**Mad River Knotweed Lab**

Knotweed Vitality Study

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For the last few years, I’ve been trying to understand how vital knotweed really is. Since our main method for killing the plants is drying the parts of the plants we dig up, it seemed prudent to validate our technique with some simple vitality tests.

Our testing focused on taking sample from the plants: roots, rhizomes, stems and leaves. Plant parts were cut into 1 to 3” pieces after drying. Typically these samples were dried outside for various amounts to time and then replanted and watered. Samples were then observed for up to 4 weeks to record germination rate. Typical germination (when shoots first appears) was about two weeks but never more than 3 weeks for new growth to appear.

In 2020 these tests were done with primary drying outside in the sun. The drying period was typical summer weather for VT. Summary data from these tests are presented below.

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Observations of the viable sample showed the larger samples remained the most viable, as one would expect with drying. The hardier the outer surface of the rhizomes and root pieces appeared to delay the drying rate which would contribute to increased viability.

In 2022, I decided to rerun the drying experiment with a bit more attention to detail and sample treatment. Only rhizomes and bucatini, white precurors to shoots shaped like bucatini pasta, were used in the 2022 tests. The selected 30 samples were dried in a barn so that the treatment was consistent. While they didn’t get sun they also weren’t rained on. The drying was less intensive but the consistent nature of the process might help with getting clear indication of viability between drying days and made drying management easier.

Samples were dried and tracked in weekly intervals, i.e. drying times of 1 week, 2 weeks, and 3 weeks. After drying the 30 sample pieces were planted in sand and watered. Typically it took 7 to 10 days for shoots to sprout. Plants were left to grow for a couple of weeks after sprouting to guarantee all samples had adequate time to sprout. Subsequently the samples were extracted from the sand and observed. The number of viable shoots out of the 30 samples provided the viability value.

The data from 2022, shown below, shows the definitive decrease in vitality with increased drying. It is possible that the diameter of the pieces may play a role in vitality differences since it is harder to fully dry larger samples then smaller samples, however rhizome and bucatini samples were roughly the same diameter and length, with diameter variation range of 2 : 1.

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The trends indicated in both tests were similar and definitely showed that drying knotweed is a very effect method to kill the plant. The rhizomes and roots are the hardest to dry out which makes perfect sense given the structure of these elements.

When the two data sets are compared, as shown below, the trend lines are consistent in that they show sustained drying lowers vitality. However, it also indicates the effectiveness of just drying indoor appears to less effective than outdoors in the sun and wind. For rhizomes the roughly seven days difference may not be significant in most outdoor drying scheme, but it is noteworthy.

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Photo Documentation: 2020 testing

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| :IMG_0367 (1).jpg | :IMG_0422.jpg |
| IMG_0373.jpg | :IMG_0224.jpg |

Rhizome Tests 2022:

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| test'22-2.pdf | test'22-3.pdf |

Samples sprouting from dried pieces

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| test'22-5.pdf | test'22-1.pdf |

Samples being counted after drying, planting and then sprouting.

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| test'22-7.pdf |