Wild Foxberry Management Trials at Selected Sites in Guysborough County, Nova Scotia

Wild foxberries (*Vaccinium vitis-idaea* L. variety minus Lodd) have the potential to be a niche crop in Nova Scotia. The east coast location of Nova Scotia is ideal for shipping berries overseas where they are well known in European cultures. Within North America, the foxberry could become a gourmet item, based on its attractiveness and interesting taste. The species listed above grows abundantly in the natural landscape of Guysborough and Richmond Countries.

The study objectives for this project were as follows:

1. To determine if several common agricultural management practices positively affect the yield of wild foxberries in selected sites in Guysborough County.
2. To determine the productivity potential of the wild crop under improved management.
3. Determine if a crop management system similar to lowbush blueberry production is useful on wild foxberries.

Materials and Methods

The trials were located on three sites in Guysborough County, NS. The first site was known as Bull Hill and is crown land between New Harbour and Tor Bay on Hwy 316. The second site was known as Sangster's because it is located on private land between Lundy and New Harbour. The third site was known as Walsh's because it is located on private land on Durell's island outside the Town of Canso.

The three sites are very different from each other which are beneficial for research purposes because it allows observations to be made on how the plant performs in varied environments. Bull Hill is rugged, barren land filled with lichens, Rhodora, wild blueberries, junipers and other annual, perennial and woody weed species. Sangster's is a cleared woodlot with tree stumps, soft and hardwood tree seedlings, wild blueberries and other annual and perennial weeds. The Walsh site is overgrown pasture land with wild roses, wild blueberries, junipers and other annual, perennial and woody weed species. For a complete list of weed species present at each site refer to Table 1: Weed Species.

Table 1: Weed Species

Site	Weed Species Present
Bull Hill	Lichen, wild raspberry, moss, wild cherry, lowbush blueberry, lambkill (*Kalmia*), Bunch berry (*Cornus canadensis*), barberry, sphagnum moss, Labrador tea, golden rod, Mayflower, wild raspberry, ferns, high shrubby species
Sangster's	Dogwood, lambkill, wild cherry, black berry, wild raspberry, fir, spruce, lichen, moss, lowbush blueberry, sphagnum moss, *Lycopodium* (Club-moss), ferns, grasses, wire birch, rhodora, mayflower, violets, goldenrod
Walsh	Dogwood, lambkill (*Kalmia*), wild cherry, black berry, raspberry, fir, spruce, lichen, moss, lowbush blueberry, sphagnum moss, *Lycopodium* (Club-moss), ferns, wild raspberry, wild roses, grasses, mayflower, wire birch, rhodora, willow, golden rod, bunch berry, violets, juniper, asters, potentilla, iris, ragweed

Three areas of focus were used for the current research - pruning, fertility and weed control. These factors were examined in two trials: 1) Herbicide Efficacy on Foxberry and 2) Pruning + Fertilizer + Herbicide Effects on Foxberry.

Trial 1: Herbicide Efficacy Trial

The Herbicide trial was located at the Walsh site and contained 4 replications (reps) of the following treatments: Control, Roundup, Velpar, Casoron, and Hand weed. The herbicide trial was set up in a single-factor randomized complete block design. Refer to the plot diagrams in Figure 1 & 2 for further details.

Figure 1: Herbicide Trial: Walsh Foundation Site Plot Diagram

	West
Water	Plot 205 Hand Weed
	Plot 204 Casoron
	Plot 203 Velpar
	Plot 202 Round Up
	Plot 201 Control
	Plot 105 Round Up
	Plot 104 Velpar
	Plot 103 Hand Weed
	Plot 102 Control
	Plot 101 Casoron

Figure 2: Herbicide Trial: Walsh Mail Box Site Plot Diagram

Plot 401 Round Up	Plot 402 Hand Weed	Plot 403 Control	Plot 404 Casoron	Plot 405 Velpar
Plot 301 Hand Weed	Plot 302 Control	Plot 303 Velpar	Plot 304 Round Up	Plot 305 Casoron

The herbicide trial began on 3-May-06. Casoron was applied @ 175 kg/ha rate with a shaker bottle to the 4 - 1x5 m plot areas. 125 ml of Casoron was applied to reps 1, 2 and 4 while only 100 ml was applied to rep 3. The hand weed treatment was also started at all 4 reps.

On 24-May-06, more treatments were applied or continued on the herbicide trial. Velpar and Round up were applied with a hand held CO_2 boom sprayer at a rate of 6g/0.6L (2 kg/ha Velpar 75DF) and 9.5 L/ha respectively. The hand weed plots were weeded again on 24-May and 20-June in a 1x1 m area.

Soil and tissue samples were collected on 1-Aug-06. On 28-Sept-06 flower bud and stem counts were to be taken but were not possible at this time as it was not possible to distinguish flower and vegetative buds; as such, counts were taken in the spring of 2007.

During 2006 and 2007, several sets of data and observations were taken, including % foxberry ground cover, weed species present, phytotoxicity ratings, weed control ratings, bud counts, stem counts, harvested berry counts and total berry weight.

Percent (%) foxberry ground cover was a rating of the visible foxberry plants. No other vegetation was moved to make this determination. Two 50x50 cm quadrants per plot were used to take the ratings and data was collected on: 3-May-06, 20-June-06, 1-Aug-06, 28-Sept-06, 23-May-07 and 3-Aug-07.

To gather information on the weed species present, pictures were taken and later referenced to create a list of plant material competing with the foxberries. Data was collected on: Jan-Dec 2005, 3-May-06, 24-May-06, 20-June-06 and 28-Sept-06.

Phytotoxicity ratings were determined by viewing the entire plot area and deciding how badly the foxberry plants were affected by the treatment. A scale of 1-100% was used, 0 being no damage and 100 being death of the foxberry plant. Data was collected on 24-May-06, 20-June-06, 1-Aug-06 and 28-Sept-06.

Weed control ratings were determined by viewing the entire plot area and deciding how much of the competing weed species had been controlled by the treatments. A scale of 1-100% was used, 0 being no control and 100 being good control. Data was collected on 24-May-06, 20-June-06, 1-Aug-06, 28-Sept-06, and 4-Oct-06.

Fruit bud counts were taken from two 25x25cm quadrants per plot. Fruit buds in foxberry plants can be distinguished from vegetative buds by their larger size and are often pinkish in color and located on the terminal end of shoots. Data was collected on 23-May-07 and 3-Oct-07. Stem counts were taken from two 25x25 cm quadrants per plot. Foxberry plants consist of a main stem with several tillers. Both stem and tillers were counted. Data was collected on 23-May-07 and 3-Oct-07.

Harvested berry counts were the number of berries harvested out of two 50x50 cm quadrants per plot. Data was collected on 3-Oct-07. Total berry weight was a combined

weight of all berries harvested out of the 2 quadrants per plot. Data was collected on 3-Oct-07.

Trial 2: Pruning + Fertilizer + Herbicide Effects on Foxberry

The pruning + fertilizer + herbicide trial was located at three sites. Rep 1 and 2 were at Bull Hill, rep 3 at Sangster's and rep 4 at Walsh's. Rep 1 and 2 at Bull Hill did not have herbicides applied because permission was not given by Stora Enso, who currently lease the land from the government.
The pruning + fertilizer + herbicide trial was set-up in a split-split plot randomized complete block design with main plot treatments of Burn, Mow, or Control; subplot treatments of Fertilizer or No fertilizer; and sub-sub-plot treatments of Herbicide (Velpar spray + Roundup wipe) and No herbicide. Refer to the plot diagrams in Figures 1, 2 & 3 for further details.

Figure 3: Pruning + Fertilizer + Herbicide Trial: Bull Hill Site Plot Diagram

Plot 205 B+NF	Plot 206 B+F		
Plot 203 M+NF	Plot 204 M+F		
Plot 105 M+NF	Plot 106 M+F	Plot 201 C+NF	Plot 202 C+F
Plot 101 C+NF	Plot 102 C+F	Plot 103 B+NF	Plot 104 B+F

Figure 4: Pruning + Fertilizer + Herbicide Trial: Sangster's Site Plot Diagrams

	Plot 307 M+NF+NH	Plot 308 M+F+NH
	Plot 305 M+NF+H	Plot 306 M+F+H
Plot 303 B+F+NH	Plot 304 B+NF+NH	
Plot 301 B+F+H	Plot 302 B+NF+H	

Plot 310 C+NF+H		
Plot 309 C+NF+NH	Plot 311 C+F+NH	Plot 312 C+F+H

Figure 5: Pruning + Fertilizer + Herbicide Trial: Walsh Site Plot Diagram

Plot 411 B+F+NH	Plot 412 B+F+H
Plot 409 B+NF+NH	Plot 410 B+NF+H
Plot 407 C+NF+NH	Plot 408 C+NF+H
Plot 405 C+F+NH	Plot 406 C+F+H
Plot 403 M+F+NH	Plot 404 M+NF+H
Plot 401 M+F+NH	Plot 402 M+F+H

Key: C (Control Prune), B (Burn Prune), M (Mow Prune); F (Fertilizer Program), NF (No Fertilizer Program); NH (No Herbicide Program), H (Herbicide Program)

The pruning + fertilizer + herbicide trial was started on 3-May-06. The mowing treatment was carried out at all three sites with a brush cutter. The mowing area consisted of one 5x5 m area for each main plot area in each rep. The weather was not very cooperative on this day and as a result the Sangster site was the only one where the burning treatment was successful. This treatment was accomplished by laying straw on the desired area (5x5 m) and setting it on fire.

On 24-May-06, the remaining Burn treatments were applied at the Bull Hill and Walsh locations. The first Fertilizer treatments were applied at this time and consisted of broadcast applications of 14-14-14 to 2.5 x 5m subplots at a rate of 196g/plot (140 lbs/acre) at Bull Hill and at Walsh. At Sangster's the 14-14-14 fertilizer was broadcast applied by hand at a rate of 196g/plot (140 lbs/acre) on two 2.5x5 m subplots and at 188g/plot (140 lbs/acre) on one smaller 3x4 m subplot. Also at this time, the first Herbicide treatment was applied to sub-sub-plots of 2.5 x 2.5m area. The Herbicide treatment consisted of Velpar applied with a hand held CO_2 boom sprayer at a rate of 6g/0.6 L (2 kg/ha) to the Sangster and Walsh sites only.

On 20-June-06, the second application of fertilizer was applied corresponding to 4-6 weeks after bud break. The 14-14-14 was broadcast applied by hand at a rate of 196g/plot (140 lbs/acre) to subplots at the Bull Hill and Walsh's sites; whereas at the Sangster's site, 14-14-14 fertilizer was broadcast applied by hand at a rate of 196g/plot (140 lbs/acre) on the two 2x5 m subplots and at 188g/plot on the remaining 3-4 m subplot.

Soil and tissue samples were collected on 1-Aug-06. On 28-Sept-06 fruit bud and stem counts were to be taken but were not possible at this time as it was not possible to distinguish flower and vegetative buds; as such, counts were taken in the spring of 2007.

The pruning + fertilizer + herbicide trial received the final Herbicide treatment component on 4-Oct-06. Roundup (25% solution) was applied at Sangster's and Walsh's with a hockey stick wiper to areas that received the spring Velpar spray at a rate of 1/3 cup Roundup to 1 cup water.

During 2006 and 2007, several sets of data and observations were taken, including % foxberry ground cover, weed species present, phytotoxicity ratings, weed control ratings, bud counts, stem counts, harvested berry counts and total berry weight.

Percent foxberry ground cover was a rating of the visible foxberry plants. No other vegetation was moved to make this determination. For the first two ratings, the area rated consisted of a 2.5x5 m area. After that two 50x50 cm quadrants were used to take the ratings. Data were collected on: 3-May-06, 20-June-06, 1-Aug-06, 28-Sept-06, 23-May-07 and 3-Aug-07.

To gather information on the weed species present, pictures were taken and later reference to create a list of plant material competing with the foxberries. Data were collected on: Jan-Dec 2005, 3-May-06, 24-May-06, 20-June-06 and 28-Sept-06.

Phytotoxicity ratings were determined by viewing the entire plot area and deciding how badly the foxberry plants were affected by the treatment. A scale of 1-100% was used, 0 being no damage and 100 being death of the foxberry plant. Data was collected on 24-May-06, 20-June-06, 1-Aug-06 and 28-Sept-06.

Weed control ratings were determined by viewing the entire plot area and deciding how much of the competing weed species had been controlled by the treatments. A scale of 1-100% was used, 0 being no control and 100 being good control. Data was collected on 24-May-06, 20-June-06, 1-Aug-06, 28-Sept-06, and 4-Oct-06.

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Harvested berry counts were the number of berries harvested out of two 50x50 cm quadrants per plot. Data was collected on 3-Oct-07. Total berry weight was a combined weight of all berries harvested out of the 2 quadrants per plot. Data was collected on 3-Oct-07.

Results and Discussion

Trial 1: Herbicide Efficacy on Foxberry

The results of the Analysis of Variance (refer to Table 2) indicated that the two most significant effects in the trial were that of phytotoxicity and weed control ratings. Average foxberry ground cover had no significant effect at the 5% level, but there was one significant data point at the 10% level. Number of fruiting buds, number of stems, and yield data did not provide any significant differences among treatments. Although the data was not significant for these latter variables, there were several interesting trends.

Table 2: Summary of Analysis of Variance (ANOVA) for Foxberry Herbicide Trial

Summary of Analysis of Variance (ANOVA)			
		Source of Variation (significance if P value <0.05)	
Variable	Treatment F values	Treatment P value	Significant – Yes or No (**5% level, *** 10% level)
% Foxberry ground cover 20-June-06	0.10*	0.980*	No
Average % Foxberry ground cover 28-Sept-06	2.26*	0.124*	No
Average % Foxberry ground cover 23-May-07	2.69*	*0.083**	***
Average % Foxberry ground cover 3-Aug-07	0.31*	0.863*	No
Phytotoxicity % 20-June-06	6.95*	**0.005***	**
Phytotoxicity % 28-Sept-06	6.02*	**0.007***	**
Weed control % 20-June-06	277.75*	**0.000***	**
Weed control % 28-Sept-06	119.39*	**0.000***	**
Average Number of fruiting buds 23-May-07	1.46	0.275	No
Average Number of foxberry stems/quadrant 23-May-07	2.08	0.146	No
Average berry counts 3-Oct-07	0.78	0.561	No
Total berry weight (g)/plot 3-Oct-07	0.78	0.562	No
Average Number of fruiting buds 3-Oct-07	1.35	0.306	No
Average Number of foxberry stems/quadrant 3-Oct-07	1.11	0.394	No

*number from transformed data

Phytotoxicity Effects

Examination of the effects of herbicides on foxberries indicates Roundup has a significantly higher phytotoxicity rating than the other treatments (Table 3). Although numerically higher than the Control and Hand weed treatments, both Casoron and Velpar were not significantly different from these treatments in terms of phytotoxicity. Comparing the data from the June 20 and Sept 28 ratings, similar trends are evident but the effects are much less pronounced suggesting that as the season progresses, the foxberry plants recover somewhat from the spray treatments (Tables 3 and 4). However, Roundup application remained the most negative, and as a result, it is recommended that its use be limited to wipe applications only.

Table 3: Effect of Herbicide on the Phytotoxicity of Foxberry Plants

Variable	*Herbicide Treatment*	*Mean*
Phytotoxicity % 20-June-06	Round Up	70.0 A
	Casoron	22.6 B
	Velpar	17.6 B
	Control	0.01 B
	Hand Weed	0.01 B

Table 4: Effect of Herbicide on the Phytotoxicity of Foxberry Plants

Variable	*Herbicide Treatment*	*Mean*
Phytotoxicity % 28-Sept-06	Round Up	42.50 A
	Casoron	30.0 AB
	Velpar	22.50 AB
	Control	15.02 AB
	Hand Weed	2.57 B

Weed Control Effects

Examination of the effects of herbicides on controlling the surrounding weed species indicated that all weed control treatments were significantly better than the untreated Control and that numerically Roundup was best followed by the Hand Weed treatment, the Velpar treatment and the Casoron treatment (Table 5). Each weed control treatment again provided significantly better weed control than the untreated Control when plots were rated a second time on 28-Sept 06; however, differences among the weed control treatments were found with this data timing (Table 6). In this rating the numeric order of best to worst weed control was the Hand Weed treatment followed by the Roundup treatment (which was not significantly different), the Casoron treatment, and finally the Velpar treatment. Treatment weed control ranged from 52.5% in the Velpar treatment to 90% in the Hand Weed treatment.

Table 5: Effect of Herbicide on the Weed Control Around Foxberry Plants

Variable	*Herbicide Treatment*	*Mean*
Weed Control % 20-June-06	Round Up	90.0 A
	Hand Weed	67.5 A
	Velpar	53.3 A
	Casoron	20.0 A
	Control	0.1 B

Table 6: Effect of Herbicide on the Weed Control Around Foxberry Plants

Variable	*Herbicide Treatment*	*Mean*
Weed Control % 28-Sept-06	Hand Weed	90.0 A
	Round Up	80.0 AB
	Casoron	60.0 BC
	Velpar	52.5 C
	Control	0.1 D

Foxberry Ground Cover Effects

Examination of the effects of herbicides on foxberry ground cover showed there were no significant differences (Table 2); however there are several findings of numeric interest (Tables 7, 8, and 9). Roundup showed the lowest or next to lowest average % foxberry ground cover (depending on rating date) and Velpar showed the highest or second highest amount. Casoron was near the bottom of the list immediately after application, but as the growing seasons went on, the amount of foxberry ground cover rebounded and increased. These data suggest that despite excellent weed control, Roundup is quite phytotoxic to the foxberries, decreasing the plant population, resulting in fewer visible plants to be captured by the ratings. In contrast, Velpar produced moderate weed control effects but showed very little phytotoxic effects as evidenced by the consistently high ground cover ratings. Like Velpar, Casoron provided moderate weed control but seemed to have greater phytotoxic effects on the foxberry; consequently, ground cover ratings were low and comparable to that of Roundup at both rating dates.

Table 7: Effect of Herbicide on Foxberry Ground Cover

Variable	*Herbicide Treatment*	*Mean*
Average % Foxberry Ground Cover 28-Sept-06	Velpar	21.88 A
	Control	20.75 A
	Hand weed	10.75 A
	Round Up	7.63 A
	Casoron	7.26 A

Table 8: Effect of Herbicide on Foxberry Ground Cover

Variable	*Herbicide Treatment*	*Mean*
Average % Foxberry Ground Cover 23-May-07	Control	23.8 A
	Velpar	22.0 A
	Hand Weed	14.50 A
	Casoron	7.89 A
	Round Up	2.70 A

Table 9: Effect of Herbicide on Foxberry Ground Cover

Variable	*Herbicide Treatment*	*Mean*
Average % Foxberry Ground Cover 3-Aug-07	Velpar	12.91 A
	Control	7.79 A
	Casoron	4.42 A
	Hand Weed	4.19 A
	Round Up	3.03 A

Fruiting Bud and Stem Count Effects

Examination of the effects of herbicides on fruit bud and stem count showed there were no significant differences among treatments (Table 2); however, there were several findings of numeric interest. In the May 2007 data, Roundup had the lowest bud and stem counts while Velpar and the Control had the highest and second highest bud and stem counts, respectively (Tables 10 and 11). These trends held largely true for the October data (Tables 12 and 13) and are also consistent with previous data showing the negative effects of Roundup in terms of phytotoxicity and ground cover, and the positive effects of Velpar on these variables. As such, it would seem that Roundup does produce negative effects on plant development, even in the absence of significant differences from other treatments, based on the consistency of negative effects from variable to variable. This is an important finding as it dispels the notion that foxberry has excellent Roundup tolerance.

Table 10: Effect of Herbicide on Foxberry Bud Counts

Variable	*Herbicide Treatment*	*Mean*
Average Number of Fruiting Buds 23-May-07	Velpar	11.13 A
	Control	10.63 A
	Hand Weed	9.50 A
	Casoron	7.41 A
	Round Up	2.4 A

Table 11: Effect of Herbicide on the Stem Count of Foxberry Plants

Variable	*Herbicide Treatment*	*Mean*
Average Number of Foxberry Stems/ Quadrant 23-May-07	Velpar	35.4 A
	Control	34.5 A
	Hand Weed	28.75 A
	Casoron	16.03 A
	Round Up	5.53 A

Table 12: Effect of Herbicide on the Fruiting Bud Count of Foxberry Plants

Variable	*Herbicide Treatment*	*Mean*
Average Number of Fruiting Buds 3-Oct-07	Velpar	14.39 A
	Control	7.90 A
	Hand Weed	6.29 A
	Casoron	3.66 A
	Round Up	2.66 A

Table 13: Effect of Herbicide on the Stem Count of Foxberry Plants

Variable	*Herbicide Treatment*	*Mean*
Average Number of Foxberry Stems/ Quadrant 3-Oct-07	Control	29.3 A
	Velpar	27.75 A
	Casoron	16.14 A
	Hand Weed	15.89 A
	Round Up	7.03 A

Yield Effects

Examination of the effects of herbicides on berry counts and total berry weight showed there were no significant differences among treatments (Table 2); however, again there were several findings of numeric interest (Tables 14 and 15). Not surprisingly based on previous trends, Casoron and Round Up had the second lowest and lowest yields respectively, while Velpar and Hand Weed had the highest or second highest yield data. The consistency of these trends from variable to variable again suggest they are real effects and that Roundup (and possibly Casoron) are negative to foxberry productivity while Velpar produces positive effects.

Table 14: Effect of Herbicide on the Berry Counts of Foxberry Plant

Variable	*Herbicide Treatment*	*Mean*
Average Berry Counts 3-Oct-07	Velpar	7.18 A
	Hand Weed	7.08 A
	Control	4.05 A
	Casoron	2.30 A
	Round Up	0.337 A

Table 15: Effect of Herbicide on the Total Berry Weight

Variable	*Herbicide Treatment*	*Mean*
Total Berry Weight (g) / plot	Hand Weed	4.85 A
	Velpar	4.10 A
	Control	2.50 A
	Casoron	1.225 A
	Round Up	0.175 A

Productivity Potential

One of the objectives of this trial was to determine the productivity potential of the wild crop under improved management. Below (Table 16) is a table summarizing potential yields and how much those yields would be worth, based on the average price being paid out by Newfoundland processors. Based on the means of total berry weight, the Hand Weed treatment had the highest yield potential at 214 lbs/ha (86 lbs/acre). Using the average processing price paid in Newfoundland, 65 cents/lb, a price of $139 /ha ($56 /acre) could be earned; however, hand weeding is not a practical weed control option in commercial foxberry production and would not be economically viable.

Based on means of total berry weight, the next highest yield potential came from the Velpar treatment at 181 lbs/ha (73 lbs/acre). Economic predictions (based on Newfoundland processing price) were $118/ha ($47 /acre). The lowest yield potential came from the Round Up treatment with approximately 8 lbs/ha (3 lbs/acre) and economic predictions of $5/ha ($2/acre).

The best herbicide treatment examined in terms of economic output was the Velpar treatment but at a production value equivalent of only $47/acre this would not even cover the cost of the herbicide at $89/acre[1]; however, it should be noted that the productivity potential data came from very poor yields that were predicated more by weather conditions than treatment effects. The local people around the trial sites indicated that the 2007 harvest was one of the worst years for wild berry picking, as there were very few berries across all of Guysborough County and this was attributed to considerable winter injury earlier in the year. This was validated by the research team in the spring of 2007 when significant tip dieback was observed throughout the plots and surrounding stands. This dieback was particularly detrimental to yield as the sensitive fruiting buds are located at the apex of foxberry stems where the winter injury was most prevalent. Review of winter conditions in Jan and Feb 2007 revealed very little snow cover and that fluctuating freeze-thaw cycles were prevalent. These conditions would have produced the observed effects and we can only speculate what yields would have been under normal circumstances.

To put these foxberry yields into perspective, the average lowbush blueberry yield is 1-2 tons/acre (2000-4000 lbs/acre). By comparison, the best herbicide treatment in the foxberry herbicide trial produced a yield of only 86 lbs/acre. Although the latter yield would not be economically viable for harvest it is feasible it represents only a small fraction of the real yield potential that would have been realized under normal conditions. Penny and Butt (1995) reported wild population yields of up to 306 g/m^2 which equate to 1160 lbs/acre. Similarly, Small and McKenzie (2003) reported wild foxberry yields of 1.5 tonnes/ha which equate to 1338 lbs/acre. Using the average of these two wild crop yields from the literature (1250 lbs/acre) and the control plot yields from the herbicide trial (44.5 lbs/acre) it would seem our yields were only 3.5% of normal. If this is in fact correct and the use of Velpar effectively doubles the yield potential, then yields comparable to lowbush blueberry are possible with the use of Velpar herbicide.

[1] Velpar 75DF @ 2 kg/ha application rate and $223/2 kg bag = $89/acre application cost

Additional work under normal yield conditions is necessary to test this possibility. At that time, a more valid economic assessment will be possible.

Table 16: Potential Yields & Economic Predictions for the Herbicide Trial

Potential Yields and Economic Predictions for Herbicide Trial				
Number	**Treatment**	**Means of Total Berry Weight**	**Final Yields**	**Economic predictions**
1	Hand weed	4.85 g	97 kg/ha 97 kg/ha x 0.89 = 86.33 lb/acre 97 kg/ha x 2.21 = 214.37 lb/ ha	214.37 lbs/ha x $0.65 = $139.34 /ha 86.33 lbs/acre x $0.65 = $56.11/acre
2	Velpar	4.10 g	82 kg/ha 82 kg/ha x 0.89 = 72.98 lbs/acre 82 kg/ha x 2.21 = 181.22 lbs/ha	181.22 lbs/ha x $0.65 = $117.79/ha 72.98 lbs/acre x $0.65 = $47.44/acre
3	Control	2.50 g	50 kg/ha 50 kg/ha x 0.89 = 44.5 lbs/acre 50 kg/ha x 2.21 = 110.5 lbs/ha	110.5 lbs/ha x $0.65 = $71.83/ha 44.5 lbs/acre x $0.65 = $28.93/acre
4	Casoron	1.225 g	24.5 kg/ha 24.5 kg/ha x 0.89 = 21.8 lbs/acre 24.5 kg/ha x 2.21 = 54.1 lbs/ha	54.1 lbs/ha x $0.65 = $35.17/ ha 21.8 lbs/acre x $0.65 = $14.17/ acre
5	Roundup	0.1750 g	3.5 kg/ha 3.5 kg/ha x 0.89 = 3.12 lbs/acre 3.5 kg/ha x 2.21 = 7.74 lbs/ha	7.74 lbs/ha x $0.65 = $5.03 /ha 3.12 lbs/acre x $0.65 = $2.03 /acre

Trial 2: Pruning + Fertilizer + Herbicide Effects on Foxberry

The results of the Analysis of Variance (Table 17) indicated that the two most dominant significant factors in the trial were that of Pruning followed by Herbicide application. There were no significant effects among Fertilizer treatments and interactions between factors were largely absent.

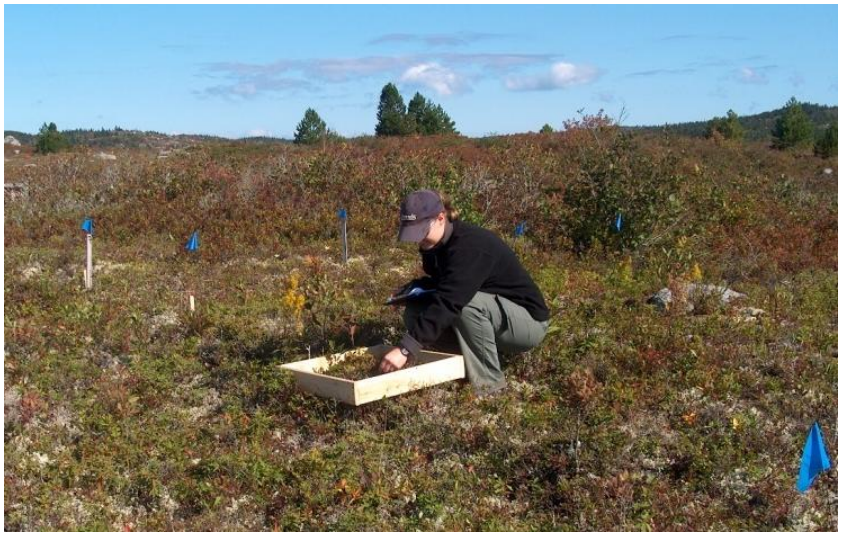

Table 17: Summary of Analysis of Variance (ANOVA) for Foxberry Pruning x Fertilizer x Herbicide Trial

Summary of Analysis of Variance (ANOVA)							
	Source of Variation (significance if P value <0.05)						
Variable	Pruning P Value	Fertilizer P Value	Herbicide P Value	Pruning + Fertilizer P Value	Pruning + Herbicide P Value	Fertilizer + Herbicide P Value	Pruning + Fertilizer + Herbicide P Value
% Ground Cover 3-May-06	0.141	0.743	1.0	0.896	0.345	0.913	0.988
% Ground Cover 20-June-06	**0.012**	0.529	1.0	0.669	0.224	0.833	0.956
Average % Ground Cover 28-Sept-06	**0.017**	0.407	*0.074*	0.547	0.344	0.938	0.389
Average % Foxberry Ground Cover 23-May-07	**0.045**	0.744	0.280	0.307	0.288	0.529	0.152
Average % Foxberry Ground Cover 3-Aug-07	0.134	0.786	0.418	*0.070*	0.391	0.188	0.497
Phytotoxicity % 20-June-06	0.310	0.700	0.194	0.843	0.310	0.700	0.843
Weed Control 20-June-06	*0.064*	1.0	0.139	1.0	0.465	1.0	1.0
Average Number of Fruiting Buds 23-May-07	**0.044**	0.836	0.592	0.287	0.122	0.599	0.627
Average Number of Foxberry Stems 23-May-07	0.263	0.932	0.996	0.620	0.623	0.741	0.579
Average Berry Counts 3-Oct-07	0.253	0.249	**0.008**	0.305	0.190	0.387	0.246
Total Berry Weight/plot 3-Oct-07	0.235	0.242	**0.007**	0.285	0.181	0.352	0.234
Average Number of Fruiting Buds 3-Oct-07	**0.035**	*0.060*	0.218	0.453	0.351	0.614	0.753
Average Number of Foxberry Stems 3-Oct-07	0.429	0.969	0.941	0.951	0.532	0.839	0.473

Pruning effects – Ground Cover

Examination of the effects of pruning on foxberries indicated that burning was slightly harmful in the short term, but over the long term was beneficial and stimulated growth, compared to mowing or untreated control plots (Tables 18, 19, and 20). Pruning the trial plots stimulated foxberry growth, but also stimulated weed growth, which can be seen when ground cover data is examined. Average foxberry ground cover data was taken by viewing the plot and determining how much foxberry growth was visible. Foxberries are a low growing plant, which are often covered by taller growing weed species. While taking this data, the taller weed species were not moved or disturbed in any way to make the foxberry plants more visible. With that in mind, treatments that may stimulate foxberry growth may stimulate weed growth at the same time, obscuring visibility of foxberries and resulting in an apparent (but false) reduction in foxberry ground cover.

Foxberry ground cover data on 20-June-06 was taken one month after the pruning treatments were carried out. Foxberry re-growth had not completely occurred in either plot, as there were more plants seen in the control plot. There were more foxberry plants seen in the mow treatment meaning the foxberry plants rebounded faster after being mowed than when burned.

Table 18: Effect of Pruning on Foxberry Ground Cover

Variable	*Pruning Treatment*	*Mean*
% Ground Cover 20-June-06	Control	35.0 A
	Mow	23.33 AB
	Burn	12.18 B

Ground cover data taken on 28-Sept-06 still indicate the control treatment had more foxberries; therefore the foxberries could still be re-growing in the pruned plots, but more than likely the stimulation of surrounding weed species was blocking the visibility of understory foxberry plots resulting in excessively depressed ground cover ratings.

Table 19: Effect of Pruning on Foxberry Ground Cover

Variable	*Pruning Treatment*	*Mean*
Average % Ground Cover 28-Sept-06	Control	24.50 A
	Burn	13.25 AB
	Mow	11.71 B

Ground cover data taken on 23-May-07 was the most reliable ground cover data as it was taken prior to any significant growth, either from the deciduous foxberries or competing weed species. As such foxberry plants could be viewed most clearly, without obstruction of treatment stimulated weed species as postulated in the 2006 ratings. With this in mind, the May-07 rating demonstrated that the Burn treatment had significantly more foxberry plants than the mow treatment and numerically more than the control treatment.

Table 20: Effect of Pruning on Foxberry Ground Cover

Variable	*Pruning Treatment*	*Mean*
Average % Ground Cover 23-May-07	Burn	19.90 A
	Control	14.50 AB
	Mow	9.15 B

Pruning Effects – Weed control

Examination of the effects of pruning on weed control indicate there were no significant effects at the 5% level, but there were at the 10% level (refer to Table 21). At the 10% level, burn plots had significantly higher weed control ratings compared to the control. Numerically the burn and mow treatments were not significantly different from each other, but the mow treatment still had considerably more weed control than the control plot. This data was taken about one month after the burning and mowing occurred and as a result, the surrounding weed species had not fully re-grown. Thus, we are seeing the effect of pruning both the foxberries and the surrounding weed species.

Table 21: Effect of Pruning on Weed Control

Variable	*Pruning Treatment*	*Mean*
Weed Control % 20-June-06	Burn	40.0 A*
	Mow	36.7 A
	Control	0.10 A*

*significant at the 10% level P=0.087

Pruning effects – Bud Counts

Examination of the effects of pruning on foxberry bud counts indicated burning was statistically superior to mowing, but only had a slight numeric advantage over control treatments (Table 22). Coupled with the ground cover data reported above, it appears that burning stimulates greater plant growth and consequently greater fruit bud formation. Mowing did not prove to be beneficial for these variables.

Fruit bud counts were collected a second time in Oct-07 following harvest and it was discovered at this time that control plots had the highest bud counts, statistically more than mowed plots and numerically more than the burn plots, at this time (Table 23). This suggests that the initial beneficial effects of burning, in terms of plant stimulation and fruit bud formation, are short-lived and can only be expected for a single harvest. As such, a two-year production cycle with one production season would seem to be the most viable for a commercial foxberry management system.

Table 22: Effect of Pruning on Fruiting Buds

Variable	*Pruning Treatment*	*Mean*
Average number of Fruiting Buds 23-May-07	Burn	9.64 A
	Control	8.43 AB
	Mow	5.15 B

Table 23: Effect of Pruning on Fruiting Buds

Variable	*Pruning Treatment*	*Mean*
Average number of fruiting Buds 3-Oct-07	Control	11.67 A
	Burn	7.47 AB
	Mow	5.138 B

Pruning effects – Yield

Examination of the effects of pruning on yield indicated that there were no significant differences among treatments (Table 17); however, the data is presented below and is consistent with the findings presented above suggesting the beneficial effect of burning and negative effect of mowing compared to untreated control plots (Table 24 and 25).

Table 24 : Effect of Pruning on Yield

Variable	*Pruning Treatment*	*Mean*
Average Berry Counts 3-Oct-07	Burn	4.65 A
	Control	3.65 A
	Mow	1.65 A

Table 25 : Effect of Pruning on Yield

Variable	*Pruning Treatment*	*Mean*
Total Berry Weight 3-Oct-07	Burn	3.37 A
	Control	2.53 A
	Mow	1.16 A

Fertilizer Effects – Ground Cover

Examination of the effects of fertilizer on foxberry ground cover indicated there were no significant differences among treatments for any of the variables examined (Table 17); however, again there were several findings of numeric interest and are worth noting (Tables 26, 27 and 28). For foxberry ground cover ratings, applying fertilizer consistently resulted in a numeric decrease in visible foxberries. Observations suggested that the fertilizer had a mild effect on new foxberry growth, but aggressively stimulated growth of the surrounding weed species, resulting in less visibility of the foxberries and depressed ground cover ratings.

Table 26: Effect of Fertilizer on Foxberry Ground Cover

Variable	*Fertilizer Treatment*	*Mean*
Average % foxberry ground cover 28-Sept-06	No Fertilizer	18.22 A
	Yes Fertilizer	14.75 A

Table 27: Effect of Fertilizer on Foxberry Ground Cover

Variable	*Fertilizer Treatment*	*Mean*
Average % foxberry ground cover 23-May-07	Yes Fertilizer	14.76 A
	No Fertilizer	14.28 A

Table 28: Effect of Fertilizer on Foxberry Ground Cover

Variable	*Fertilizer Treatment*	*Mean*
Average % foxberry ground cover 3-Aug-07	No Fertilizer	15.80 A
	Yes Fertilizer	14.87 A

Fertilizer effects – Yield

Examination of the effects of fertilizer on yield variables again showed there were no significant differences among treatments; however, because of the consistent trends observed from variable to variable it is worth viewing the numerical data (Tables 29 and 30). In both yield measurements, the No fertilizer plots had more yield which indicates that foxberry yield was not stimulated by the type, rate or timing of the fertilizer applications tested. In fact, coupled with the negative trend of fertilizer application on foxberry ground cover it is convincing that the fertilizer type, rate and timing examined is in fact detrimental to foxberry production. Further experiments will need to be conducted

to determine if alternate rates, timings or types of fertilizer will be more useful for promoting foxberry growth and yield.

Table 29: Effect of Fertilizer on Berry Counts

Variable	*Fertilizer Treatment*	*Mean*
Average Berry counts 3-Oct-07	No Fertilizer	4.35 A
	Yes Fertilizer	2.29 A

Table 30: Effect of Fertilizer on Total Berry Weight

Variable	*Fertilizer Treatment*	*Mean*
Total Berry Weight 3-Oct-07	No Fertilizer	3.07 A
	Yes Fertilizer	1.63 A

Herbicide effects –ground cover

Examination of the effect of Herbicide on foxberry ground cover showed there were no significant differences among treatments (Table 17); however, again there were trends of interest that are reported below (Tables 31, 32 & 33). In all cases, the Yes herbicide plots had more visible foxberries present, which is most likely the result of better weed control, making the understory foxberry plants more visible. The consistency of this effect from rating date to rating date suggests it is a real effect, despite the lack of statistical validation at a given rating date.

Table 31: Effect of Herbicide on Foxberry Ground Cover

Variable	*Herbicide Treatment*	*Mean*
Average % foxberry ground cover 28-Sept-06	Yes Herbicide	23.62 A
	No Herbicide	12.92 A

Table 32: Effect of Herbicide on Foxberry Ground Cover

Variable	*Herbicide Treatment*	*Mean*
Average % foxberry ground cover 23-May-07	Yes Herbicide	18.88 A
	No Herbicide	12.34 A

Table 33: Effect of Herbicide on Foxberry Ground Cover

Variable	*Herbicide Treatment*	*Mean*
Average % foxberry ground cover 3-Aug-07	Yes Herbicide	20.94 A
	No Herbicide	12.53 A

Herbicide effects – Yield

Examination of the effect of Herbicide on yield variables indicated that applying herbicide produced statistically superior yields when compared to applying no herbicide (Tables 34 & 35). For both berry numbers and berry weight per unit area, the Yes Herbicide plots had significantly higher yields than the No Herbicide plots. This data shows the importance of applying herbicides in commercial foxberry production; weed control is essential when trying to obtain optimal yields.

Table 34: Effect of Herbicide on Berry Counts

Variable	*Herbicide Treatment*	*Mean*
Average Berry Counts 3-Oct-07	Yes Herbicide	8.76 A
	No Herbicide	0.60 B

Table 35: Effect of Herbicide on Berry Weight

Variable	*Herbicide Treatment*	*Mean*
Total Berry Weight /plot 3-Oct-07	Yes Herbicide	6.25 A
	No Herbicide	0.404 B

Interactive Effects

Examination of the interaction between Pruning and Herbicide show there are no significant differences among treatments; however, there are several findings of numeric interest (Tables 36, 37 and 38). In terms of yield predictors (bud counts) and actual yields, the top two treatments were Burn + Yes Herbicide and Control + Yes Herbicide for all three variables presented. Without the use of herbicides, yields were not that good, demonstrating the importance of using herbicides in a foxberry management system. It can also be argued that burning is of benefit but that this treatment would be secondary to herbicide treatment.

Table 36: Effect of Pruning + Herbicide on Bud Counts

Variable	*Pruning + Herbicide Treatment*	*Mean*
Average Number of Fruiting Buds 23-May-07	Burn + Yes Herbicide	14.63 A
	Control + Yes Herbicide	10.63 A
	Control + No Herbicide	7.32 A
	Burn + No Herbicide	7.14 A
	Mow + No Herbicide	6.01 A
	Mow + Yes Herbicide	3.41 A

Table 37: Effect of Pruning & Herbicide on Total Berry Weight

Variable	*Pruning + Herbicide Treatment*	*Mean*
Total Berry Weight 3-Oct-07	Burn + Yes Herbicide	9.40 A
	Control + Yes Herbicide	7.13 A
	Mow + Yes Herbicide	2.22 A
	Mow + No Herbicide	0.63 A
	Burn + No Herbicide	0.35 A
	Control + No Herbicide	0.23 A

Table 38: Effect of Pruning & Herbicide on Average Berry Counts

Variable	*Pruning + Herbicide Treatment*	*Mean*
Average Berry Counts 3-Oct-07	Burn + Yes Herbicide	12.90 A
	Control + Yes Herbicide	10.30 A
	Mow + Yes Herbicide	3.07 A
	Mow + No Herbicide	0.94 A
	Burn + No Herbicide	0.53 A
	Control + No Herbicide	0.33 A

Productivity Potential

One of the objectives of this trial was to determine the productivity potential of the wild crop under improved management. Below (Table 39) is a table summarizing potential yields and how much those yields would be worth, based on the average price being paid out by Newfoundland processors.

Based on the means of the total berry weight, the Burn + No fertilizer + Yes herbicide treatment had the highest yield potential at 592 lbs/ha (238 lbs/acre). Using the average processing price paid in Newfoundland, 65 cents/lb, a price of $385/ha ($155/acre) could be earned. While this is unexciting by itself, in comparison with control plot yields of only 4.5 kg/ha (4 lbs/acre) and an economic value equivalent of only $6.47/ha ($2.60/acre) it is an outstanding result. The yield of the burn herbicide combination in fact out yielded the control plots by nearly 60 times!

It should be noted that the productivity potential data came from yields that were almost nonexistent. The local people around the trial sites informed the research team that the 2007 season was one of the worst years for wild berry picking, as there were very few berries all across Guysborough County. This can probably be explained by the winter weather earlier in the year. Jan and Feb of 2007 had very little snow cover and fluctuating freeze-thaw cycles were conducive to significant tip dieback which was noted in and outside plots in the spring of 2007. This winter injury was particularly detrimental to yield as foxberry fruit buds are located at the apex of stems, the area coinciding with the tip dieback observed in the plots.

To put these foxberry yields into perspective, the average lowbush blueberry yield is 1-2 tons/acre (2000-4000 lbs/acre). In comparison, the best treatment in the pruning + fertilizer + herbicide trial gave a yield of only 238 lbs/acre. Although unimpressive and certainly below economic viability, under normal weather conditions it is conceivable that this "best" treatment might have produced a more economically appealing result. Penny and Butt (1995) reported wild population yields of up to 306 g/m^2 which equate to 1160 lbs/acre. Similarly, Small and McKenzie (2003) reported wild foxberry yields of 1.5 tones/ha which equate to 1338 lbs/acre. Using the average of these two wild crop yields from the literature (1250 lbs/acre) and the control plot yields from the pruning + fertilizer + herbicide trial (4 lbs/acre) for comparison, it would seem the control plot yields were only 0.3 % of normal. Considering that the best treatment of burning + Velpar/Roundup increased yields 60 times that of the control plots, a yield of 37 t/acre would have been realized under normal cropping conditions! While this may be unrealistic and subject to significant yield variation within the plots, it does demonstrate that the economic viability of a foxberry management system involving pruning and herbicide use is still in question. Future studies will seek to assess the real yield potential of a burn and herbicide management regime under normal weather conditions so that the economic viability of this combination may be more accurately measured.

Table 39: Potential Yields & Economic Predictions for the Pruning + Fertilizer + Herbicide Trial

Potential Yields and Economic Predictions for the Pruning + Fertilizer + Herbicide Trial				
Number	**Treatment**	**Means of Total Berry Weight**	**Yield Predictions**	**Economic Predictions**
1	Burn + No fertilizer + Yes herbicide	13.4 g	268 kg/ha 238.52 lbs/acre 592.28 lbs/ha	592.28 lbs x $0.65 = $384.98/ha 238.52 lbs/acre x $0.65 = $155.04 /acre
2	Control + No fertilizer + Yes herbicide	10.4 g	208 kg/ha 185.12 lbs/acre 459.68 lbs/ha	459.68lbs/ha x $0.65 = $298.79 /ha 185.12 lbs/acre x $0.65 = $120.33 /acre
3	Burn + Yes fertilizer + Yes herbicide	5.35 g	107 kg/ha 95.23 lbs/acre 236.47 lbs/ha	236.47 lbs/ha x $0.65 = $153.71 /ha 95.23 lbs/acre x $0.65 = $61.89 /acre
4	Mow + Yes fertilizer + Yes herbicide	4.35 g	87 kg/ha 77.43 lbs/acre 192.27 lbs/ha	192.27 lbs/ha x $0.65 = $124.98 /ha 77.43 lbs/acre x$0.65 = $50.33 /acre
5	Control + Yes fertilizer + Yes herbicide	3.80 g	76.0 kg/ha 67.64 lbs/acre 167.96 lbs/ha	167.96 lbs/ha x$0.65 = $109.17 /ha 67.64 lbs/acre x $0.65 = $43.97 /acre
6	Mow + No fertilizer + No herbicide	1.0 g	20 kg/ha 17.8 lbs/acre 44.2 lbs/ha	44.2 lbs/ha x $0.65 = $28.73 /ha 17.8 lbs/acre x $0.65 = $11.57 /ha
7	Burn + No fertilizer + No herbicide	0.60 g	12 kg/ha 10.68 lbs/acre 26.52 lbs/ha	26.52 lbs/ha x $0.65 = $17.24 /ha 10.68 lbs/acre x $0.65 = $6.94 /acre
8	Mow + Yes fertilizer + No herbicide	0.25 g	5 kg/ha 4.45 lbs/acre 11.05 lbs/ha	11.05 lbs/ha x $0.65 = $7.18 /ha 4.45 lbs/acre x $0.65 = $2.89 /acre
9	Control + Yes fertilizer + No herbicide	0.25 g	5 kg/ha 4.45 lbs/acre 11.05 lbs/ha	11.05 lbs/ha x $0.65 = $7.18 /ha 4.45 lbs/acre x $0.65 = $2.89 /acre
10	Control + No fertilizer + No herbicide	0.225 g	4.5 kg/ha 4.0 lbs/acre 9.95 lbs/ha	9.95 lbs/ha x $0.65 = $6.47 /ha 4.0 lbs/acre x $0.65 = $2.60 /acre
11	Burn + Yes fertilizer + No herbicide	0.1 g	2 kg/ha 1.78 lbs/acre 4.42 lbs/ha	4.42 lbs/ha x $0.65 = $2.87/ha 1.78 lbs/acre x $0.65 = $1.16 /acre
12	Mow + No fertilizer + Yes herbicide	0.1 g	2 kg/ha 1.78 lbs/acre 4.42 lbs/ha	4.42 lbs/ha x $0.65 = $2.87/ha 1.78 lbs/acre x $0.65 = $1.16 /acre

Conclusions

Trial 1: Herbicide Efficacy on Foxberry

The first study objective of this trial was to determine if several common agricultural practices positively affect the yield of wild foxberries. This study focused on the use of herbicides and specifically Velpar, Casoron and Roundup applied as foliar sprays to native foxberry stands. In general Roundup gave the best weed control but was most phytotoxic to foxberries and resulted in stand reduction and the poorest yield performance. Velpar and Casoron gave similar weed control benefits but Velpar seemed to be the least phytotoxic to foxberries and this translated into stand increase and the best yields among the herbicide treatments and yields nearly twice that of the untreated control plots. As such, application of Velpar appeared to be a useful treatment for management of wild foxberry stands.

The second study objective of the trial was to determine the productivity potential of a wild foxberry crop. Table 16 summarizes the results based on the 2007 plot yields and would seem to suggest that investing in the production of foxberries is probably not a sustainable venture. However, it was noted that severe winter injury compromised crop potential and the yields reported in 2007 were not in fact reflective of normal expectations. Based on the literature reporting on wild foxberry yield potential and the yield response to Velpar application seen in the present study, it is possible that economically viable yields may be obtained under normal weather conditions. As such, additional research is required to determine the real crop potential of the "best" treatments and their economic viability.

The third objective of the trial was to determine if a crop management system similar to lowbush blueberries is useful on wild foxberries. Since this trial focused only on herbicides, this objective cannot be completely answered properly; however, the use of Velpar did positively affect foxberry production and has potential for use in a multi-faceted management program.

Trial 2: Pruning + Fertilizer + Herbicide

The first study objective of this trial was to determine if several common agricultural practices positively affected the yield of the wild foxberries. Pruning to encourage ground cover was not as successful as herbicide use; however, burning may be marginally beneficial. Fertilizer use had a significantly negative effect on yield and more experiments should be conducted to determine if alternate types, rates or timings might produce more desirable results. One important finding from the fertilizer program utilized in the present study was that foxberries did not respond aggressively and appear not to be opportunistic spreaders; specifically, they did not compete strongly when fertilizer applications were made and appeared at an even greater competitive disadvantage due to the greater responsiveness of the surrounding weed species. In summary, dramatic beneficial responses were not obtained with any of the treatments studied; however, Velpar coupled with Roundup wipes produced the best effects on stand parameters and

yield while burning also affected marginal benefits. It is felt that these two elements should form the basis for any commercial production systems although further refinement will no doubt be necessary. At this point fertilizer application seems detrimental although further evaluation of different nitrogen sources, rates and timings may give more promising results.

The second study objective for the trial was to determine the productivity potential of a wild foxberry crop. Table 39 summarizes the results and based on the 2007 plot yields it would not seem viable to invest in the production of foxberries at this time. However, it has been noted that the 2007 crop was compromised by excessive winter injury and as such the answer to this question is still unknown. Based on the literature reporting on wild foxberry yield potential and the yield response to burning and Velpar/Roundup applications seen in the present study, it is possible that economically viable yields may be obtained under normal weather conditions. Future research with "best" treatments determined in the present study, under normal production levels, will be needed to complete this objective.

The third objective of the trial was to determine if a crop management system similar to lowbush blueberries is useful on wild foxberries. The current study results suggest that elements of the lowbush blueberry production system are helpful while other aspects are exacerbating to foxberry production. In particular, foxberries responded favourably to burn pruning which was once the norm for lowbush blueberry production, but has the since been replaced by mow burning. Interestingly, the latter prune treatment produced negative results on foxberries. It is also noteworthy that although burn pruning stimulated foxberry growth and yield, it stimulated competing weed species to a greater extent and necessitated herbicide treatment in combination for best effect. Foxberries proved to be a poor competitor and control of competing species that responded more aggressively to the pruning (such as lowbush blueberry) is essential. Also, response to burn pruning was short term, and similar to lowbush blueberry in that a two-year burn cycle appears to be most feasible. Fertilizer response in lowbush blueberry is variable and a delicate process due to the responsiveness of this plant. In contrast, foxberries appear to be largely unresponsive to fertilizer application with consistently negative effects on yield. Finally, the most promising herbicide for use in foxberries appears to be Velpar which is in fact the main herbicide used in lowbush blueberry production systems. Likewise, Roundup wipes are used routinely in lowbush blueberry production and would seem to offer similar benefits to a foxberry management system.

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