

# Seed orchard at Brån

This will be the home page of the seed orchard in November 2013. Note that this description is mainly in English (or “Swenglish”) to offer foreigners (in particular scientists) an insight into Swedish seed orchards, for this new seed orchards it will be a deep insight in some of the details. Swedes are able to read English. Many of the links are to Swedish documents.

[The seed orchard was inaugurated at a ceremony Sept 30 2013](#). Where links and notes about the particulars of the inauguration can be seen

**About Swedish seed orchards.** [The Swedish seed orchard program was described among others by Lindgren m fl 2008](#). The seed orchard link on my earlier web is here. [seed orchard link is here](#). “The third batch of Seed Orchards” (TreO=“Tredje omgången”) [has a home page at Skogforsk](#). The Skogforsk “TreO” page considers only new or planned seed orchards affiliated to the programme, not the full programme. Swedish seed orchards are established without any governmental support. The owners are different, but the owner of this new Scots pine seed orchard at Brån (Svenska Skogsplantor) is the most important seed orchard owner and operator in Sweden.

## Links

[Specifik and general\(this page\)](#)\_\_\_

[The Swedish seed orchard program \(Lindgren m fl 2008\)](#)\_\_\_

[Skogsfakta om fröplantager](#)\_\_\_

[TreO](#) (Skogforsk om tredje omgången fröplantager)

[General about seed orchards](#) (Lindgren SLU-länk)

[Fröplantager motverkar global uppvärmning!](#)\_\_\_

[Det finns en bok om fröplantageskötsel på svenska som säljs genom Skogforsk.](#)\_\_\_

## Specific for Brån

[Genetics and registers](#)\_\_\_

[Maximising Seed Orchard gain at given diversity](#) (study)

[Slide show about seed orchard optimization](#) (Mullin et al)

[Outdated History](#)\_\_\_

[Invigning september 30 2013](#)\_\_\_

[Västerhus - a seed orchard](#) connected to Brån\_\_\_

[Svenska skogsplantor](#) (Plantageägaren)

[An exkursion including Vännfors – a genetic demonstration trial with pine near.](#)\_\_\_

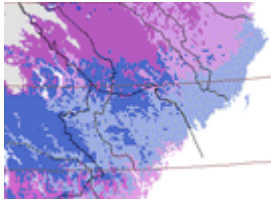
[Media och bilder i samband med invigningen](#)\_\_\_

**Establishment.** The land was cleared already 2005. Earlier it was an old seed orchard on the ground and the stumps of the old trees have been removed (including grinding roots). Selection of genotypes to graft and graft collection was done during 2011? Grafts were placed on rootstocks (“top grafting” at Sävar and the potted grafts have been propagated in the nursery at Sävar. The grafts was tagged with clone number and a glass ampulla with an identification chip was placed in the pot. Short before the establishment the pots were lifted on lastpallar, clones were kept together. Several large trucks transported the potted trees which arrived to the orchard clone wise shortly before planting.

The seed orchard was planted the last weeks of September 2013 with two year old grafts. Planting was done clone by clone according to a premade map. Planting was done and netcages was put around the grafts as protection against voles till end of September. [The grafts originated from Sävar](#). There were 84 clones with 2459 ramets (grafts). Around 100

excess grafts were moved from Sävar to the orchard site. No moose fence is planned, probably the moose pressure is limited so close to houses.

“**Brån (T10 Dag Lindgren)**” is a Scots pine seed orchard. It has a target area overlapping “[Västerhus](#)”, where scientific work is going on. Västerhus has been in the focus of scientists for the last decade, and is now is a major seed server of the zone. Västerhus is currently the genetically best and most advanced Scots pine seed orchard in full production. The zone is called T10 (T for “Tall” and 10 for geographic target area). **T10 is the area coloured in light blue in the figure to the left.** The actual use may, however, be slightly different from the target area. planned at establishment. The geographic areas are more for dimensioning than for exact delineation of actual use.



Furtheron global warming is likely to have an effect on the target area moving it northwards and upwards.

**Ownership and contact:** This seed orchard is owned and managed by [Svenska Skogsplantor](#) and not shared by other owners. [Skogsplantor seed supply](#) is a unit currently headed by Finnvid Prescher. Seed orchards in the north including Brån and the new seed orchard are managed by Joakim Fjällström, Umeå, 090-380 36; 070-268 92 85 [joakim.fjellstrom@skogsplantor.se](mailto:joakim.fjellstrom@skogsplantor.se).

**Three seed orchard batches** Part of the mature seed orchard “Brån” still exists besides “New Brån”. Comparison can be done with this “first batch seed orchard” at Brån. [Västerhus](#) is one of the most modern seed producing orchards belonging to second batch seed orchards, and the new seed orchard can be considered the most modern third batch seed orchard. Västerhus is the seed orchard which has been the most important target for research since 2006.

**The mature Brån pine seed orchard.** There is an old seed orchard adjacent to the new, but it is not in use any more. Part of old Brån still exists 2013, but was not harvested or managed the last years. Old seed orchards, like the old Brån, become genetically outdated, but may still serve a function. They function as back-ups if harvest of genetically better seed orchards does not full-fill expectations. Harvest in genetically outdated seed orchards can be concentrated to the tested genetically best clones. The harvested seeds can used for seeding in the forest, where seed demand per area is much higher, but the success rate by physiologically superior seed orchard seeds much better. Mature grafts can improve genetic quality of the pollen pollinating young grafts and thus improve the genetic quality of the first harvests of a new adjacent seed orchard. But no of these reasons explains the existence of old Brån, it is just a rather unproductive storage of ground till (in maybe a decade) further seed orchards will be required. A reason to remove it maybe that moose can hide where or (in a decade) the pollen will degrade the genetic quality of the new seed orchard.

**Vägbeskrivning** från Umeå (26 km från centralstationen = 30 min): Tag E12 (mot Vännäs). Följ E12 över bron över Vindelälven. Några hundra meter efter bron vik av vänster mot Vännäsby (“Umevägen”). Följ denna 600 m, vik åt vänster Brånvägen (mot Överboda). Följ den 500 m över Ume älv. Efter bron tag första vägen åt höger (“Skattåkersvägen”). Efter 500 m Brånplantagen till vänster. Det går också att ta andra avtagsvägen (“Brännvägen”) från Brånvägen åt höger, då kommer plantagen till höger efter en stund. Plantagen ligger alltså mellan Brännvägen och Skattåkersvägen. Det går att köra genom den nya plantagen mellan dessa båda vägar. Den nya plantagen ligger väster om den gamla Brån-plantagen, som delvis finns kvar och syns. Från avfarten från E12 till Vindelns längs Vindelälven är det 2 km SV till

den nya fröplantagen. 2013 noterades att buss har stopp på Brånvägen 500 m från plantagen busshållplats ”Skattevägen” Länstrafiken 15. Även buss 55 trafikerar Brån.

Det finns en ”arbetsväg” syd-norr genom plantagen. Den är lerig och gropig och kan nog vara besvärlig för personbil vid vått väglag. Det går att köra mellan plantagehalvorna både från norr och söder. Det finns gamla tallympar norr och väster om nya plantagen, så plantagen var kanske större en gång i tiden.



#### **Historic background:**

At the dinner following Finnvids Prescher's dissertation 07-09-28 a dedication of a new planned seed orchard at Brån was done to Dag Lindgren. The occasion of the dedication is shown on the picture to the left. At that time only the location of the current seed orchard was known.

#### **Will the name of the orchard remain “Dag Lindgren”?**

The owner did baptize the orchard to “T10 Dag Lindgren”. Is the name of the seed orchard *really* “Dag Lindgren”? Perhaps it cannot be seen in that way, a seed orchard has no single official name, until the seeds are approved for marketing. When it appears in [the official list](#) (called “rikslängden”; ett “handelsregister”; “National list of basic material”) managed by the forest authority (Skogsstyrelsen). Brån (FP-18) is on the current official list. Usually orchards are “named” by geographic designation, but there are sometimes several orchards on the same spot. But “Dag Lindgren” is a designation and works as work name and will be found in “unofficial” registers the coming decade. “Dag Lindgren” is a “dedication” like clones in Västerhus have, which can serve as work name till the official registration, which is needed for marketing the seeds, when it is up to the owner at that moment probably a decade ahead to decide. I think it is not directly undeserved because the seed orchard represents collectively developed ideas, where I have been an important part. But there are many others deserves it as much.

#### **Design of clones and grafts**

The design is a mixture of selection of founders and their offspring. The list of clones selected and propagated for the seed orchard includes 86 clones, but only 84 were planted. There were 2459 grafts planted. The actual lists are found below. The number of grafts planned for each clone was optimised, but there are some losses and other limitations. Before setting up the actual orchard the optimizing program was run once more. Of the clones in the orchard, 11 are “selection backwards” (“founders”). Thus genotypes selected as phenotypes in a forest



once upon a time. Four of these are “old plus trees” selected before 1978 as mature trees in natural forest. Three of these grow at [Västerhus](#). Seven are plus trees selected after 1980 in some decade old plantations. Their progenies were tested in field-experiments and based on that, genotypes found to be genetically superior were selected. One third (33%) of the grafts in the seed orchard are such

first generation plus trees. All 73 selection in offspring have known father and mother, which were selected and tested plus trees. Some of these parents grow at Västerhus.

**Figure 1 Grafts for the seed orchard cultivated at Sävar midsummer 2012**

### **Dedication of clones to Västerhus and how these dedications roll on to “Dag Lindgren”**



Two clones in the planned New Brån are offspring of a clone in Västerhus (Y4508) dedicated to Nebi Bilir: 11-067 (Y4508xY4500, where the dedicated clone is mother) and 86-398 (Y4501xY4508, where the dedicated clone is father). Here Nebi's son, Yusuf Bilir, keeps grafts of these two clones, which have the clone dedicated to his father as one of their parents. (Photo midsummer 2012) The Figure demonstrates that trees are like humans, generations follow each other.

There are more who will get their dedicated genes transmitted to “Dag Lindgren”. Three clones in Västerhus grow also in “Dag Lindgren” and will thus get their life as clones prolonged some decades and contribute more to future forests. Those lucky are: Run Peng Wei, Katarina Lindgren and Gösta Eriksson. Their dedicated clones were also used in a seed orchard established 2012 by Holmen, “Öden”. Those who will get offspring from their dedicated clones in “Dag Lindgren” and thus get grandchildren of their dedicated clones in the seed crop are: Seppo Ruotsalainen, Shen Xi-Huan, Urban Eriksson, Nebi Bilir, Anders Fries, Xiao Ru Wang and Yoshinari Morugushi.

### **Another new seed orchard serving the same area**

There is another new seed orchard meant to serve T10. It is owned by Holmen and



established 2012, a year before “New Brån”. It is Öden, Grundsunda (ca 7 km norr Husum, immediatly east of E4, 72 kms south Umeå, well visible from road. A stop can be made without much delay or trouble if coming from Umeå). Planting of about 8.400 grafts were planned spring 2012. New Brån and Öden have eight clones in common (selection backwards). The picture to the left is from end of June 2012. Since then fences

and rodent cages have been put in place and the grafts have grown to visible size. Öden was made with only selection backwards (old established clones) and is thus genetically less advanced than New Brån, and the estimated breeding value of the crop will be lower.

### **Swedish attention to seed orchards (bred material)**

Generally the current situation seems good. The current seed orchard establishment programme will be brought to a successful end and seed orchard establishment is likely to continue beyond that. A course on seed orchard management arranged some weeks before the

inauguration was filled. The request for planting seed orchard material is generally larger than what could be supplied. Current harvest from forest is similar to what the forest can sustainably supply, thus better plants are not foreseen to be surplus forest. The major owners of seed orchards seem rather stable. There is not much opposition against seed orchards for environmental reasons. If there is an opposition, it is rather against plantation forestry and choice of species. But on the other hand the focus on seed orchards in e.g. Skogforsk web or SLU web or the forest media is very much less than corresponds to the practical importance of seed orchards. When writing about this event I rather seldom get reactions even when they could be motivated. I do not think this rather careful description in English is worth-while, few will read it compared to the job of writing it.

### **Touristic in neighbourhood**

Fågelreservat kan nås syddåt från plantagen "Kallbäcksvägen" med parkeringsplats "Kallmyrkläppen" i hörnet av reservatet. Verkar dock långt att gå runt Brånsjön.

Anm: Dag Lindgrens far föddes 130930 och skulle alltså fyllt 100 på invigningsdagen.

This document was last edited 13-10-06.