Grizzly Snow Pigs, Silage final report

The project showed that young shoots (ie the present year's growth) of Willow, Fireweed, Trembling Aspen, and Black Cottonwood could be harvested using a gas powered hand held brushcutter quite straightforwardly from the easements of the highways of the Yukon. Regular clearing of the easements by YECL or Highways means there is a ready and continuous supply of new shoots of the three species each year. Fireweed was surprisingly more difficult to find in concentrations suitable for cutting, and the best growth was found over the septic field at Icy Waters Ltd. Collection trips were made in June, July, and August of 2014. After each collection trip the material was brought back to Grizzly Pigs Farm (km220 North Klondike Highway) for processing. Collections were made along the Klondike Highway for Willow, Aspen and Cottonwood, and at Icy Waters Ltd for Fireweed. As the project continued it became clear finding dense growth that made for efficient cutting and collection was a challenge; what may appear dense from the Highway, was often not particularly dense once I got in amongst it. This caused longer than expected collection times, and often less material collected than expected.

The gas powered cutter was a Troy-Bilt 4 Cycle 29cc Brush Gas Grass Trimmer, 18". It was lightweight, easily cut stems up to 15mm thick and very durable. It was accidentally driven over by a loaded F250 and continued to work perfectly. For Fireweed, the most effective cutting method was not the trimmer, but a long blade such as a machete, a sickle or scythe would also have worked; the last August harvest was in fact most efficiently collected by hand, although work gloves are a necessity as by then the lower stalks are brittle and sharp when broken. The wetter, fleshier stalks of fireweed tended to get caught and wrapped round the trimmer head.

Processing involved chopping/shredding the material in a Troy Bilt 250cc gas chipper and shredder. The chipper outlet is practically at ground level, so a platform was constructed to sit the machine on, so the collection bag can fill vertically, and fully. The chipper ran well with the woody material. However the Fireweed caused significant difficulty by becoming a wet mulch and cogging the blades and outlet port. This necessitated numerous shutdowns for clean-outs and a batch of fireweed tended take significantly longer than the other materials. Doing 50/50 mixes with the woody shoots did help a little in that the chips helped clear the fireweed, however numerous stops were still required to clear the machine. Black Cottonwood also had a longer processing time - its shoots were bushier but shorter, ie per shoot, less weight was shredded compared to Aspen and Willow. It also exuded a sticky sap which encouraged clogging. Otherwise the machine worked well, and ear defenders are highly recommended.

The project started before the storage drums could be ordered, and it became apparent they would not be necessary. Each shredded batch was split into two portions: one was fed fresh to poultry, and pigs, to evaluate interest and acceptance of the fresh product. The goal was to establish if it was suitable for a fresh feed trial. A sample of the fresh was sealed in a ziplock bag

and refrigerated, to be sent out for nutritional analysis the following day, a further sample, also in a ziplock was frozen. The second portion was first sealed in heavy duty plastic bags (reuse fish food bags from Icy Waters Ltd), after having been squashed to expel as much air as possible. This was then placed in a black plastic bag to exclude light. The bags were then dated and stored in a dark shed at ambient temperatures.

Feeding Fresh

Shredded willow is of interest to Pigs, and Chickens, they will browse upon it. There was no exceptional interest, and there was always material left over. With pigs - even when fed willow at normal feeding times instead of the customary grain based diet, there would be willow left in the bowls at the time of next feeding, normally feed bowls are picked clean. The chickens scratched around in it, pecked at it, but again did not eat it with gusto.

Shredded Aspen and Black Cottonwood was pretty much ignored by the pigs, they sniffed at it, tasted it, and walked away from it. Chickens scratched around in it, as if they were trying to find something tasty underneath.

Fireweed was acceptable to pigs and chickens, however if became apparent it was preferred in the non-shredded form. Pigs certainly did not find the shredded/compacted mush form as palatable as the straightforward fireweed shoot.

Mixing any of the freshly shredded material with grain diets did not encourage the consumption of the vegetable matter: the chickens picked out what they wanted, and the pigs carefully took their time to sift through the vegetation for the grains.

This behavior was repeated with every batch of fresh vegetation processed from June through August. As a result it was apparent whilst the animals may have an interest in willow and fireweed, they did not consider it a staple, and would not consume it in volume even if they had been starved for 24 hours. I did not wish to starve the animals longer, to encourage them to eat the vegetation, as I was concerned regarding the effect of ongoing starvation on egg production and the deteriorating behavior of the pigs. Consequently there was no need for a feed trial. It is of note that during 2014 the pigs were used for ground clearing at GPF, the shrubs and trees that remained untouched the longest were Aspen and Black cottonwood, even the bark of evergreens was consumed before those species were touched.

Feeding the preserved material

The “silage” or preserved material was held at ambient temperatures, and froze with the onset of winter. During winter it was thought the material would be more palatable, due to a natural lack of green foodstuffs. Regularly, batches were removed, defrosted and fed to pigs and poultry either alone, or mixed with grains. The material was well preserved, appeared to have no fungal spoilage, nor “off” smell when defrosted. Unfortunately the response of the animals remained the same – some interest in the willow and fireweed, very little (perhaps simple curiosity) interest in the aspen and black cottonwood. This silage is not suitable as a winter fodder for pigs or chickens._

However, batches of the material were retained through to August 2015. In June, two samples of willow were re-analysed – one that had been frozen since processing on July 28th, the other that had been stored ambiently. This was to determine if there had been any change in nutritional quality from the fresh product, almost a year before, and if the different storage methods affected quality:

	Protein%	%Fibre	Fat%	M E* swine	M E* poultry
Fresh	2.77	9.14	1.69	1053.63	904.75
Frozen	2.81	16.77	1.52	711.37	424.95
Ambient	2.65	13.74	1.23	881.51	603.06

*ME Metabolisable Energy, (kcal/kg)

The loss in energy is presumably related to the increase in fibre, however it would appear it is not necessary to bear the cost of freezing the material, as ambient storage, with air removal in darkness seems as good as preservative method as freezing. Thus the preservation method of excluding air, in darkness, was effective.

During summer 2015, after the material had defrosted naturally, it was regularly fed to the pigs and poultry with similar results. The willow and aspen by now exhibited an almost alcoholic odour, which encouraged the pigs to roll in it – unfortunately this was not an appetite stimulant and interest in eating the material was again confined to fireweed and willow, however this was again in small volumes. The fireweed, probably due to its higher moisture content, by now showed signs of fungal decomposition.

The only materials the animals were interested in were willow and fireweed, and the preferred form was fresh, unshredded. The volumes consumed however, were not large enough to indicate they would be suitable as a feed replacement for a commercial diet.

During summer 2015 it was apparent that all but the fireweed had preserved as a loose fluffy material, reminiscent of garden mulch. It was used to good effect to mulch both 1 year haskap seedlings, and the experimental oat and quinoa plots at GPF. Although a failure as a feed replacement, the product was a very useful mulch a d significantly helped the germination of both seeds.

Comparison of the present price of commercial feed with the sheer labour requirement required to collect and process this wild feed would also make it uneconomic to harvest.

Collections and Nutrition

Collections for stockpiled material for both fresh and preserved feeding occurred in June, July, and August. Collections for nutritional analysis were undertaken at the beginning and end of July for willow, fireweed, willow+fireweed mix, black cottonwood, and aspen and are attached to this report.

Early July Sampling

	Moisture	Protein	Fat	Fibre	ME for Swine
	%	%	%	%	kcal/kg
Willow	58.38	2.93	1.25	11.7	859
Fireweed	74.25	4.44	0.73	4.86	689.55
Willow+Fireweed	66.14	3.43	0.92	11.1	
Aspen	60.53	3.03	1.57	8.69	1016.67

Late July Sampling

	Moisture	Protein	Fat	Fibre	ME Swine	ME Poultry
	%	%	%	%	kcal/kg	kcal/kg
Willow	56.8	2.83	1.14	17.54	597.22	221.93
Fireweed	75.96	3.42	0.88	4.23	628.97	312.02
Black						

Cottonwood	51.36	2.55	2.20	11.97	1130.52	1008.48
Aspen	55.68	2.77	1.69	9.14	1053.63	904.75

There are small declines between the start and end of the month, especially for Fireweed. As this is the plant the animals appeared to prefer, although not in great volume, it seems the earlier cuts are the best nutritionally. The low protein figures suggest these plants are not a viable substitute for commercial diets, even if they were consumed with gusto. They are of interest to the animals as something different, to perhaps liven up the diet occasionally, but they are no substitute for commercial diets. It is important to remember this when free ranging animals that are expected to grow fast and reproduce in numbers: the wild food is not concentrated in nutrients as is commercial food, wild food may provide micronutrients and be interesting for the animal, but it does not provide a commercial return…even if they do actually like it and eat it, which was not the case in this project.

It would have been interesting to nutritionally analyse samples from the end of August collections, to determine if nutritional content varied by the end of the growing season. However by then it was clear these plants were not suitable as commercial feed replacements.