

# Choosing herbicide products for invasive plant management

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# Topics



- Importance of innovation among herbicide manufacturers
- Patent vs. Post-patent actives
- Brands vs. Secondary Brands/Generics
- Performance of herbicide products
- Considerations for choosing an herbicide
- Nufarm portfolio for invasive plant management

- What kinds of innovation do herbicide manufacturers deliver?
  - New products and active ingredients for vegetation management problems
  - Enhancements to existing products for ease of use or better performance
  - Improved recommendations and support through adaptive management and cooperative trials

## Examples in invasive plant control

### Patented

- Aminopyralid
- Imazamox

### Post-Patent

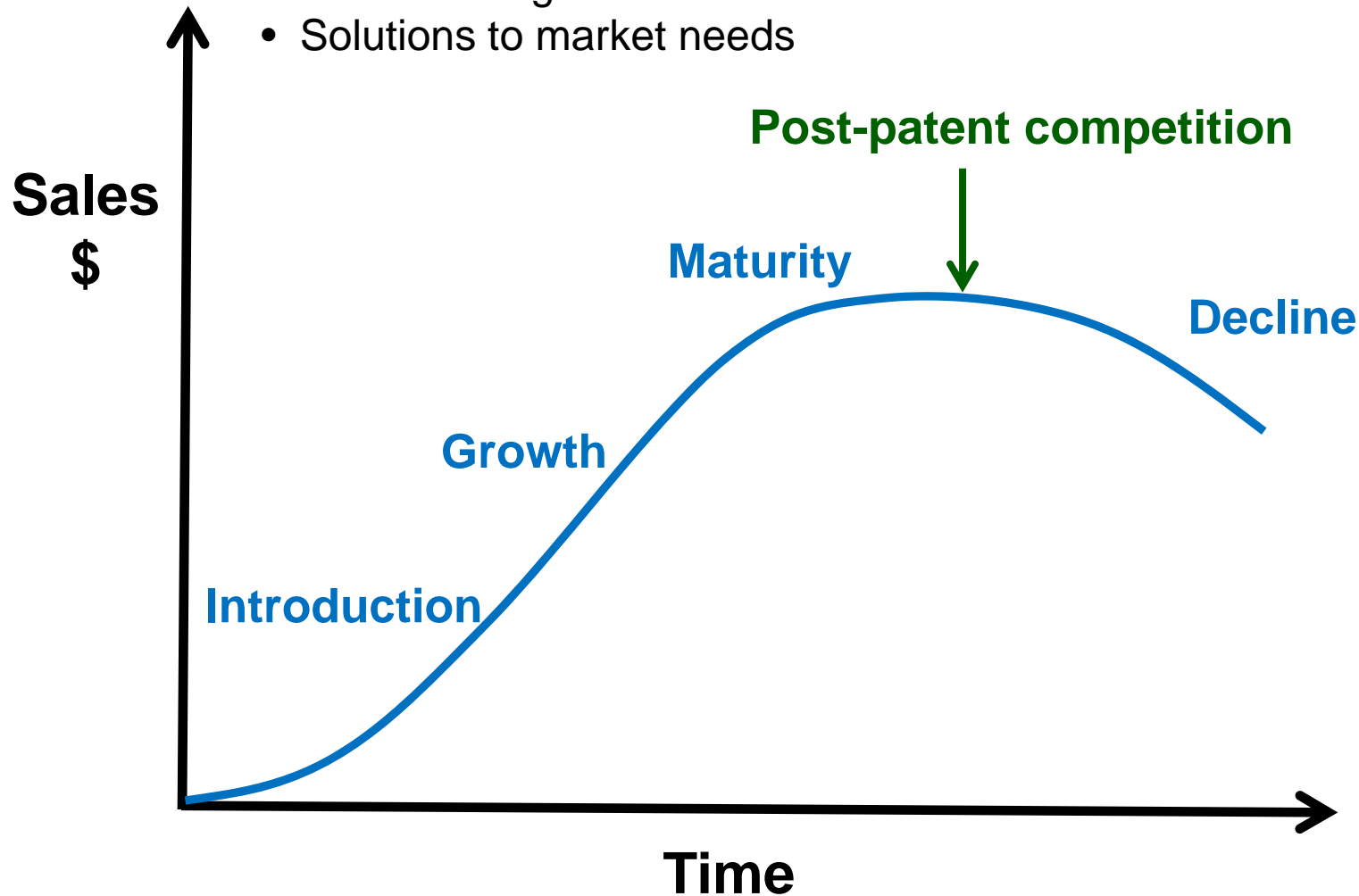
- Glyphosate
- Imazapyr
- Triclopyr
- Clopyralid
- 2,4-D
- Dicamba
- Diquat
- Imazapic
- Metsulfuron-methyl
- Sulfometuron
- Picloram

# Typical life cycle of a new product



## Assumptions

- Product brings innovative
- Solutions to market needs



# Brands vs. Secondary brands/generics



- Original brands
  - First to enter the market
- Secondary brands/generics
  - Enter market later in an active ingredient life cycle
  - Increase competition with “me too” products
- Are companies defined as “Branded” or “Generic” competitors?
  - Sometimes, but usually not
  - Example: Nufarm sells a mixed portfolio in veg mgt:
    - Brands (Weedestroy® AM-40, Escalade® II, Patron ® 170)
    - Secondary brands (Aquaneat ®, Razor ®, Polaris ®)
    - Generic offerings (Diquat E-Pro, Chlorsulfuron E-Pro)
  - Most companies have a mixed portfolio

# Performance of Post-Patent Products



- Example: Research on Etigra imazapyr
- Etigra was purchased by Nufarm in 2008
  - Independent 3<sup>rd</sup> party research was installed in 2006
  - Etigra imazapyr formulations were found to perform similar to:
    - Habitat® Herbicide on phragmites (aquatic)
    - Chopper® Herbicide on sweetgum (forest understory, loblolly pine)
    - Arsenal® AC Herbicide on sweetgum (woody release, loblolly pine)
  - No statistical differences were found between imazapyr formulations within different treatment types

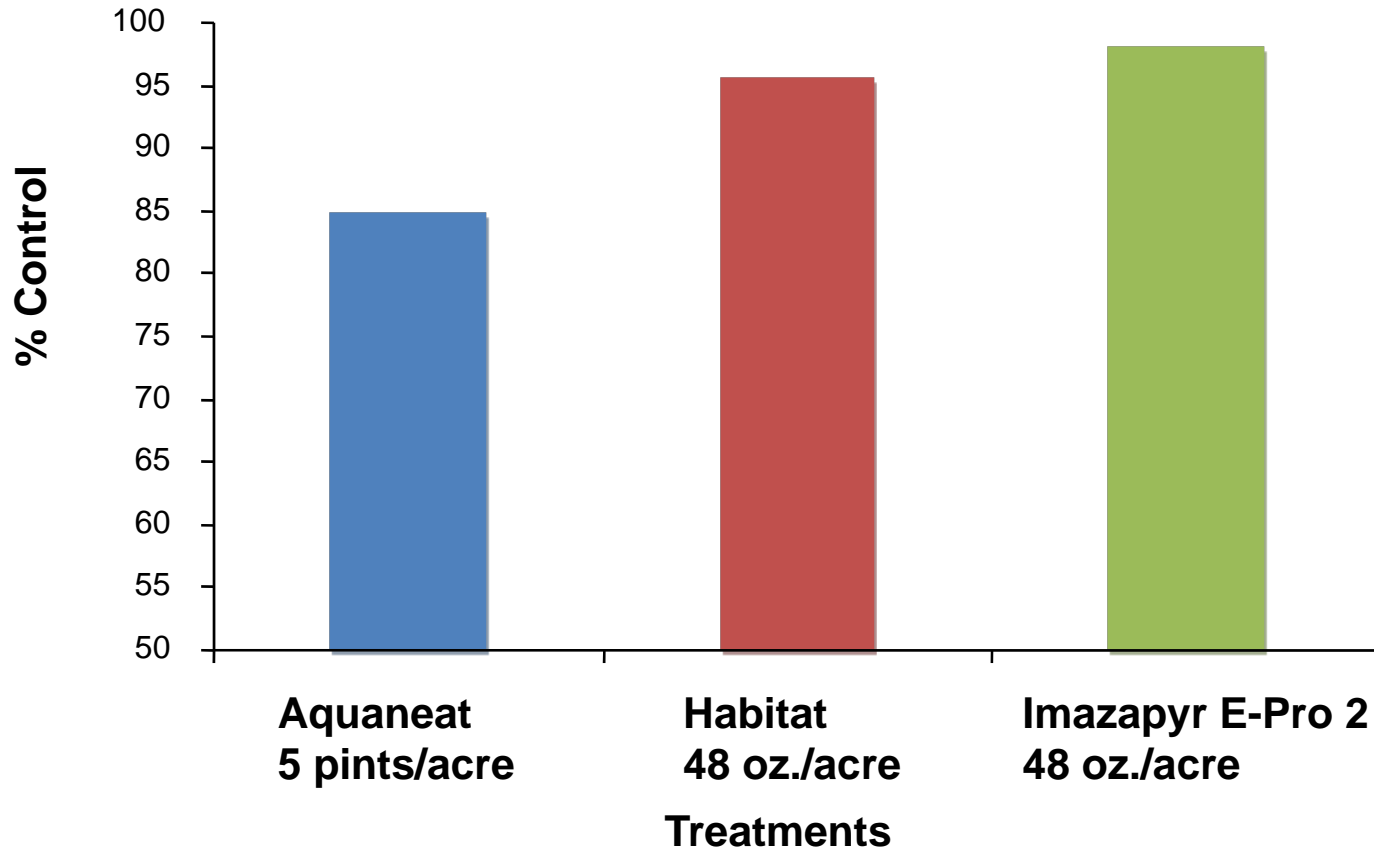
\* Habitat, Chopper and Arsenal AC are trademarks of BASF

# Phragmites Control



- Installed on September 15, 2006
- 15 GPA, 1% v/v MSO surfactant
- Replicated 3 times, RCB design

Figure 1: % Visual Control of Phragmites, 7 MAT





# Phragmites Control



Control, 7 MAT



5 pints/acre Aquaneat, 7 MAT



48 oz/acre Habitat, 7 MAT



48 oz/acre Imazapyr E-Pro 2, 7 MAT

# Diquat Performance



- Independent research performed in September, 2008
- Performance on duckweed and emergent marsh species
  - Reward® (Syngenta)\*
  - Diquat E-Pro (Nufarm)
- No statistical difference in performance of Reward vs Diquat E-Pro

\* Reward is a trademark of Syngenta



# Diquat Performance



## Pre-treatment



Reward



Diquat E-Pro 2L

## 11 Days after Treatment



Reward



Diquat E-Pro 2L

- **What should a land manager consider when choosing an herbicide product?**
  - **Comparable products with same actives?**
    - Is the product supported by distributors/applicators that you are working with?
    - Is the manufacturer responsive to questions and concerns?

- **What should a land manager consider when choosing an herbicide product?**
  - **New actives or new uses of existing actives**
    - Has it been proven to be effective and safe for non-target plants?
    - Is it cost-effective in comparison to alternatives?

- **What should a land manager consider when choosing an herbicide product?**
  - **New/enhanced formulations of existing actives**
    - Does the formulation add measurable value (performance, safety for non-targets, etc)?
    - If it is more expensive, then can the value of the formulation be quantified in comparison to standard formulations?
    - Is there more cost-effective ways to accomplish the same goal? (example: surfactant technologies)

- We work with our distribution partners to sell and support our product line
- Over 30 herbicide products in our portfolio
- Brands as well as “me too” offerings
- Nufarm Brands like...
  - Aquaneat® Herbicide (aquatic-labeled glyphosate)
  - Weedestroy® AM-40 (terrestrial/aquatic-labeled 2,4-D)
  - Solution® Water Soluble (terrestrial/aquatic-labeled 2,4-D)
  - Escalade® II Herbicide (2,4-D, dicamba, fluroxypyr)
    - Superior selective noxious weed control
  - Patron® 170 Herbicide (2,4-D, 2,4-DP)
    - Excellent basal and foliar control on non-native shrubs

- Nufarm “me too” offerings like.....
  - Polaris® Herbicide (imazapyr for terrestrial/aquatic)
  - Tahoe ® 4E Herbicide (triclopyr ester for foliar/basal)
  - Tahoe ® 3A Herbicide (triclopyr amine for terrestrial/aquatic)
  - Clean Slate ® Herbicide(clopyralid)
  - Patriot ® Herbicide (metsulfuron methyl)
  - Spyder ® Herbicide(sulfometuron)
  - Diquat E-Pro 2L Herbicide



# Questions?

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Patriot®

Aqua Neat®

TAHOE™ 3A

Solution™ WS

WEEDDestroy™ AM-40