



What are all those
yellow flowers?

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Clair Keene

Extension Specialist in Cropping Systems

- Penn State PhD in agronomy
- Williston REC since 2016
- Projects
 - Working with farmers to diversify crop rotations
 - Saline seep & pipeline reclamation with perennials
 - Intercropping chickpea + flax
 - Kernza (perennial grain)



Narrow leaf hawkweed

(*Crepis tectorum*) aka False dandelion



Upper leaves
curl under

Narrow leaf hawkbeard biology

- Winter annual
 - Germinates fall and spring
 - Flowers throughout growing season
- Wind dispersed seeds have feathery papus
- Likes disturbed areas
 - Pipelines, roadsides, oil well sites, etc.



NLHB timeline

- 2016
 - Clair in Williston, gets calls about yellow flowers along pipelines
 - Few plants brought to WREC for ID
 - Ag Alert on NLHB
- 2017
 - Reports of heavily infested crop fields, especially pea & lentil
 - Observed along pipelines and roads
- 2018
 - All over Williams Co: oil and gas wells, along the roads, crop fields
 - **Is that a canola field?**
 - NDSU Weed of the Year



NLHB in field pea

Lentil field western Williams County June 29, 2017



SW corner Hwy 2 & 1804 looking west
June 12, 2018



Oil well Williams County

June 12, 2018

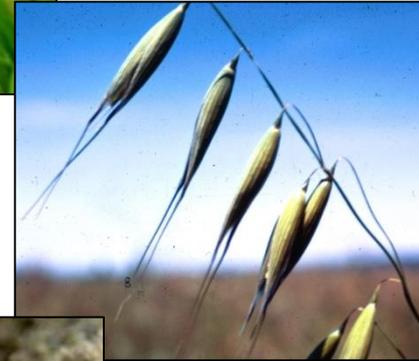


NLHB Control

- Fall burn down
 - Broadleaf herbicide + glyphosate (**full-rate 32 oz RT3**)
 - Gly + Express or Panoflex + (2,4-D)
 - Gly + Sharpen + (2,4-D)
 - Gly + **Valor** + 2,4-D
 - **Excellent residual control with Valor into spring**
- Spring BD → spray rosettes, bolting too late!
 - Gly + Sharpen
 - Full rate glyphosate
- In-crop wheat
 - Affinity Broad Spec + 2,4-D, GoldSky, Starane Flex + 2,4-D
 - WideMatch + 2,4-D not sufficient

And it's not just NLHB

- **Green foxtail** (Pigeon grass)
 - Brian Jenks finding Group 1 & 2 resistance, some with both!
- **Wild oat**
 - Wide-spread Group 2 resistance
- **Kochia**
 - Glyphosate-resistant not common in western ND, but could get it from either MT or eastern ND
 - Group 2 resistance: Glean, Ally used heavily late 1980's
- **Horseweed** (Marestail)
 - Glyphosate-resistant populations appearing



How do you choose
what to plant?

How do you choose
what to plant?

Most profitable



How is this possible?

We assume that we can:

- Control the weeds
- Provide adequate fertility
- Manage other potential pests

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What do we do?

Reduce selection pressure on important herbicides

Chemical weed control

- **Residuals**

- Group 3 Sonalan, Prowl H2O, Treflan
- Group 14 Spartan, Sharpen, Valor
- Group 15 Dual, Outlook, Zidua

- **POST**

- Roundup Ready or Liberty Link
- Group 27 (HPPD) Huskie, Talinor

- **Rotate Mode of Action**

- **Labeled rate + Labeled weed size**



What do we do?

Reduce selection pressure on important herbicides

Non-chemical weed control

- **Crop rotation**

- Cool-season | Warm-season
- Annual or Perennial forages
- Interseed small grain with sweet clover

- **Cultural**

- Planting date
- Variety selection

- **Mechanical**

- Mowing a forage
- Swath grain instead of straight cut
- Targeted cultivation



Questions?

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Save the Date!



OATS: Organic Agronomy Training Series

March 26-27, 2019

Ramada Hotel & Conference
Center in Bismarck, ND

<https://oatswest.bpt.me>

\$95 before March 20th