidelines that are now established from them are clear and persistent. The use of insecticides for protection against the pine weevil is no longer accepted!

Conniflex is the new, effective and environmental friendly coating protecting the forestry seedling against pine weevil attacks. Conniflex can simply be described as an armor of sand applied to the stem of seedling. The coating is flexible and expands as seedling grows. The specially developed and water-based glue is used to guarantee that sand sticks to the stem. The treatment is completed in the drying unit for hardening of the glue.

Only one treatment in the nursery is necessary for an effective and environmental friendly protection for two years. Conniflex can be used on all seedlings grown in trays, also called containerized seedlings.



9. Packing System

The BCC Packing Systems are used for packing of seedlings into cardboard boxes or similar type of boxes. The design is modular and parts are interchangeable in order to handle different types of growing containers. The level of mechanization in our solutions varies depending on operational factors and the customer's economy. The packing system will be adjusted to fit the customer's requirements.

After thorough and intensive research with forest nursery experts and growers BCC has developed a new Automatic Plant Packer customized for the modern forest nursery. There is a great need from our customers around the world to make the sorting and packing process more efficient saving both money and time. The major part of the sorting and the packing processes are still very labor intense in many forest nurseries around the world. With the new BCC plant packer the customer will be able to get a fully automatic sorting and packing function customized and optimized for the nursery operations.



10. Planting

The processes of seed cleaning and plant production are crucial phases in order to become a successful grower. Planting trees properly is not an exception! Even though an exceptionally fine work has been performed in the nursery stage it can unfortunately be ruined if planting is not made with caution and precision.

BCC's planting tube, referred to as Pottiputki, is the most efficient tool for manual planting of containerized seedlings. The persons involved in the planting operations can work in an ergonomically correct position, which makes the method both fast and comfortable. The level of precision, meaning the angle and depth when placing the seedling in the ground, is also an advantage when using the Pottiputki.

Since the tube enters the ground about 2 000 times a day, durability is an important factor. To minimize the risk of breaking during planting season the tube is made of hardened steel, which creates a strong and lasting jaw.

The Pottiputki comes in different dimensions and is designed to fit a number of different trays on the market, as long as the plug and seedling pass freely through the tube.



II. Know-How

In the process of becoming a successful grower of plants, biological skills, experience and personal commitment are of great importance. Despite new and advanced technology within the industry, growing plants needs human expertise and human touch. This is something BCC provides in every project!





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