



Ministry of Forests, Lands
and Natural Resource Operations

Provincial Reforestation Program: Seed Needs

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Provincial Reforestation Program

Non-obligation reforestation

1. FFT- Gov't-funded investments to improve timber supply.
2. FCI- FESBC/Prov Gov't/Fed Gov't funded reforestation to increase carbon sequestration.
 - FFT building since 2003.
 - FCI 4 year funding (2017-2021)
 - 2020 (may) be the final year for FCI sowing
 - Est. seed demands for 2020, 60-64M

Sowing Year	M trees		
	FFT	FCI	Total
2012	23		23
2013	24		24
2014	19		19
2015	20		20
2016	24		24
2017	25	1	26
2018	24	11	35
2019	22.5	25.9	48.4
2020	25	37	62
2021	25	0	25
2022	25	0	25
2023	25	0	25

Provincial Reforestation: Seed Planning

Assessing Seed Needs:

- Driven by surveys designed to identify NSR areas where no legal obligations exist

Challenges:

- Stochastic nature of disturbances (frequency, size and location),
- Seed needs are not tied to longer term harvest planning,
- Seed needs are determined based on survey results in the same year,
- Unknown where FFT delivery agents are planning their surveys (BECvar) in a given year, and
- RPB funds the work, but is disconnected from the planning
- Budgets...

Need:

- A methodology to forecast seed needs based on lots of unknowns.

Seed Planning: post-2017 fires

Known information:

- Current inventory of FFT-Owned Seed
- Historic annual FFT demand
- Known 2017 fire locations
 - Fire severity analysis (H, Mod, Low, Unb, Unk)
- Projected FCI demand (target 25M seedlings)

Unknown information:

- BECvar's where reforestation will occur
- Species, seedlots and #'s required to meet sowing demand

Seed Planning post-2017 fires: Assumptions

- Past FFT seed demand constant
- New demand comes from young stands where natural regen not likely
- Not all burned areas require planting (net downs applied)
 - High (0.9), moderate (0.5), low (0.2) and unknown (0.2),
- Surveys and sowing requests will target AC 1 and 2 (H-M severity),
- Stocking standards (species and %'s) apply to zonal sites
- Planting density 1700sph

Seed Planning post-2017 fires: Methodology

1. Generate a table indicating net treatable area by BECvar
2. Apply an average 1700sph planting density to estimate the #'s of trees required by BECvar
3. Use past planting info and input from local silviculture staff determine appropriate species %'s applied to each BECvar
4. Total seedling requirement (~124M) exceeded target (25M) – reduce each BECvar seedling demand by ratio ($25/124 = 0.202$)
5. Added annual FFT demand and estimated post-wildfire demand (#4) for each species by BECvar
6. Subtracted estimated 2018 sowing demand from existing FFT inventory.

Seed Planning post-2017 fires: Gap Assessment Methodology

1. Assess BECvar / species combinations for deficits
2. Major gaps in:
 - IDFdk3 (Fdi and Pli), IDFdk4 (Fdi and Pli)
 - MSxv (Pli)
 - SBPSdc (Pli and Sx), SBPSmc (Pli and Sx)
 - SBSdw3 (Pli)
3. SPAR report for surpluses by species/BECvar
4. Initiate purchases (Feb-Mar 2018)
5. Co-ordinate cone collections (Summer 2018)
 - ~10M IDFdk3/dk4 Fdi collected



2018 Seed Planning Evaluation: 2019 Sowing

	Class A (kg)	Class B (kg)	Class A and B (kg)
Total Seed Used for 2019 Sowing	207.6	451.9	659.5
Used from inventory	117.9	330.9	448.8
Gap analysis purchase and sowing	62.3	247.3	309.6
Purchased at sowing	89.7	121.0	210.7
Gap analysis purchase/sowing %	30%	55%	47%
Used from inventory	57%	73%	68%
Purchased at sowing %	43%	27%	32%

Some Figures:

- 31.5% Class A Seed, 68.5% Class B
- 47% of all seed identified through the gap analysis
- 68% of all seed used came from inventory
- 86% of sowing utilized CBST



2019 Sowing: Where are the Gaps?

Species	2019 Sowing Seedlings (k)			
	Class A	% A	Class B	% B
Cw	9	47%	10	53%
Fdc	103	88%	14	12%
Fdi	2,882	29%	6,907	71%
Lw	1,084	59%	745	41%
Pli	8,973	34%	17,410	66%
Sx	8,138	90%	936	10%

- Only 29% of Fdi and 34% of Pli sowing was able to utilize Class A seed
- 90% of Sx sowing utilized Class A seed

2020 Provincial Reforestation Seed Demand and A Class Availability

Forecasted Demand (62M)

- No A Class Avail With CBST
- A Class Avail with CBST
- No CBST Options

BECvar	FDI	LW	PLI	PY	SX	Total Trees
SBS mc 2	843,700	1,251,781	4,778,882	-	4,241,451	11,115,814
IDF dk 3	3,072,739	395,534	5,449,558	572,796	854,627	10,345,255
IDF dk 4	3,457,893	629,415	2,061,988	181,135	122,869	6,453,300
SBS dk	335,476	666,911	1,899,686	-	2,158,367	5,060,440
SBPS xc	-	27,533	3,792,461	-	329,844	4,149,838
SBPS dc	312,996	-	1,919,869	-	1,084,694	3,317,560
BWBS mw	-	-	1,817,132	-	673,012	2,490,144
MS dm 2	21,079	-	288,025	-	1,526,858	1,835,962
BWBSmk	-	-	-	-	1,788,127	1,788,127
MS dk 1	178,652	99,197	984,501	-	487,242	1,749,592
SBPSmc	-	-	1,317,402	-	64,087	1,381,490
IDF dk 1	240,045	136,462	862,323	-	90,136	1,328,967
SBPS mk	18,952	-	739,749	-	505,151	1,263,853
SBS mc 3	-	-	1,160,869	-	86,374	1,247,243
MS xk 2	149,313	-	982,060	-	111,908	1,243,281
SBS dw 2	174,143	-	585,793	-	264,805	1,024,741
IDF xh 2	755,806	-	-	265,263	-	1,021,069
Multiple others 500k or less						
Totals	9,560,795	3,206,833	28,640,300	1,019,195	14,389,553	56,816,675

Provincial Reforestation Program: Looking Longer Term

- Annual FFT program (BCTS ITSL's, MPB rehab, pre-2017 fires) ~24-25M trees/year
- 2017 Fires-Government AC 1 and 2 Demands (124M)
- 2018 Fires-Government AC 1 and 2 Demands (30M)
- After 2020 sowing remaining seed demands:
 - 55M from 2017 fires
 - 15M from 2018 fires
 - ? from S.107 and inconsequential S.108
 - ? from drought mortality
 - ? from new fires

Provincial Seed and Reforestation Issues

1. Timing of sowing and orchard crops vs. industry
2. Orchard production and supply of A class seed
3. Need to optimize the use of seed using CBST (currently manually done)
4. Nursery capacity 275 M in 2018...approaching 305 M in 2019
5. Increased costs
6. Need to coordinate provincially with licensees, seed producers, and nurseries