Panel Discussion: Seed Supply Issues for Vallonia Nursery

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Vallonia Nursery

Setting our production goals by year is based on a forecast for seedling demand.

Seeds Needed

The amount of good seeds needed is based on the following factors (Figure 1):

1. Recovery factors from previous years.
2. Sowing rates.
3. Estimated good seeds per pound (based on 6- to 7-year data).
4. Setting quotas for each nursery/statewide to meet our goals.

This is for the seeds we know we can purchase from local seed vendors throughout Indiana. Seeds that are historically purchased from vendors outside the state are purchased in a different manner.

Typically, with the number of collectors that participate in our Seedbuy Program, only the scarcity of the seeds in the areas of collection would keep us from meeting our seed quotas within the state. Minor adjustments are made during the collection process to the individual quotas if a species is abundant and another is scarce. Revisions are made based upon site locations as to where the trees typically are grown. Our overall production goal is achieved, with slight changes made to the original goal of individual species.

Seed Prices

Prices for good seeds are based on the following factors (Figure 2):

1. Previous years' prices.
2. Seed abundance or scarcity.
3. Going rates.
4. Internal budgets.

Statewide Collection

Purchasing regionally adapted seeds from local collectors throughout the state helps to maintain the genetic diversity of the nursery planting stock. Historically, seeds from diverse sources were collected by the state's district foresters. Recently, most seeds have been purchased from sources closer to the nurseries.

					SEEDLING	SEEDLING	EMERGED					
VALLONIA				SEED TO	TO	TO	TO					
CODES PROGRAM	OK			SEEDLING	SEEDLING	SEEDLING	SALEABLE		TARGET	GOOD	TOTAL	ESTIMATED
TODAY IS:	PRODUCTION	PRODUCTION	PRODUCTION	RECOVERY	RECOVERY	RECOVERY	SEEDLING	SOWING	DENSITY	SEED	GOOD	POUNDS
29-Jul-03	GOAL FOR	GOAL FOR	GOAL FOR	FACTOR	FACTOR	FACTOR	RECOVERY	RATE	EMERGED	NEEDED	SEED	OF SEED
	1-0	2-0	3-0	FOR 1-0	1-0 TO 2-0	2-0 TO 3-0	FACTOR	1-0	SEEDLINGS	1-0	NEEDED	NEEDED
SEASON TOTAL	3,968,000	590,000	200,000							11,381,904	13,688,685	90,122
SPECIES												
VIRGINIA PINE 1-0	40,000	0	0	20%	100%	100%	60%	45	9	333,333	333,333	9
PITCH X LOBLOLLY F2 1-0	50,000	0	0	50%	100%	100%	65%	18	9	153,846	153,846	6
BLACK CHERRY 1-0	100,000	0	0	40%	100%	100%	70%	20	8	357,143	357,143	291
BLACK GUM 1-0	40,000	0	0	60%	100%	100%	80%	15	9	83,333	83,333	89
BLACK OAK 1-0	90,000	0	0	80%	100%	100%	70%	9	7	160,714	160,714	1,256
BLACK WALNUT 1-0	240,000	0	0	60%	100%	100%	80%	6	4	500,000	500,000	27,277
BUR OAK 1-0	257,000	0	0	70%	100%	100%	70%	8	6	524,490	524,490	15,483
CHERRYBARK OAK 1-0	100,000	0	0	60%	100%	100%	80%	9	5	208,333	208,333	762
CHINKAPIN OAK 1-0	40,000	0	0	60%	100%	100%	75%	9	5	88,889	88,889	692
GREEN ASH 1-0	166,000	0	0	70%	100%	100%	80%	15	11	296,429	296,429	32
PECAN 1-0	90,000	0	0	50%	100%	100%	80%	11	6	225,000	225,000	1,754
PERSIMMON 1-0	100,000	0	0	75%	100%	100%	80%	10	8	166,667	166,667	214
PIN OAK 1-0	105,000	0	0	75%	100%	100%	90%	9	7	155,556	155,556	702
RED OAK 1-0	300,000	0	0	80%	100%	100%	70%	9	7	535,714	535,714	8,373
RIVER BIRCH 1-0	60,000	0	0	20%	100%	100%	80%	35	7	375,000	375,000	3
SCARLET OAK 1-0	60,000	0	0	80%	100%	100%	75%	8	6	100,000	100,000	872
SHUMARD OAK 1-0	110,000	0	0	80%	100%	100%	80%	8	6	171,875	171,875	2,514
SILVER MAPLE 1-0	40,000	0	0	50%	100%	100%	70%	14	7	114,286	114,286	87
SWAMP CHESTNUT OAK 1-0	150,000	0	0	85%	100%	100%	80%	9	8	220,588	220,588	5,152
SWAMP WHITE OAK 1-0	150,000	0	0	80%	100%	100%	80%	9	7	234,375	234,375	3,154
SWEETGUM 1-0	60,000	0	0	30%	100%	100%	60%	70	21	333,333	333,333	13
SYCAMORE 1-0	75,000	0	0	25%	100%	100%	80%	40	10	375,000	375,000	4
TULIPTREE 1-0	300,000	0	0	35%	100%	100%	75%	18	6	1,142,857	1,142,857	2,264
WHITE ASH 1-0	200,000	0	0	40%	100%	100%	80%	25	10	625,000	625,000	125
WHITE OAK 1-0	300,000	0	0	65%	100%	100%	75%	9	6	615,385	615,385	7,836
OVERCUP OAK 1-0	90,000	0	0	65%	100%	100%	80%	9	6	173,077	173,077	2,253
SHINGLE OAK 1-0	30,000	0	0	75%	100%	100%	75%	9	7	53,333	53,333	229
BALD CYPRESS 1-0	100,000	0	0	25%	100%	100%	85%	35	9	470,588	470,588	456
CHESTNUT OAK 1-0	40,000	0	0	80%	100%	100%	75%	9	7	66,667	66,667	1,722
KENTUCKY COFFEE TREE 1-0	30,000	0	0	70%	100%	100%	70%	8	6	61,224	61,224	426
BUTTONBUSH 1-0	20,000	0	0	25%	100%	100%	50%	28	7	160,000	160,000	2
ELDERBERRY 1-0	25,000	0	0	13%	100%	100%	65%	35	5	295,858	295,858	7
FLOWERING DOGWOOD 1-0	100,000	0	0	35%	100%	100%	80%	25	9	357,143	357,143	376
HAZELNUT 1-0	30,000	0	0	50%	100%	100%	80%	15	8	85,714	85,714	387
REDBUD 1-0	70,000	0	0	60%	100%	100%	70%	15	9	166,667	166,667	17
SILKY DOGWOOD 1-0	50,000	0	0	60%	100%	100%	80%	12	7	104,167	104,167	22
GRAY DOGWOOD 1-0	50,000	0	0	30%	100%	100%	70%	28	8	238,095	238,095	54
SPICEBUSH 1-0	20,000	0	0	65%	100%	100%	50%	12	8	61,538	61,538	41
BLACK CHOKEBERRY 1-0	60,000	0	0	8%	100%	100%	85%	80	6	882,353	882,353	6
SMOOTH SUMAC 1-0	10,000	0	0	50%	100%	100%	80%	20	10	25,000	25,000	1
COMMON CHOKECHERRY 1-0	20,000	0	0	30%	100%	100%	80%	20	6	83,333	83,333	16

Figure 1—Example of calculations for seeds needed by species for Vallonia Nursery.

CODE	SPECIES	TOTAL GOOD SEED NEEDED	TOTAL POUNDS NEEDED	SEEDBUY GOOD SEED NEEDED	SEEDBUY POUNDS NEEDED	SEEDBUY UNIT PRICE	ADJUSTMENT TO VALLONIA SEED NEEDED FOR OTHER NURSERY	GOOD SEED PER POUND
	SEASON TOTALS	13,688,685	90,122	5,791,464	54,006	0	(63,000)	
CODE	SPECIES							
1.008	WHITE PINE 1-0 FOR 3-0	653,595	30	0	0	$0.00000	0	21,601
1.018	NORWAY SPRUCE 1-0 FOR 2-0	520,833	10	0	0	$0.00000	0	51,680
1.021	WHITE PINE 1-0 FOR 2-0	882,353	45	0	0	$0.00000	0	19,459
1.089	SHELLBARK HICKORY 1-0 FOR 2-0	138,889	4,755	138,889	4,755	$0.03000	0	29
1.144	SHAGBARK HICKORY 1-0 FOR 2-0	0	0	50,000	596	$0.02000	70,000	84
1.280	PAWPAW 1-0 FOR 2-0	111,111	302	111,111	302	$0.02000	0	369
29.000	VIRGINIA PINE 1-0	333,333	9	0	0	$0.00000	0	38,992
31.000	PITCH X LOBLOLLY F2 1-0	153,846	6	0	0	$0.00000	0	27,864
42.000	BLACK CHERRY 1-0	357,143	291	584,143	475	$0.00900	237,000	1,229
43.000	BLACK GUM 1-0	83,333	89	83,333	89	$0.01000	0	936
45.000	BLACK OAK 1-0	160,714	1,256	135,714	1,061	$0.01250	0	128
46.000	BLACK WALNUT 1-0	500,000	27,277	300,000	16,366	$0.01071	0	18
48.000	BUR OAK 1-0	524,490	15,483	74,490	2,199	$0.03000	(300,000)	34
49.000	CHERRYBARK OAK 1-0	208,333	762	0	0	$0.00000	0	273
51.000	CHINKAPIN OAK 1-0	88,889	692	58,889	459	$0.02000	0	128
55.000	GREEN ASH 1-0	296,429	32	246,429	26	$0.00200	0	9,354
58.000	PECAN 1-0	225,000	1,754	0	0	$0.00000	0	128
59.000	PERSIMMON 1-0	166,667	214	146,667	188	$0.01000	(20,000)	780
60.000	PIN OAK 1-0	155,556	702	140,556	634	$0.01200	0	222
63.000	RED OAK 1-0	535,714	8,373	460,714	7,201	$0.01250	0	64
64.000	RIVER BIRCH 1-0	375,000	3	(0)	(0)	$0.00000	0	138,463
67.000	SCARLET OAK 1-0	100,000	872	(0)	(0)	$0.01250	0	115
68.000	SHUMARD OAK 1-0	171,875	2,514	11,875	174	$0.02500	0	68
69.000	SILVER MAPLE 1-0	114,286	87	0	0	$0.00000	0	1,315
71.000	SWAMP CHESTNUT OAK 1-0	220,588	5,152	220,588	5,152	$0.02500	0	43
72.000	SWAMP WHITE OAK 1-0	234,375	3,154	59,375	799	$0.03000	(50,000)	74
73.000	SWEETGUM 1-0	333,333	13	47,619	2	$0.00000	0	25,111
74.000	SYCAMORE 1-0	375,000	4	(53,571)	(1)	$0.00000	0	86,907
75.000	TULIPTREE 1-0	1,142,857	2,264	842,857	1,670	$0.01000	0	505
76.000	WHITE ASH 1-0	625,000	125	575,000	115	$0.00200	0	4,995
77.000	WHITE OAK 1-0	615,385	7,836	615,385	7,836	$0.01250	0	79
79.000	OVERCUP OAK 1-0	173,077	2,253	173,077	2,253	$0.02000	0	77
80.000	SHINGLE OAK 1-0	53,333	229	8,333	36	$0.01250	0	233
83.000	BALD CYPRESS 1-0	470,588	456	0	0	$0.00000	0	1,032
84.000	CHESTNUT OAK 1-0	66,667	1,722	36,667	947	$0.01250	0	39
92.000	KENTUCKY COFFEE TREE 1-0	61,224	426	0	0	$0.00000	0	144
206.000	BUTTONBUSH 1-0	160,000	2	0	0	$0.00000	0	81,180
211.000	FLOWERING CRABAPPLE 1-0	0	0	0	0	$0.00000	0	48,432
214.000	ELDERBERRY 1-0	295,858	7	0	0	$0.00000	0	42,303
216.000	FLOWERING DOGWOOD 1-0	357,143	376	357,143	376	$0.01000	0	950
217.000	HAZELNUT 1-0	85,714	387	45,714	206	$0.02000	0	221
219.000	REDBUD 1-0	166,667	17	66,667	7	$0.00100	0	9,565
220.000	SILKY DOGWOOD 1-0	104,167	22	104,167	22	$0.00500	0	4,794
227.000	GRAY DOGWOOD 1-0	238,095	54	88,095	20	$0.00500	0	4,408
231.000	SPICEBUSH 1-0	61,538	41	61,538	41	$0.00500	0	1,506
259.000	BLACK CHOKEBERRY 1-0	882,353	6	0	0	$0.00000	0	137,340
282.000	SMOOTH SUMAC 1-0	25,000	1	0	0	$0.00000	0	20,432
283.000	COMMON CHOKECHERRY 1-0	83,333	16	0	0	$0.00000	0	5,376

Figure 2—Example of seed pricing by species for Vallonia Nursery.

Pros

- Adds diversity to seed supply.
- Expands base of local collectors.

Cons

- Program costs.
- Generating interest.
- Species identification.
- Communication/program administration.

Inhouse Collection

Planting grafted clones or seedling progeny from "select" parent trees into seed orchards and managing them for optimal seed production allows us to control the quality and cost of the seed supply. Department of Forestry staff and Department of Corrections inmates collect seeds from established orchards and heavily rogued natural stands.

Pros

- Genetically improved stock from seed orchards.
- Ability to control seed quality.
- Lower seed cost (potentially).

Cons

- Irregular cropping cycles in orchards.
- Limited availability of laborers or inmates during busy season.
- Higher seed cost (potentially).

Commercial Purchase

Working with multiple suppliers allows us to identify seed sources and seed collection zones that are appropriate for planting in Indiana's nurseries.

Pros

- Diverse species availability.
- Competitive prices.
- Availability during local crop failures.

Cons

- Inappropriate seed sources.
- Frequently delayed deliveries.
- State government purchasing constraints.