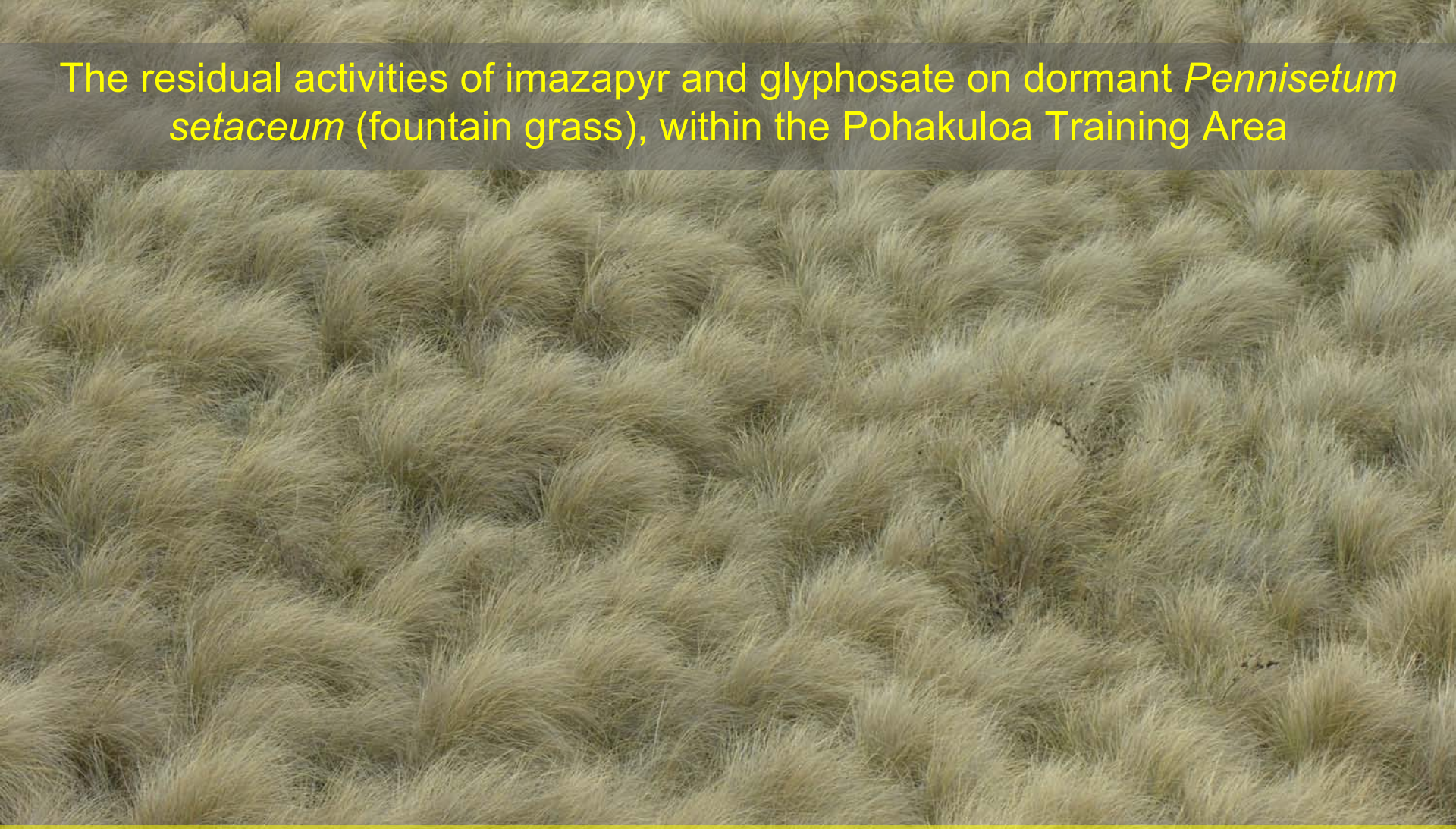
# The residual activities of imazapyr and glyphosate on dormant *Pennisetum setaceum* (fountain grass), within the Pohakuloa Training Area



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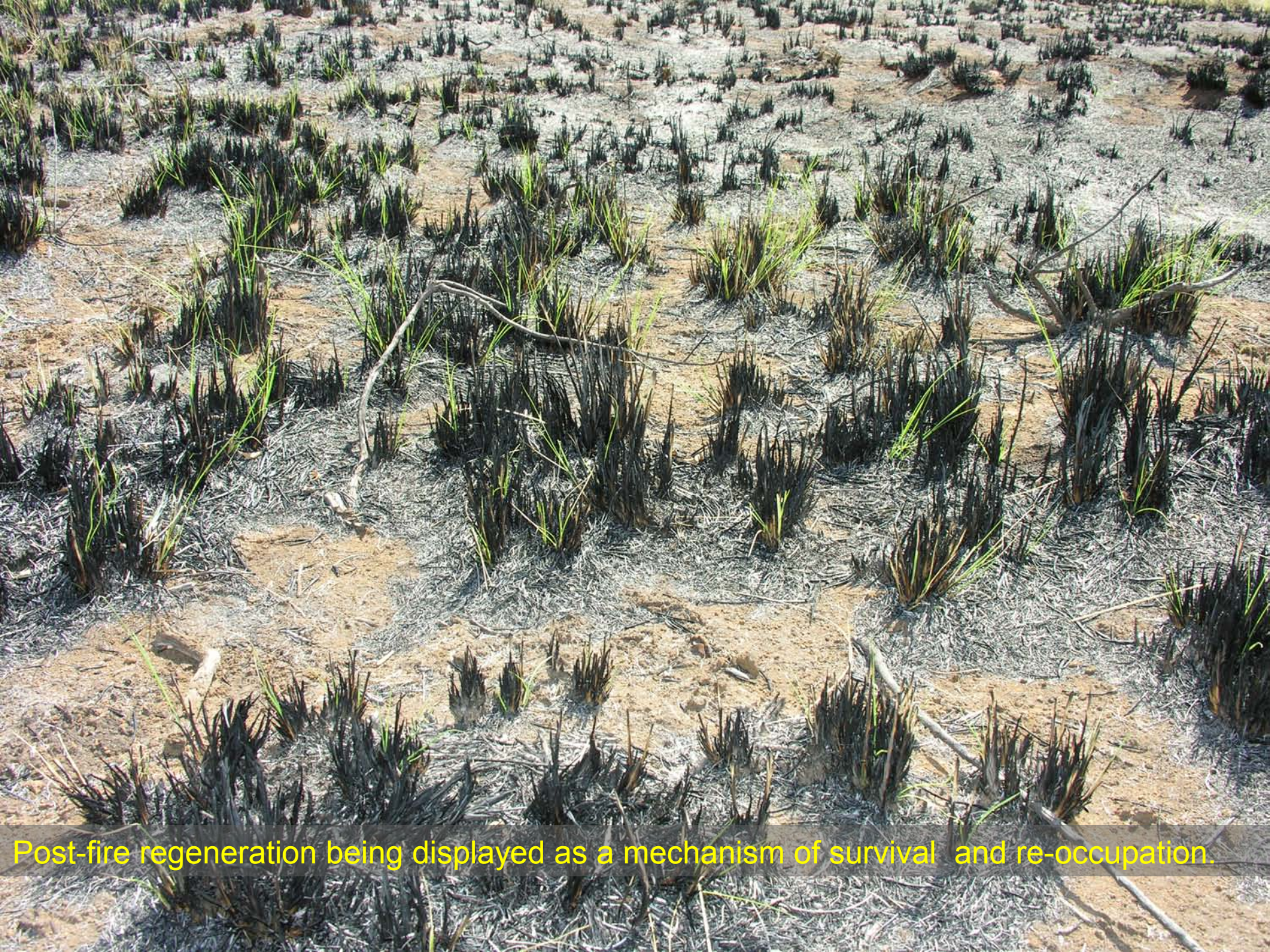
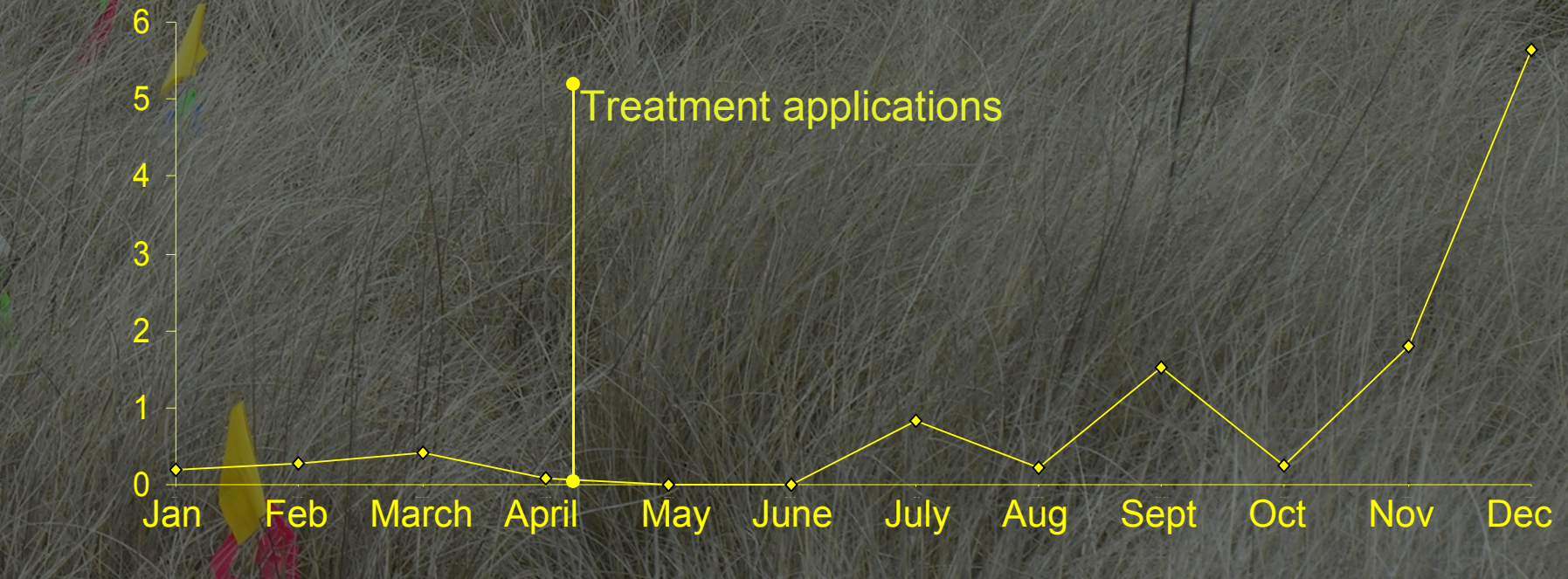
Fountain grass creates major fire hazards in Hawaii. Post-fire landscape in North Kona July 2007.

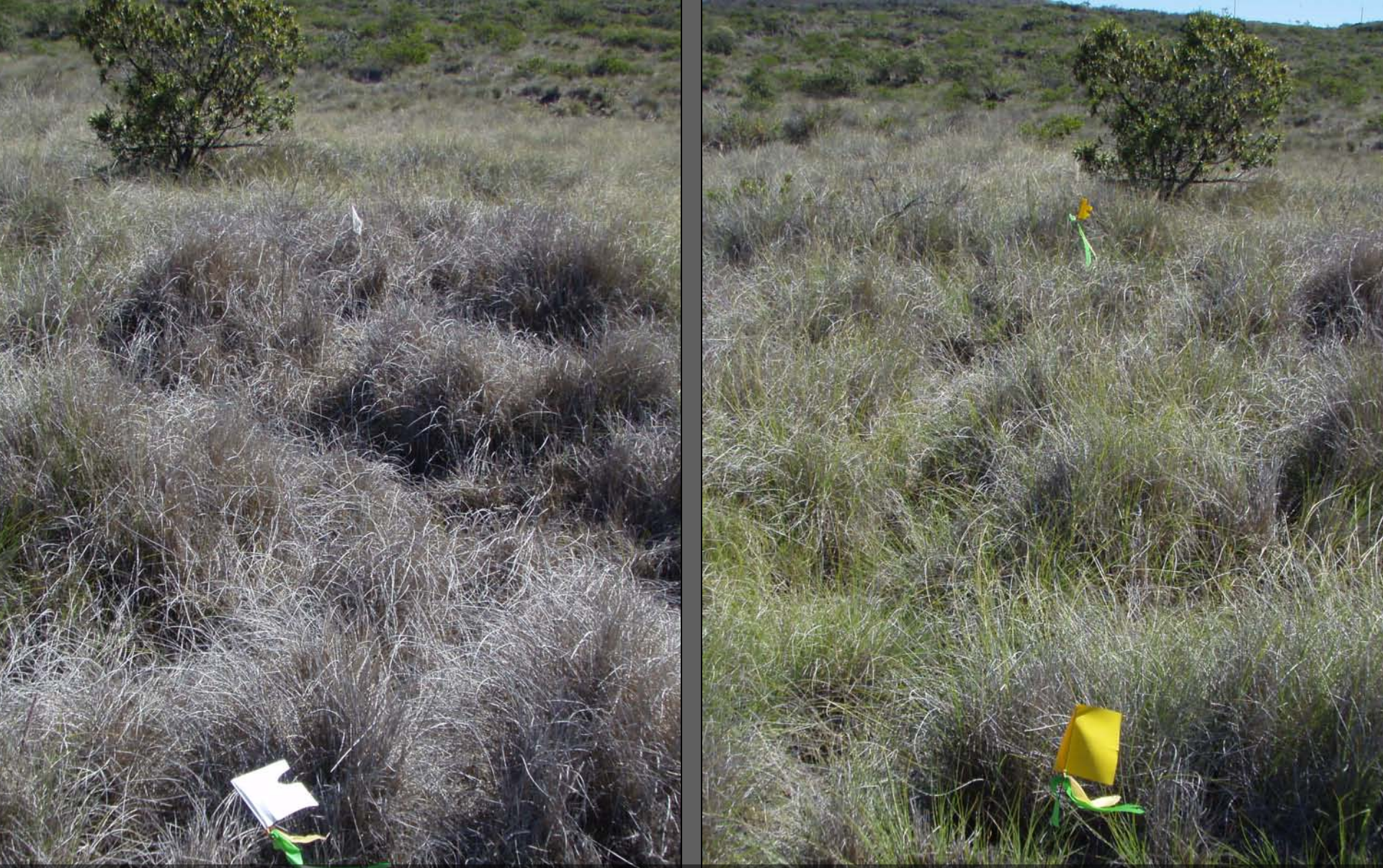


Post-fire regeneration being displayed as a mechanism of survival  and re-occupation.

| Active ingredients: | Symbol |
|---|---|
| Habitat®- imazapyr applied at a rate of 1 qt/A =0.5 lbs a.i./A | IM |
| Roundup Original Max®- glyphosate applied at a rate of 1 qt/A =1.125 lbs acid equivalents./A | GLY |
| **Adjuvants:** | |
| R-11®- non-ionic surfactant applied at a rate of 0.25% v/v (1qt/100gal) | NIS |
| Hasten®- modified vegetable oil applied at a rate of 0.5% v/v (1pt/A) | MVO |
| In-Place®- inverted emulsion applied at a rate of 0.25% v/v (8 oz/A) | IE |

Monthly accumulated precipitation (inches) at PTA for 2007. Collected from remotely monitored weather station PTRH1 located within Range 17, adjacent to our experiment. Data is being archived by the MesoWest Project, Utah State University. *http://www.met.utah.edu/mesowest/*



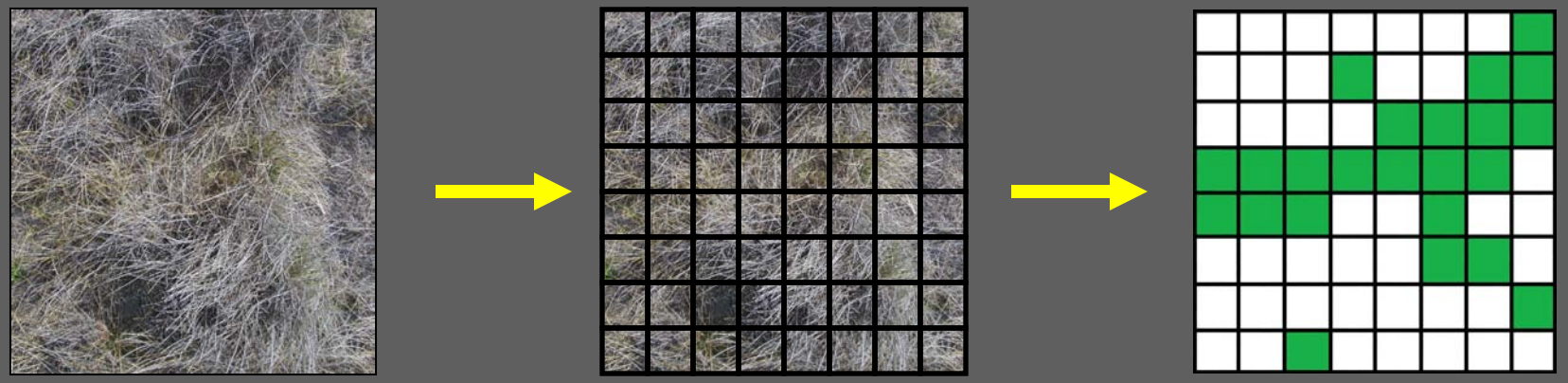


Imazapyr (white flags) and glyphosate (yellow flags) treatment plots recorded in November 2007 (31 WAT). Grass regeneration in glyphoste corresponding to winter precipitation and indistinguishable to untreated surroundings.

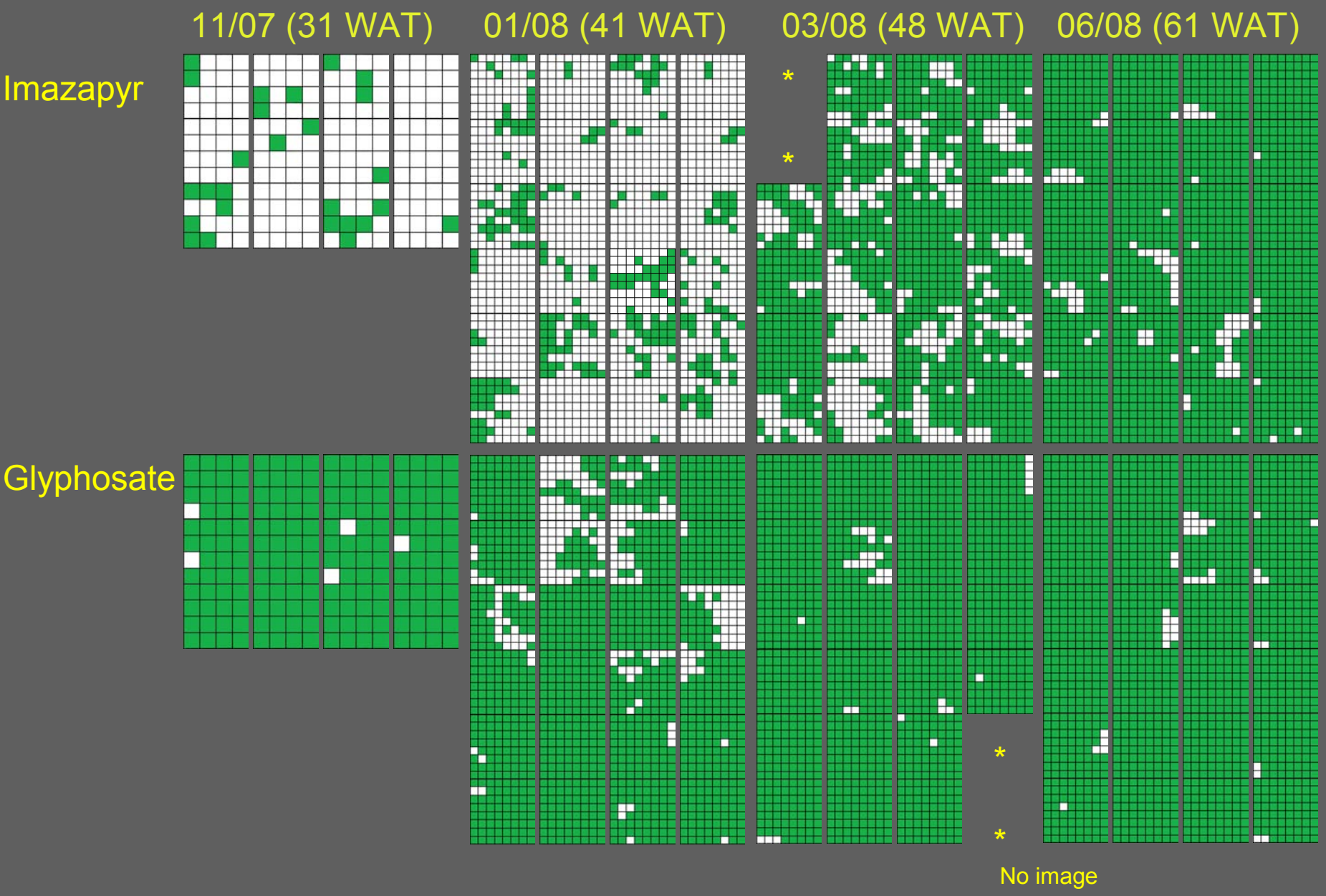
# Visual Color Index for rating herbicide injury

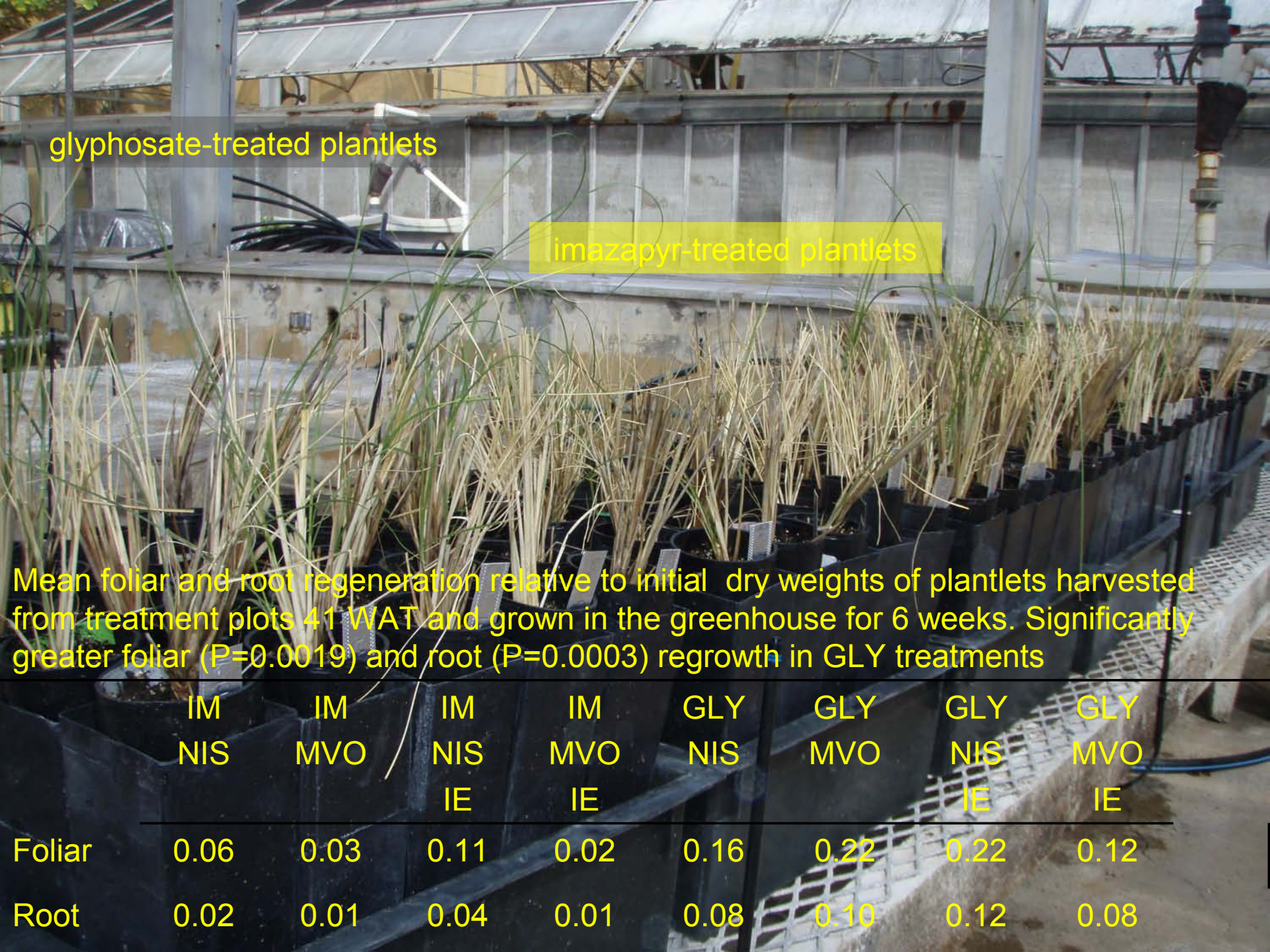
1. Record digital images of random representative 1x1 m areas encompassed by a frame placed within the treatment plot (2x subsamples in Jan and March 08)

1. Superimpose a grid layer over the image (4x4 grid for Nov. 2007 results



Grid overlay of regenerating foliage, (green) or absence (white)






Mean foliar and root regeneration relative to initial dry weights of plantlets harvested from treatment plots 41 WAT and grown in the greenhouse for 6 weeks. Significantly greater foliar (P=0.0019) and root (P=0.0003) regrowth in GLY treatments

| | IM NIS | IM MVO | IM NIS IE | IM MVO IE | GLY NIS | GLY MVO | GLY NIS IE | GLY MVO IE |
|---|---|---|---|---|---|---|---|---|
| Foliar | 0.06 | 0.03 | 0.11 | 0.02 | 0.16 | 0.22 | 0.22 | 0.12 |
| Root | 0.02 | 0.01 | 0.04 | 0.01 | 0.08 | 0.10 | 0.12 | 0.08 |


Mean counts (±SE n=3) of flower spikes within 4 $m_2$ plots recorded on January 24 (41 WAT) and March 13 2008 (48 WAT). Significantly greater spikes in GLY treatments at 41 WAT (P=0.0001) and 48 WAT (P=0.0002)

| | IM NIS | IM MVO | IM NIS IE | IM MVO IE | GLY NIS | GLY MVO | GLY NIS IE | GLY MVO IE |
|---|---|---|---|---|---|---|---|---|
| 41 WAT | 1±1 | 0 | 0 | 0 | 51±5 | 42±19 | 40±4 | 44±24 |
| 48 WAT | 27±24 | 53±28 | 46±9 | 39±21 | 153±28 | 100±53 | 130±43 | 176±84 |


Mean regenerating foliar fraction relative to total above ground biomass collected from two individual clumps. Significantly greater regrowth observed in the field in GLY treatments at 61 WAT ($P$=0.022)

| | IM NIS | IM MVO | IM NIS IE | IM MVO IE | GLY NIS | GLY MVO | GLY NIS IE | GLY MVO IE |
|---|---|---|---|---|---|---|---|---|
| 61 WAT | 0.15 | 0.15 | 0.26 | 0.15 | 0.23 | 0.33 | 0.21 | 0.23 |

Waipunalei (DHHL) in August, 2007 (0 WAT) dominated by kikuyu grass (*Pennisetum clandestinum*) and Yorkshire Fog (*Holcus lanatus*)

Waipunalei (DHHL) in November, 2007 (10 WAT). Grasses desiccated by aerial application of Habitat® at 1 qt/A in 10 gal/A volume

Bonus feature: Tolerance of young *Acacia koa* tree

## Conclusions

The utility of imazapyr allows for greater flexibility in management planning and implementation.

Increasing rate to 2 qt/A could result in greater grass suppression and fuel load reduction.

Opportunities in selectivity  with the establishment of native legumes

Sensitivity observed on *Dodonea viscosa, Metrosiderous polymorpha and Myrsine lessertiana*

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