Best management guidelines to achieve sustainability of wildlife resources

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Sustainable biomass done right: Our Vision

1. Helps to address global warming
2. Maintains economic viability
4. Does not threaten habitat & biodiversity
5. Does not impact water supplies
6. Does not deplete soils
7. Does not become invasive

Can we create perennial energy grass BMGs for wildlife?

- Worked with two wildlife experts: Susan Rupp and Bill McGuire
- Convened an advisory group of wildlife and bioenergy experts
- Narrowed the focus:
  - Prairie Pothole Region (PPR)
  - Two feedstocks native to region:
    - Switchgrass
    - 3 species mix: big bluestem, indiangrass, and sideoats grama

Courtesy U.S. Fish and Wildlife Service

Alberta

Saskatchewan

Montana

North Dakota

Minnesota

South Dakota

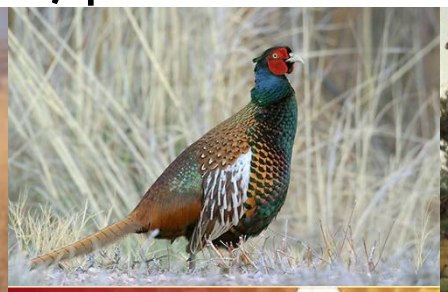
Iowa

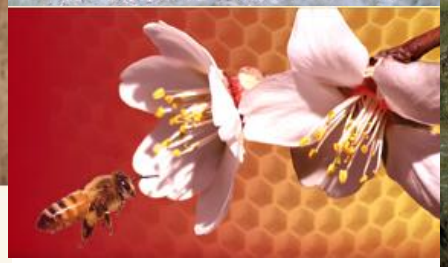
The Prairie Pothole Region

Why the PPR?

- >50% of the nation's waterfowl produced here
- Grassland birds have shown steeper, more consistent, and more widespread declines than any other group of N.A. birds
- Significant potential for biomass production; significant importance for wildlife, pollinators

Deer in switchgrass at Dakota Lakes, SD. Fall 2005. Photo by Arvid Boe



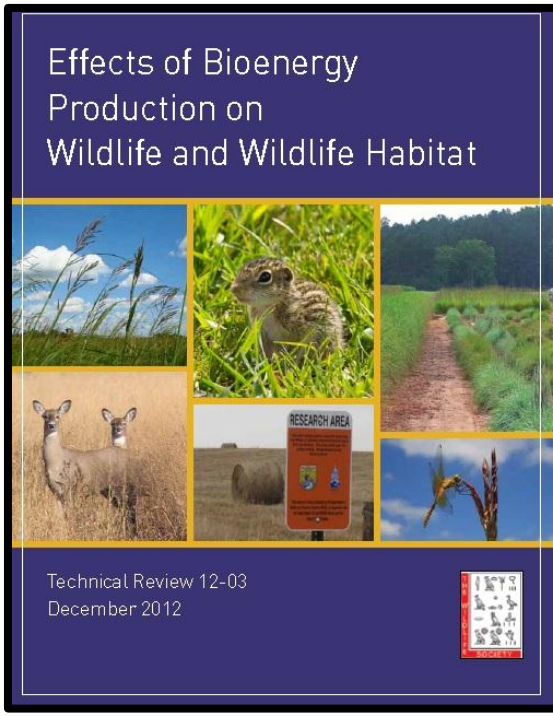


Guiding Principles for BMGs

1. Biodiversity as part of bioenergy sustainability
2. Energy crops on marginally-productive cropland
3. Balance the environmental with economics
4. Feasible to adopt –
   with profit potential
5. Bioenergy industry and
   biomass producer target
6. Useful in the PPR and
   adjacent geographies

Challenges with managing for wildlife

- Habitat management is site specific
- Habitat differences between species
- Seasonal needs can differ
- Some species are resident and some migrate
- Habitat generalists vs. specialists



Based on guiding principles, literature reviews, experience and best professional judgment of the expert advisory committee, we came up with over 30 BMG practices

A few of the BMGs….

- Landscape/Site Selection
  - Marginally-productive croplands only – do not convert prairie/sod, wetlands, or other rare native ecosystems
  - Consider the context: plant biomass crops on fields adjacent to native prairie stands, consider using biomass plantings as conservation for existing cropland (plant along water bodies, or on HEL soil)
- Planting Design
  - Match native grass feedstock to local/regional soil types and vegetation for optimal yield and ecological potential
  - Polyculture plantings - Foster plant diversity

A few of the BMGs…

- Establishment
  - Plant no-till fields as late as possible and plant bare/conventional tilled fields as early as possible
  - Avoid fertilizers during the establishment year to minimize weed growth and runoff
- Management
  - No herbicide/fertilizer in buffers around potholes or other water bodies
- Harvest
  - After growing season to avoid nesting wildlife
  - High stubble levels to benefit wildlife

Implementation and Next Steps

- Next step: Try to get BMGs implemented and monitor effectiveness
  - Potential for collaboration with Abengoa in Nebraska on native grasses grown on converted corn fields, with monitoring of BMG impacts on wildlife by UNL and Nebraska Game and Fish
  - Looking for other companies, researchers interested in trying out BMGs

Research Needs

- Landscape-scale effects
- Before/after controlled studies
- Evaluating effects of selectively bred crops, hybrids, etc., on ecological systems (containment)
- Diversifying feedstocks
- Interseeding legumes
- Analyzing effects of stand density
- Refining harvest strategies

Biomass BMGs and Wildlife Acknowledgements

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For more information

Download a PDF of this report at:
www.nwf.org/pdf/Wildlife/BiomassBMGPPR.pdf

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