

The image shows several quackgrass plants against a blue background. The plants have long, thin, green leaves and several upright seed heads. The roots are visible at the bottom, showing a dense network of fibrous roots. A red rectangular box is superimposed over the middle of the image, containing the title text.

Quackgrass Management in Four Corn Hybrid Technologies

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Quackgrass Status

Still out there

- ❑ **Less in cash grain systems**
 - ❑ **Overall less in livestock systems**
 - ❑ **Will still need systems to keep it in check**
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Quackgrass and Cropping Systems

- **Many technologies in corn and associated herbicide modes of action**
 - **Rotation is always best**
 - **Crops**
 - **Modes of action**
 - **Especially true in continual no-till systems**
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Quackgrass and Cropping Systems

- **Questions to ponder regarding quackgrass:**
 - Does it matter which hybrid technology or MOA a grower starts with?
 - Will one or more technology or herbicide be better than another in the long term?

 - **My objectives were to compare various treatments within Liberty Link, Roundup Ready, ClearField and conventional hybrids in rotation with soybeans for 5 years**
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Methods

- **Site was an old alfalfa stand at Arlington ARS**
 - **Deep disked twice, field cultivated in 1999**
 - **No tillage or cultivation done for next 4 years**
 - **Corn planted in 1999 and then rotated annually with conventional no-till soybeans in 7” rows**
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Methods

- **Annual weeds controlled each year with soil active herbicides with no quackgrass activity**
 - **After 1999, paraquat used each year as a burndown treatment**
 - **Allowed the corn and soybean to “start with a clean slate”**
 - **Preemergence herbicide applied then, too**
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Methods

Rotation of corn hybrid technologies:

1999	2001	2003
Liberty Link	Conventional	Liberty Link
Roundup Ready	Conventional	Roundup Ready
ClearField	Roundup Ready	ClearField
Conventional	LL and CF	Conventional

(specific hybrids given in Table 1 of proceedings)

Methods

- **Corn planted in six 30” rows in plots 25 ft long**
 - **Plots blocked so same hybrid was in adjacent plots within a rep**
 - **All quackgrass treatments applied postemergence**
 - **Quackgrass 6 to 10 inches tall**
 - **Herbicides applied in 20 gal/a water; flat fan XR nozzles**
 - **Standard rates used (given in Table 2)**
 - **Additives used as recommended (see Table 3 and 4 footnotes)**
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Methods

- **Quackgrass treatments rotated to avoid consecutive use of same mode of action in consecutive cycles of corn**
 - **After 1999, treatment decisions based on quackgrass pressure in fall**
 - **Threshold of 10% in 2001**
 - **Lowered to 5% in 2003**
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Methods

- **Quackgrass control and pressure ratings taken regularly; only October pressure data presented**
 - Data in Table 3

 - **Corn yield taken in 1999, 2001 and 2003**
 - Data in Tables 4, 5 and 6
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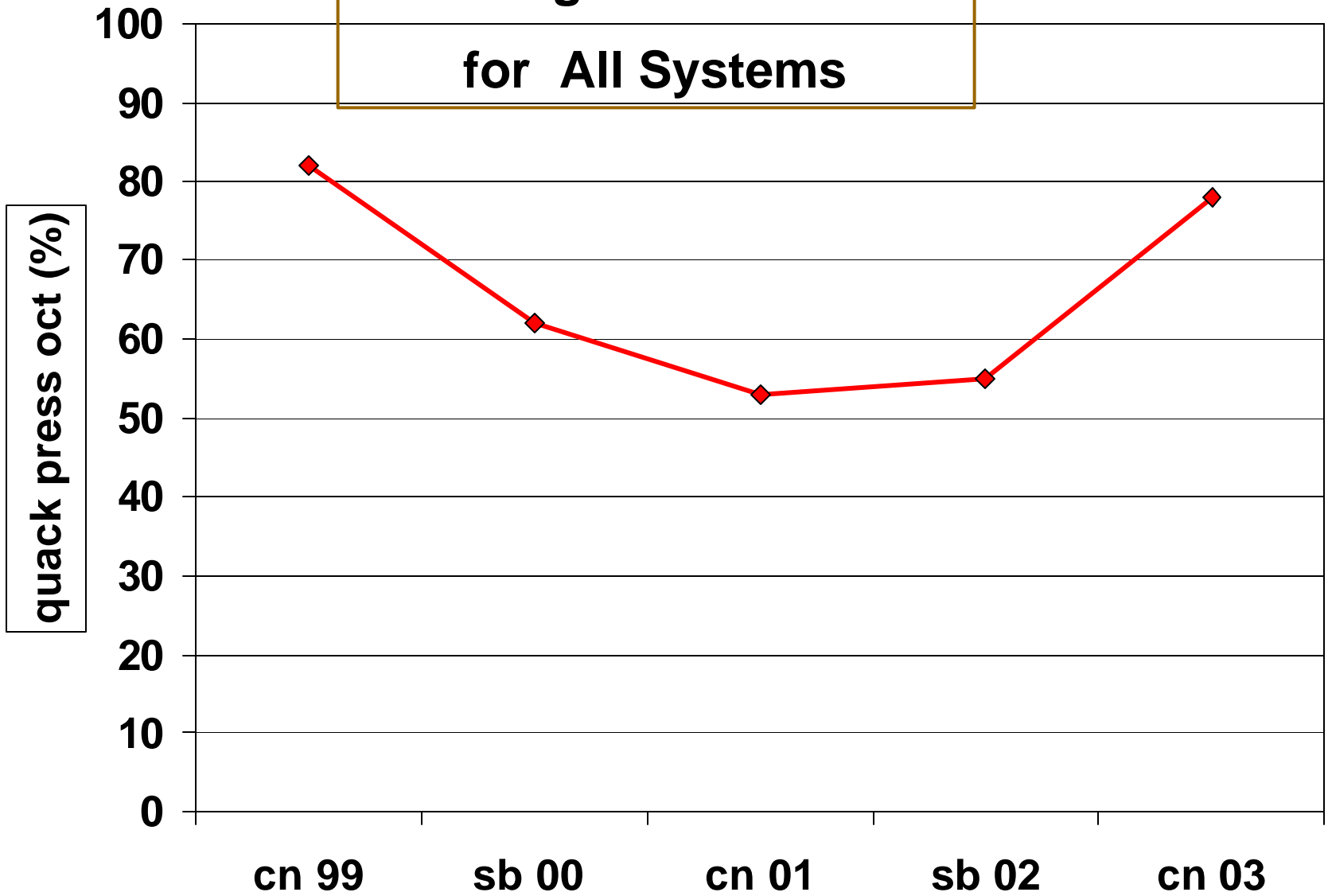
Quackgrass Pressure

A relative term based on quackgrass vigor, abundance and health

- ❑ **0 = no quackgrass**
 - ❑ **100 = complete cover of dense, vigorous quack**

❑ 1-5%	= very light	21-40%	= moderate
❑ 6-10%	= light	41-60%	= high
❑ 11-20%	= moderately light	61-80%	= serious
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**Avg. of Check
for All Systems**



Results

- **In 2001, treatments with >10% quack pressure retreated**
 - **Of 22 possible retreat situations, only 4 treated**
 - **Three followed Liberty; the other followed NorthStar**

 - **In 2003, treatments with >5% quack pressure retreated**
 - **14 retreated; 12 did not need retreating**
 - **7 of the 1999 treatments did not need treating in 2001 or 2003**
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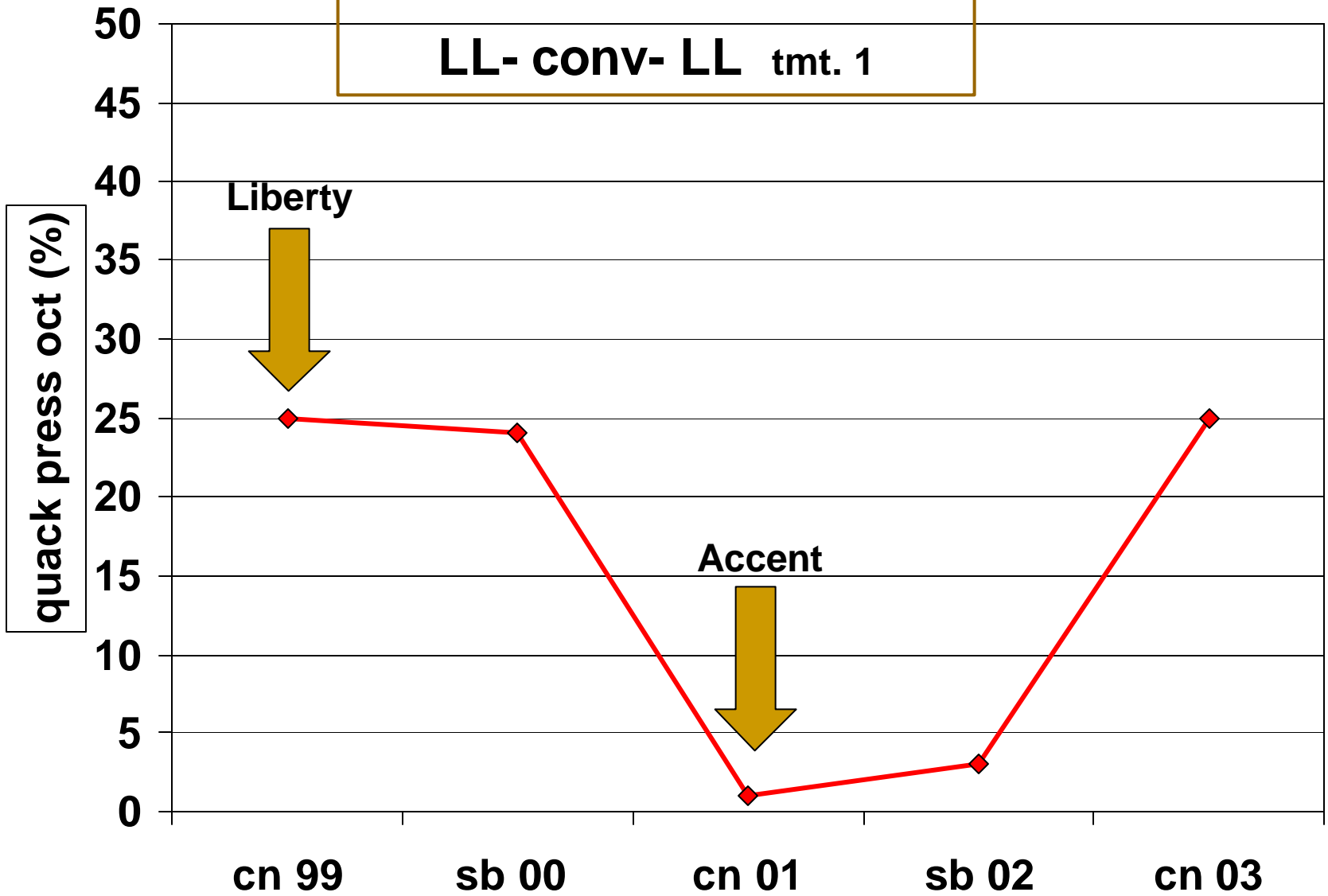
Results

Accent, Accent + Beacon, Accent + NorthStar and Basis Gold

- **One shot in 1999 suppressed quack through 2003**
 - **Beacon, NorthStar and Lightning needed retreatment in 2003**
 - **Better than glyphosate in RR corn**
 - **A no-till system: did not double glyphosate rate**
 - **Did not cut spray volume in half**
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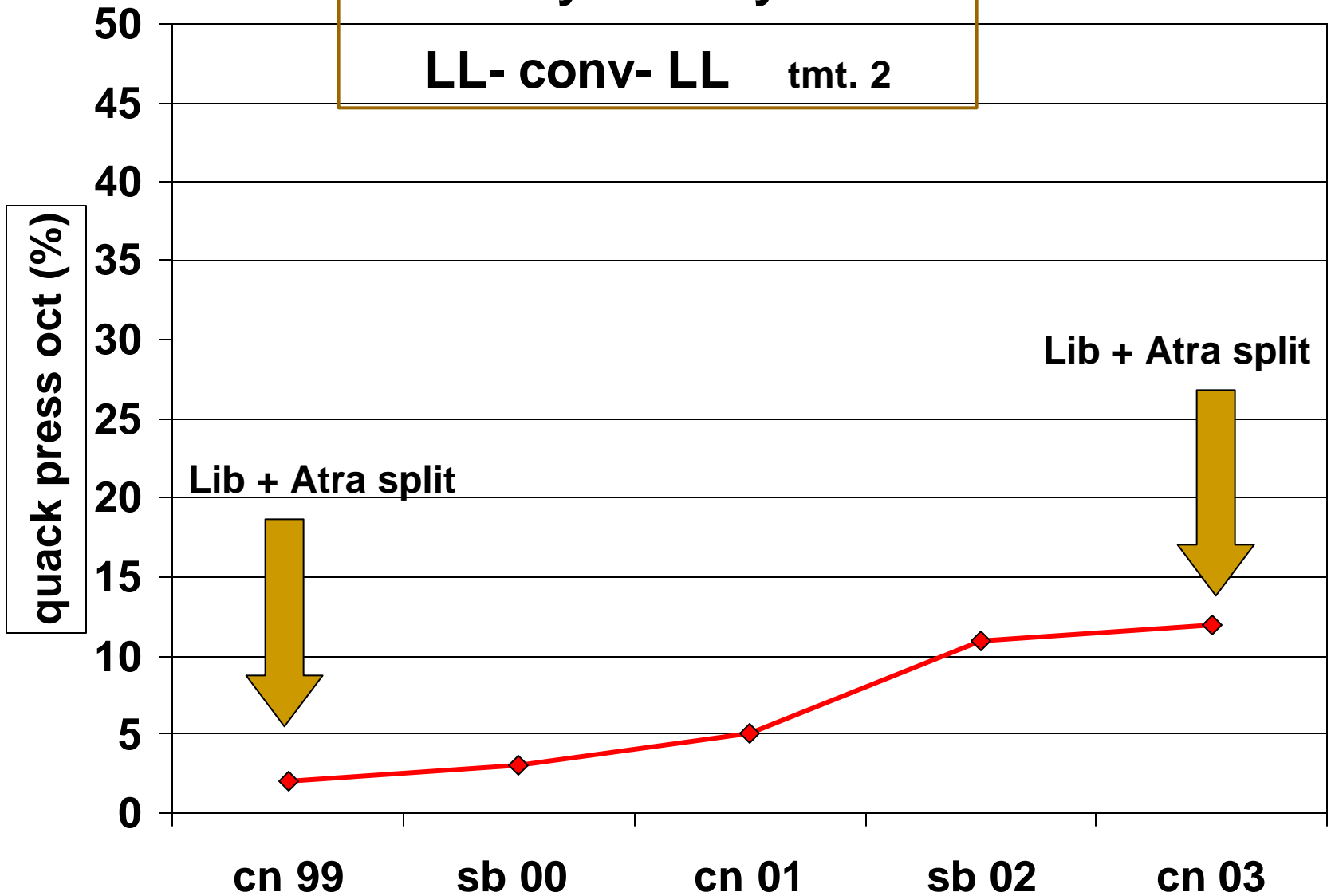
Liberty Link System

LL- conv- LL tmt. 1



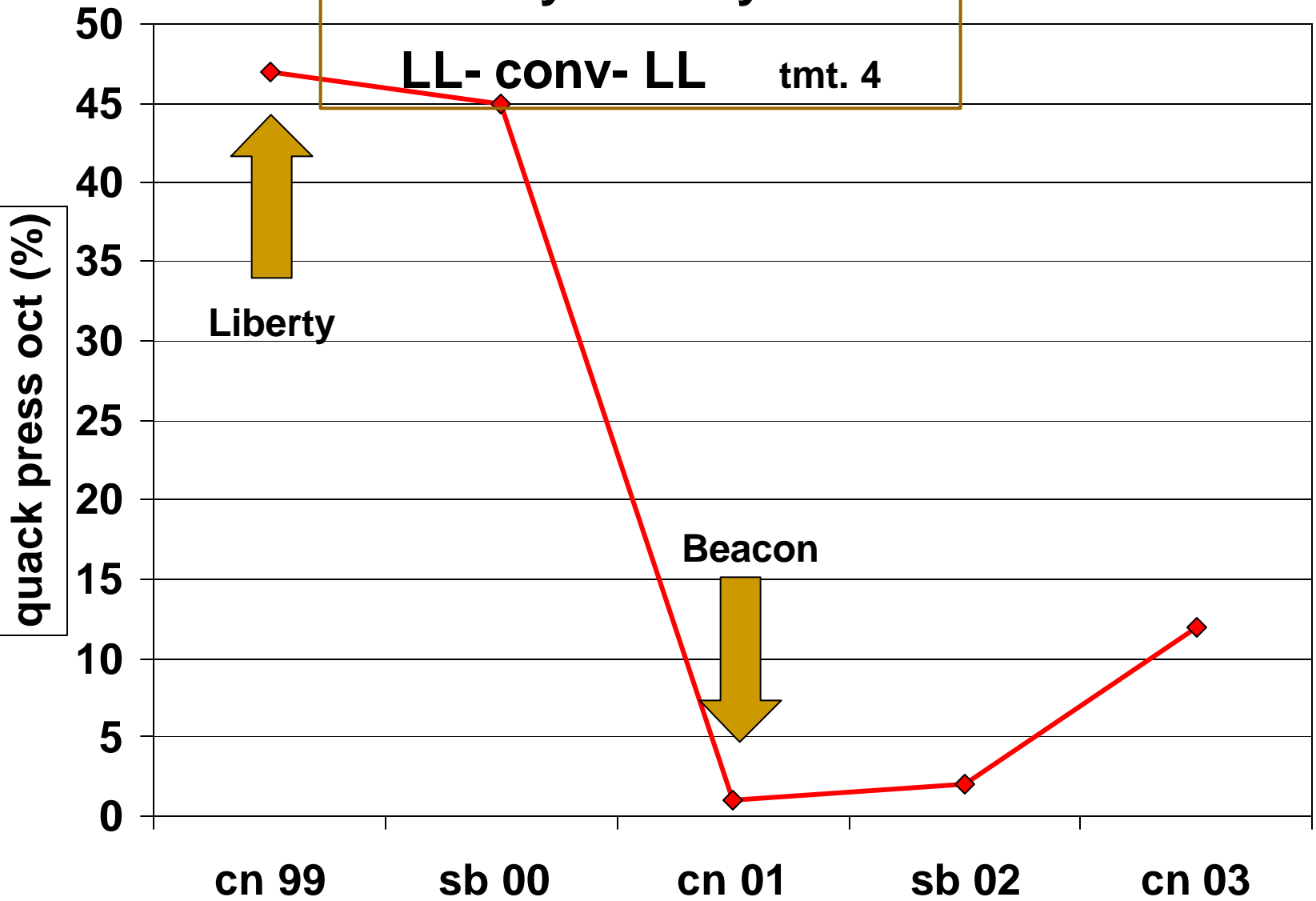
Liberty Link System

LL- conv- LL tmt. 2



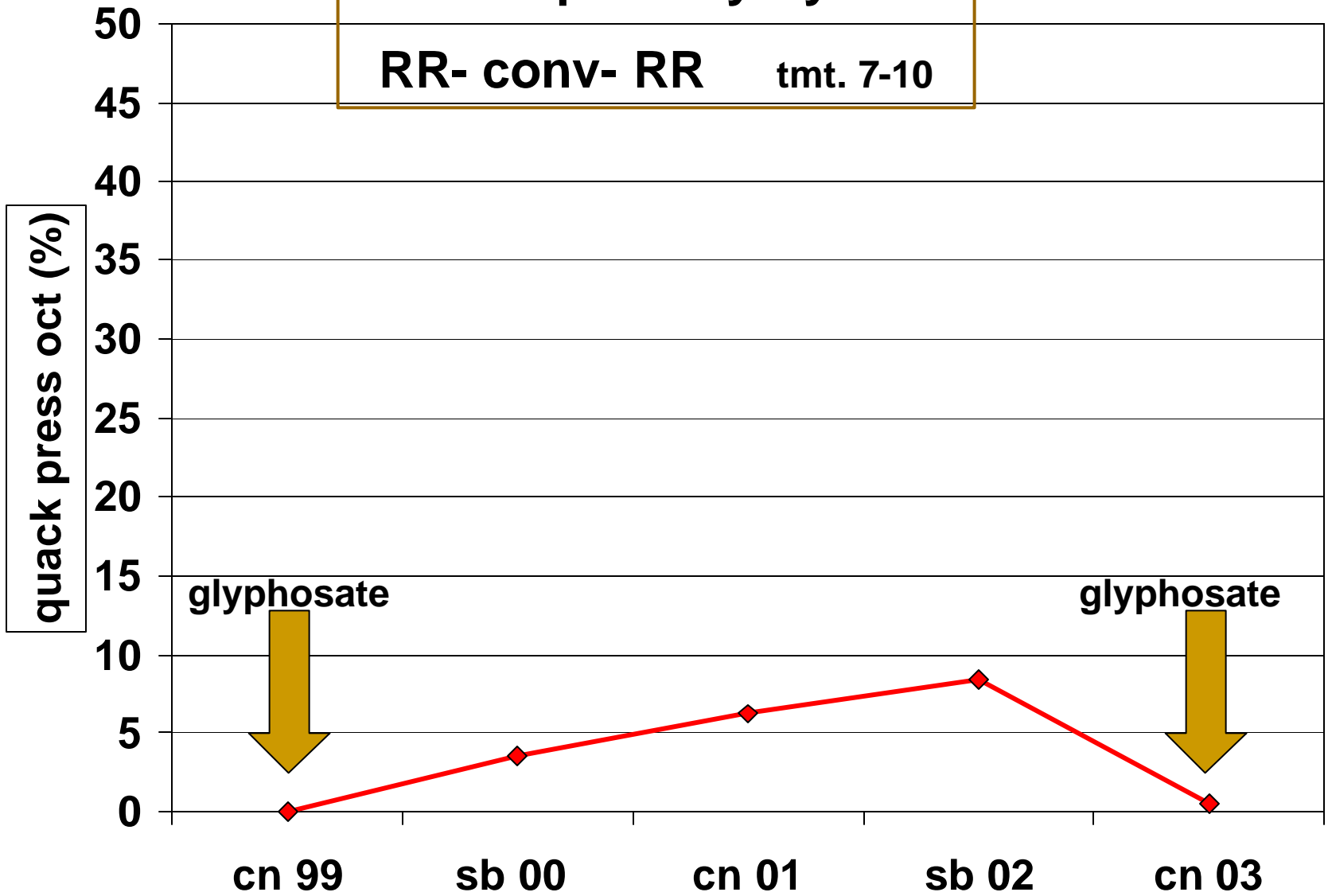
Liberty Link System

LL- conv- LL tmt. 4



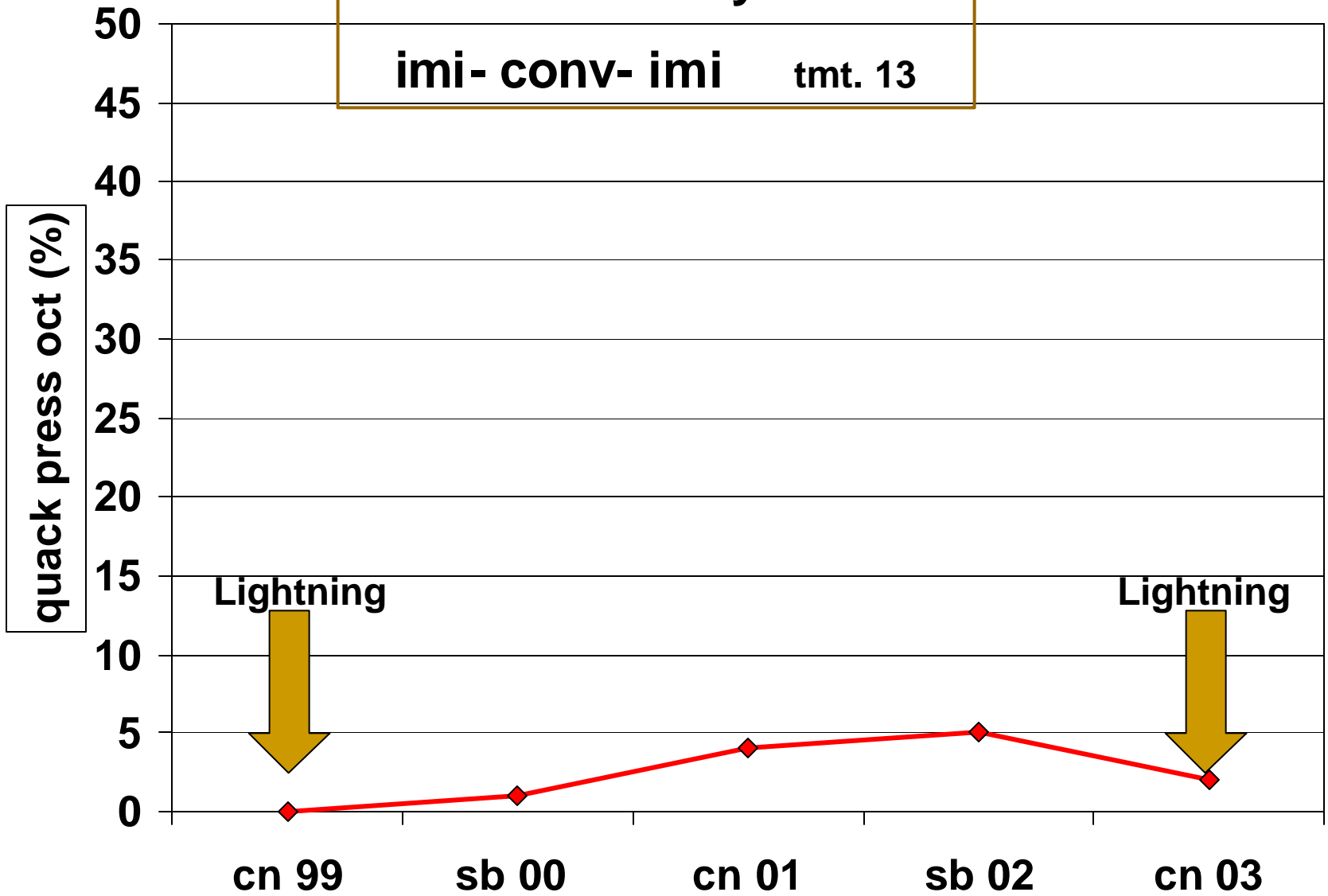
Roundup Ready System

RR- conv- RR tmt. 7-10



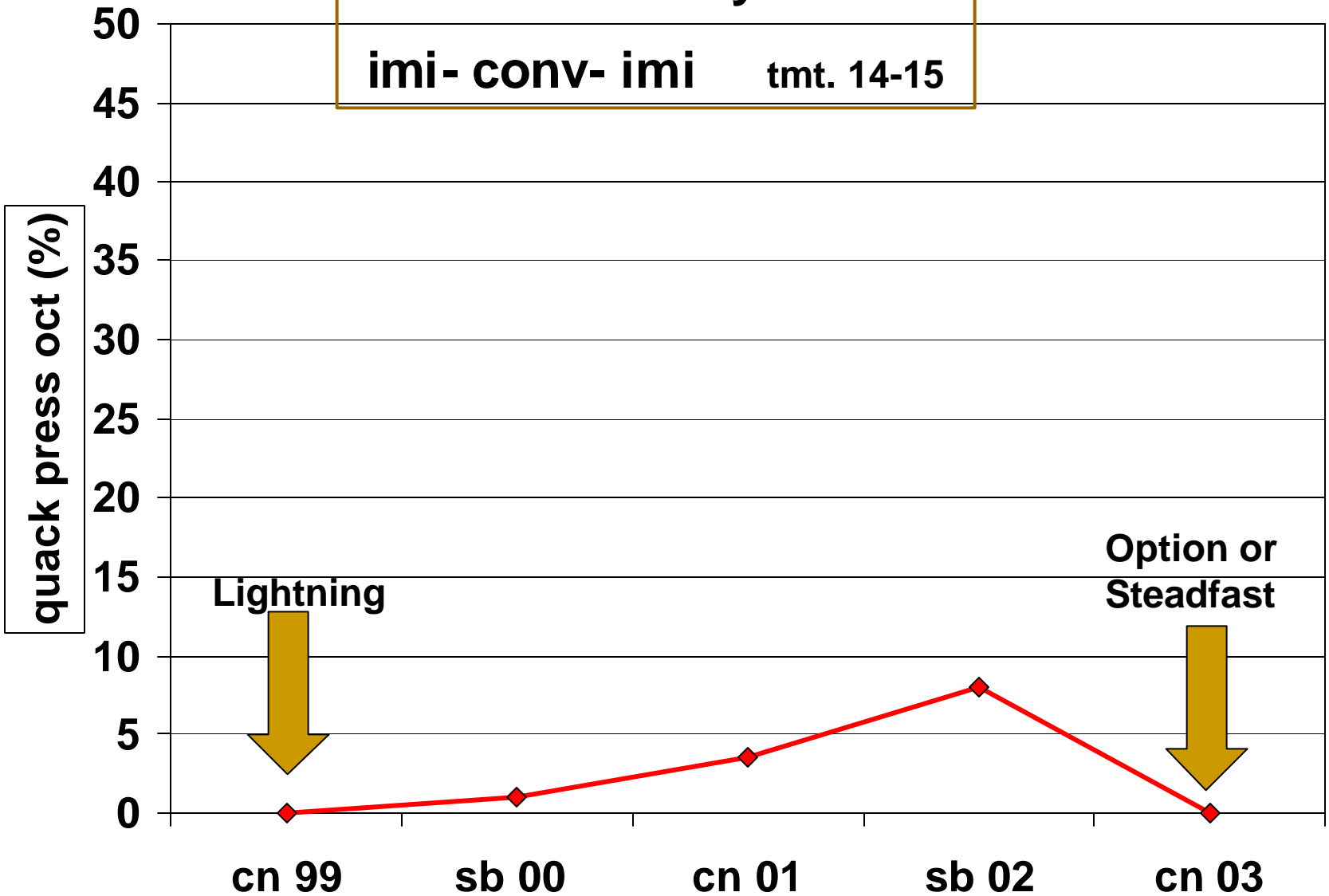
ClearField System

imi- conv- imi tmt. 13



ClearField System

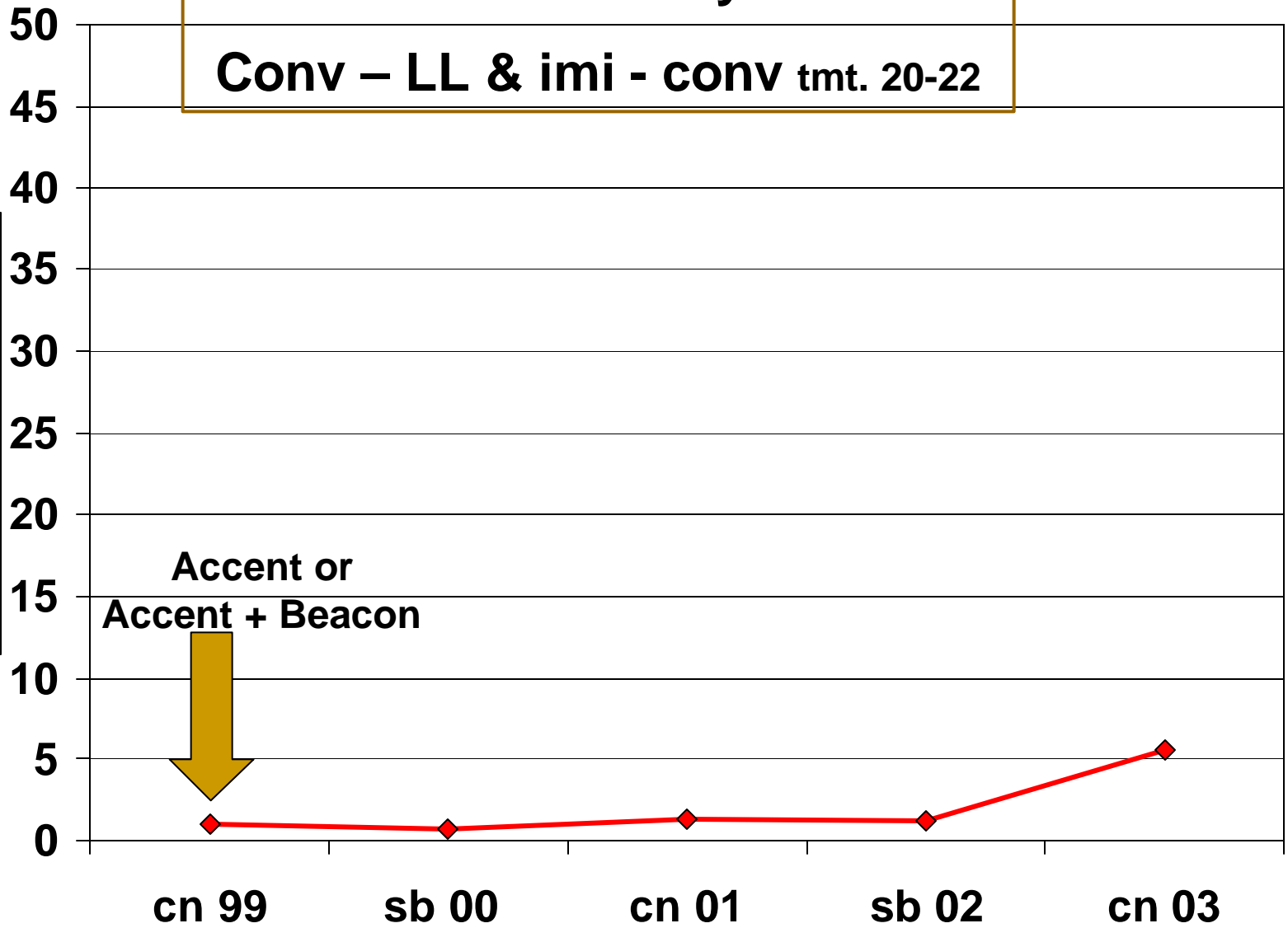
imi- conv- imi tmt. 14-15



Conventional System

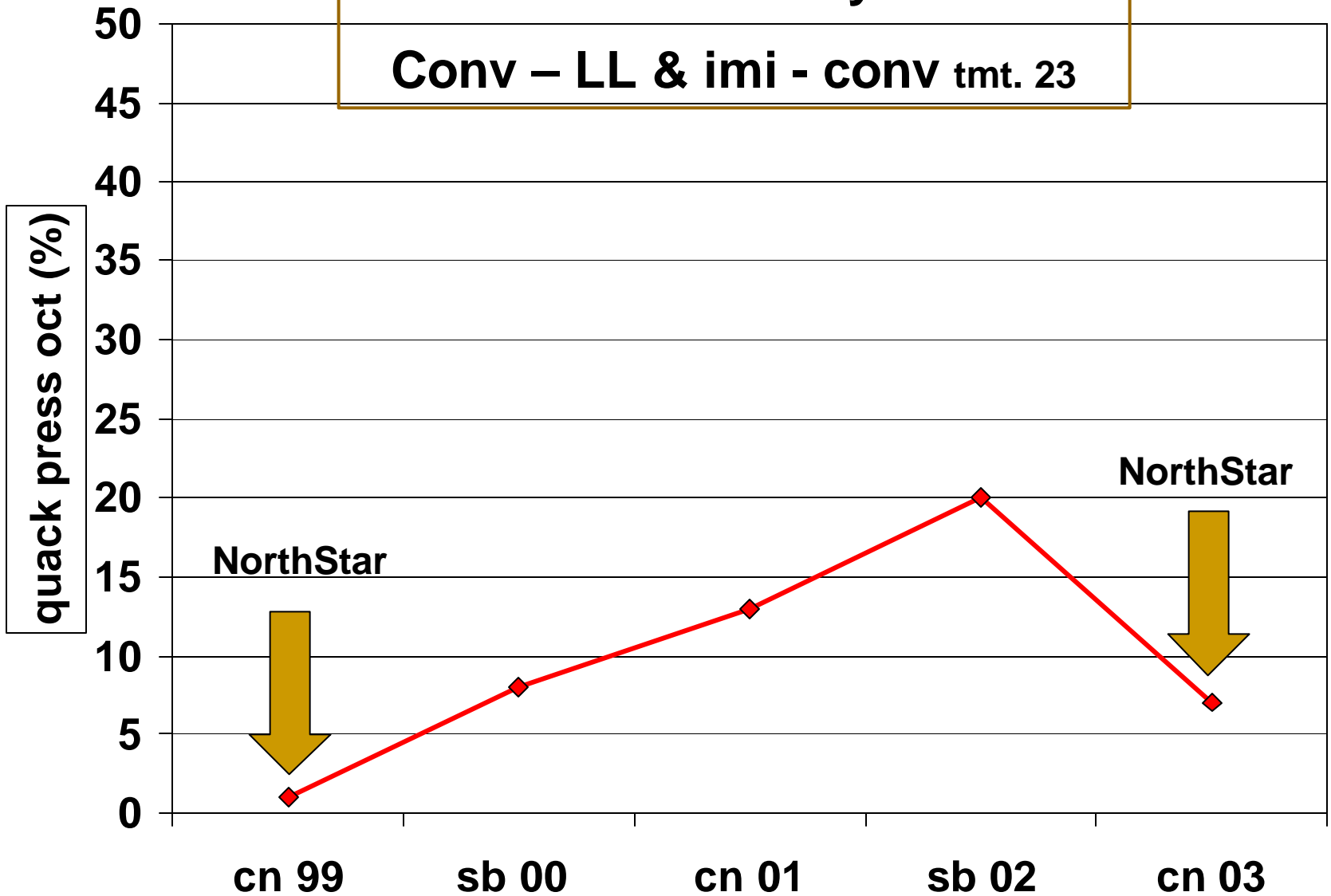
Conv - LL & imi - conv tmt. 20-22

quack press oct (%)



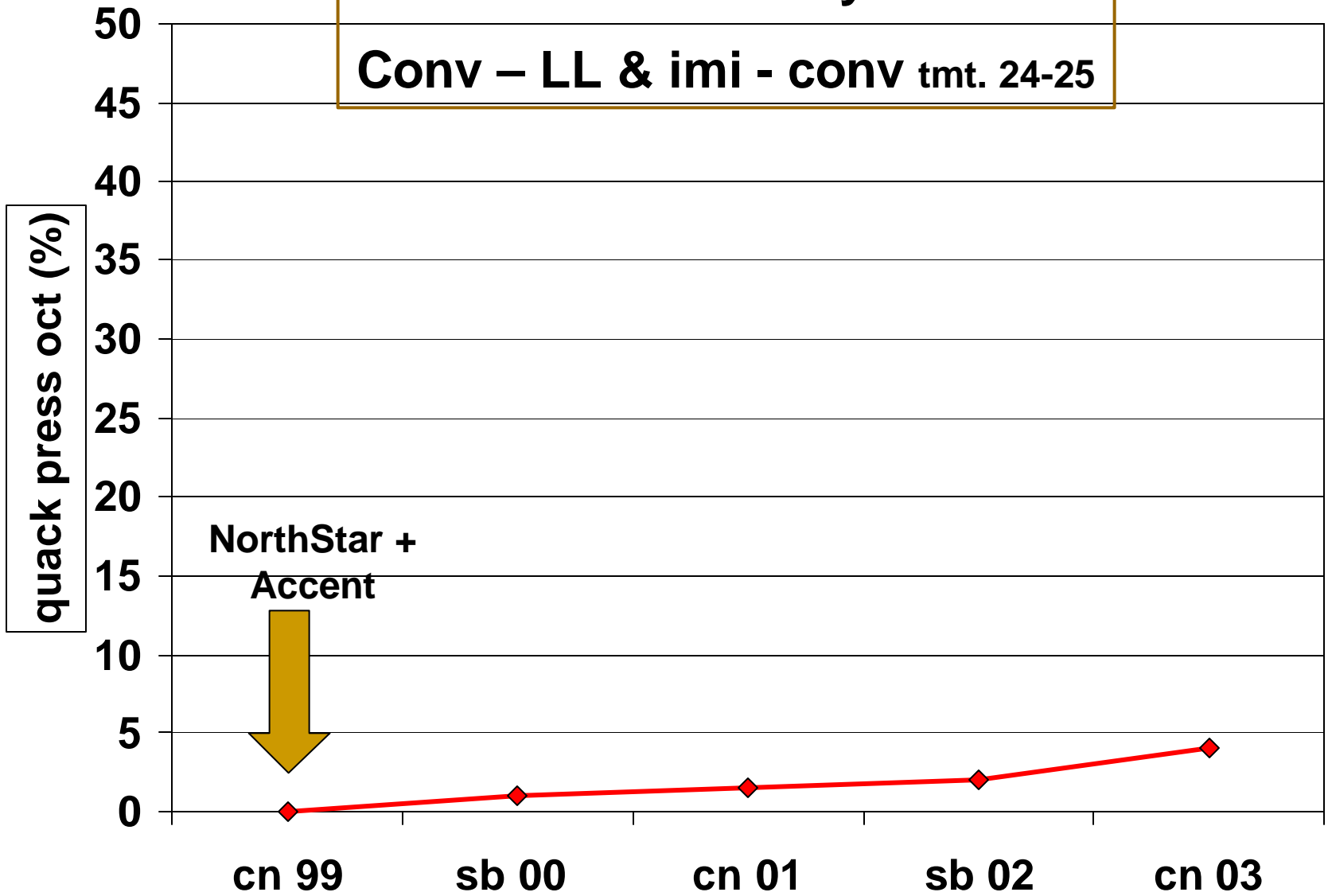
Conventional System

Conv – LL & imi - conv tmt. 23



Conventional System

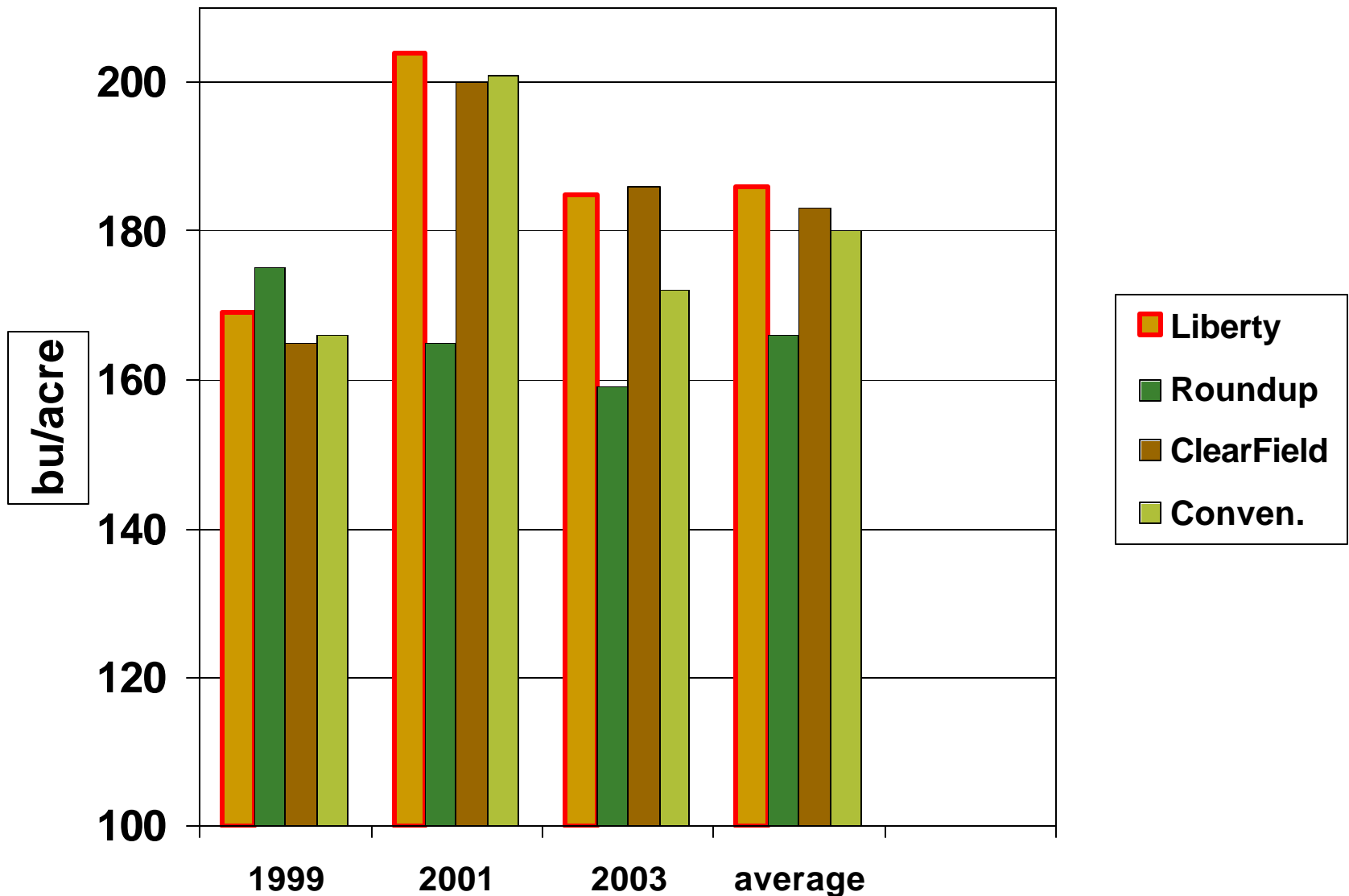
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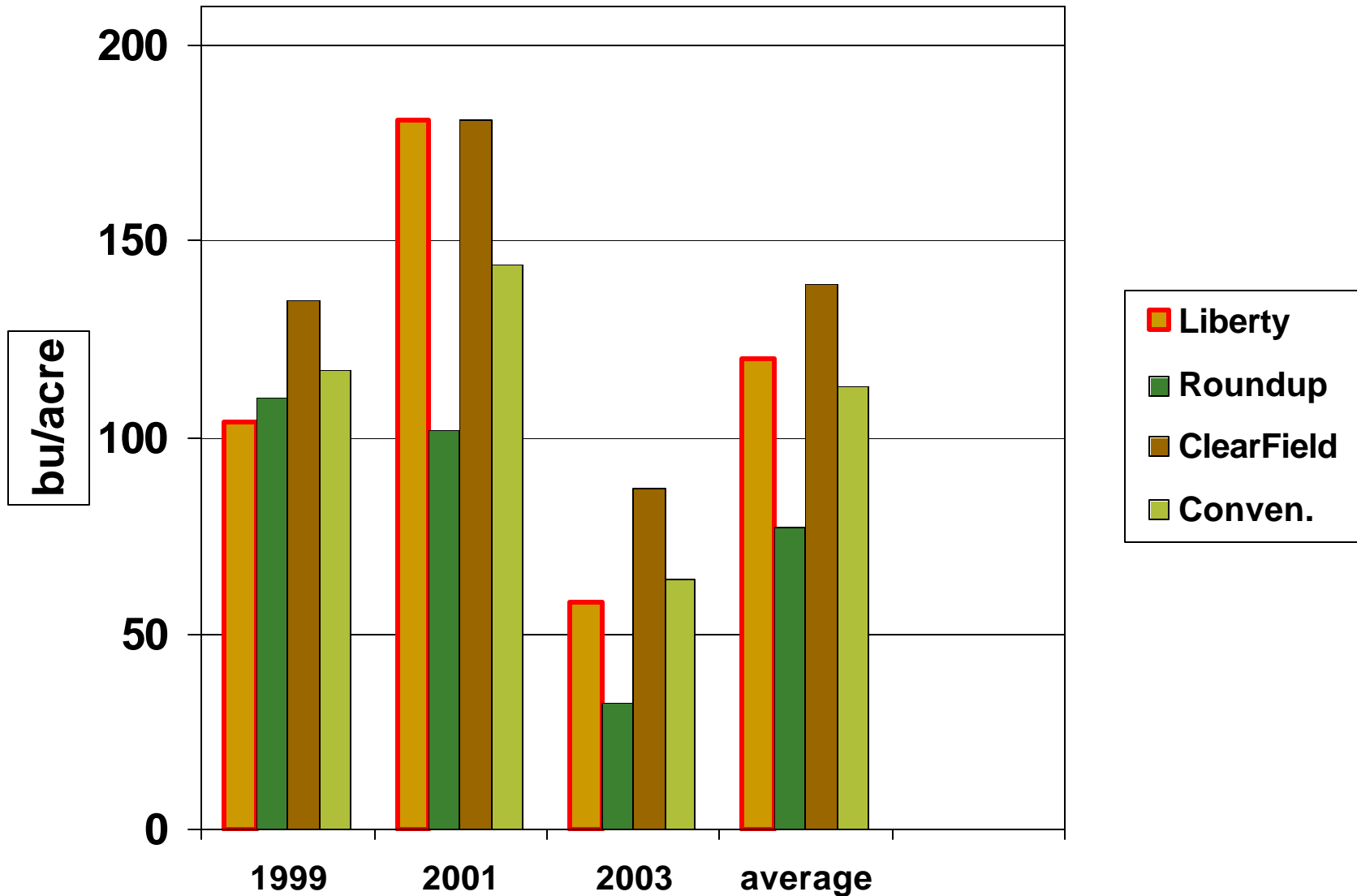
Corn Yield Observations

- **Not a hybrid test**
 - **Yields for all years in Table 6**
 - **When quackgrass controlled, yields:**
 - **Excellent**
 - **Similar for all technologies in 1999**
 - **Poorer for RR hybrid in 2001 and 2003**
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Corn Yield when Quackgrass Controlled



Corn Yield when Quackgrass Not Controlled



Corn Yield Loss (%) Due to Uncontrolled Quackgrass

Technology	1999	2001	2003	average
Liberty Link	38	11	69	39
Rndup Rdy	37	38	80	52
ClearField	18	10	53	27
Conven.	30	27	63	40
mean	31	22	66	40%

Corn Yield Loss (%) Due to Uncontrolled Quackgrass

- **Yields averaged 40% loss**
 - Would have been much lower without tillage in 1999 and burndown other years
 - **Losses greatest in 2003**
 - drought + quack = 66% yield reduction
 - **Technologies differed in competitiveness**
 - ClearField most competitive in 1999 and 2003
 - ClearField and Liberty Link equal in 2001
 - Roundup Ready affected the most
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Observations

- Do not start with Liberty Link for quackgrass
- For first year corn after alfalfa, conventional or ClearField hybrid and herbicides with ALS mode of action suggested
 - Longest quackgrass suppression
 - Economical products
 - High yields

Rotation Observations

- **Did hybrid technologies differ?**
 - **Yes: do not start with Liberty Link for quack**
- **Did MOA rotation help?**
 - **Can't say because so few treatments needed retreatment in 2001; in 2003 back to the original modes**
- **If more than 2 years control given, can select crop and herbicide rotation based on other weeds**

Summary

- Many effective tools to control quackgrass in corn
- When controlled in corn, no quackgrass control needed in soybean phase
- Quackgrass may be a non-issue in RR soybean systems

Questions?

Comments?

