Leaving unharvested beets in the field this fall presents some challenging management decisions for 2009. Which crop to use in rotation, what type of tillage is best to speed up root degradation, how should the 2009 crop following sugarbeets be fertilized?

Tillage for Beets Left in the Soil

Past tillage in PIK years and 2004 included using field cultivators, chisel plows, disks, and occasionally mold board plows. Each operation costs $5-8 per acre and has its disadvantages. The most successful practice may be simply defoliation. Beets left in the soil completely deteriorate over winter. Tops rapidly deteriorate and will release N and other nutrients by the end of May. Beets left untilled are uniformly distributed across the field too. Tillage operations leave many beets on the soil surface that can plug ditches and culverts if spring flooding occurs. The U of MN has successfully disked and chisel plowed some fields.

Which Crop to Grow After Beets Left in Field

SOYBEANS - are the ideal crop choice, they have no nitrogen management concerns, need good stand establishment, yields might decline in a dry year.

CORN - can have significant yield reductions due to corn following sugarbeet syndrome (CFS), P & N management is critical, you must establish a good stand, yields could be reduced in a dry year.

SMALL GRAINS - must establish a good stand, N immobilization by roots can reduce yields since small grains require almost all their N early in the season. N management is critical, there is less risk of yield reduction in a dry year than with long season crops.

SUNFLOWER - another deep rooted crop that can suffer yield loss in a dry year, less effected by N immobilization since planted later, may require some extra N to maximize yield.

Fertility Management for Crops after Unharvested Beets

CROP	**FERTILITY RECOMMENDATION**
Soybean	No special management needed
Small Grain	Add 25 to 30 lb/acre extra nitrogen to maintain yields
Corn	- Use an in-row or 2x2 starter fertilizer with P and zinc chelate - Add additional broadcast P based on soil test results - Select "fallow syndrome/purple corn" tolerant hybrids if data is available - Require 30-50 lb/A extra N to maximize yields

Choosing a Starter Fertilizer for Corn after Beets

Soil Test Level for P or Zn	Rate of 10-34-0	Amount of N-P-K Applied	Rate of Zinc Chelate
	Gallons/Acre	Pounds/Acre	Quarts/Acre
Low	10	11-39-0	1-2
Medium	7	8-27-0	1
High or Very High	5	6-19-0	1

Other Considerations

- Determine if abandoned acreage is large enough to justify separate management practices for 2009
- Make a map of abandonment areas for future reference
- Fall 2008 soil testing will not give an accurate index of nutrient availability
- N in the tops will be available very early in the spring of 2009
- Each ton of roots with yellow tops will tie up about 5-6 lbs per acre of soil nitrogen
- Each ton of roots with green tops will tie up about 2 lbs per acre of nitrogen
- Apply N fertilizer as close to planting as possible in 2009 to reduce nitrogen immobilization
- Banded N for 2009 will be more effective than broadcast nitrogen
- Sidedress part of the nitrogen in 2009 after crop emergence to maximize use
- Use past P soil test data on fields to fertilize for 2009
- Banded applications of P in the spring will be most effective
- Starter P is recommended where practical to use it
- Sulfur deficiency is not very likely, but might occur early in the spring and disappear as crops root into subsoil S supplies
- Incorporation of sugarbeet roots and tops usually increases the content of available K in the surface soil.
- Careful spring tillage may be required to maximize stand establishment
- Consider increasing seeding rates by 10 percent after abandoned beets to overcome stand establishment problems with small grains, corn or soybean
- Soil sample parts of fields where beets were abandoned in 2008 separately from the rest of the field in the fall of 2009, nutrient differences are likely.
- Beet fields with bad Rhizoctonia present some degree of risk for root rot in soybeans to be elevated to some degree.
- Spring tillage should be definitely thorough enough to kill any beets that survive the winter if the field was planted to a Roundup Ready variety, volunteer RR beets are nasty weeds in other RR crops.