Hieracium (Hawkweed) Removal Method Experiment

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Methods: In experimental plot 1 (P1) a 4m x 4m plot was established with corners at 12, 870; 16, 870; 16, 866; 12, 866 (Figure 1). We divided the plot into 16, 1m x 1m quadrants. We determined the percent basal cover of hawkweed in each quadrant by taking the average (mean) of two independent visual estimates. We randomly assigned, to each plot, a hawkweed removal treatment. We had five treatments: 1. Hand pull, without tools, hawkweed basal leaves and flowers with the intent of removing as much root as possible (hand pull, no tool) 2. Hand pull with a tool with the intent of removing as much root as possible (hand pull w/tool) 3. Paint one leaf of each rosette with a 2:1 round-up herbicide solution with red dye (paint leaves) 4. Cut the flower head off of each hawkweed plant, paint 2:1 round-up herbicide solution with red dye on peduncle (cut head, paint stem). We randomly assigned the following treatments to each 1m x 1m area and calculated the initial percent basal cover and duration of the treatment application (Table 1). Due to time constraints, quadrants 16 and 7 were not treated with one of the first four treatments, and so is the fifth treatment.

Table 1: Treatments associated with each quadrant (1-16), estimated % cover of hawkweed and duration of treatment application

Treatment	**Quadrant**	**% cover hawkweed**	**Duration of treatment application (minutes)**
Control	16	10	-
Control	7	77.5	-
Cut head, paint stem	1	2.5	1
Cut head, paint stem	10	32.5	9.38
Cut head, paint stem	15	17.5	3
Hand pull, no tool	13	7.5	15
Hand pull, no tool	9	37.5	16.3
Hand pull, no tool	3	15	6
Hand pull, no tool	4	12.5	9.75
Hand Pull w/ tool	5	5	6
Hand Pull w/ tool	14	25	19
Hand Pull w/ tool	6	25	19
Hand Pull w/ tool	11	62.5	73
Paint leaves	8	27.5	18
Paint leaves	2	12.5	8
Paint leaves	12	20	5

Quadrant 1	Quadrant 2	Quadrant 3	Quadrant 4
Quadrant 5	Quadrant 6	Quadrant 7	Quadrant 8
Quadrant 9	Quadrant 10	Quadrant 11	Quadrant 12
Quadrant 13	Quadrant 14	Quadrant 15	Quadrant 16

Figure 1: Map of quadrants in the experimental plot. North is on the top of the plot, south on the bottom, east to the right, and west to the left. The south end of the plot begins at row 866, with the north end at row 870. The east boundary is at 16 and the west boundary at 12.