POTATO HAIL DECISION MANAGEMENT

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Cindy Snyder, Courtesy Photo
Hail defoliation of potato crop can be a concern to growers.

Response of potato crop to hail defoliation depends on a lot of factors.
Some Factors That Influence Response of Potato Crop to Hail Defoliation

- Potato variety/cultivar
- Growth stage of the crop during hail
- Intensity of hail
- Interval between hail damage and harvest
“To make any meaningful management decision after hail, one needs to know the % yield loss that the hail could cause”
Determine the effect of simulated hail defoliation on tuber yield loss and on tuber quality of an early Russet cultivar and a medium to late cultivar.
<table>
<thead>
<tr>
<th>Treatment</th>
<th>33%</th>
<th>66%</th>
<th>99%</th>
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</thead>
<tbody>
<tr>
<td>TUBER INITIATION (TI)</td>
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<td>EARLY TUBER BULKING (EB)</td>
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<td>LATE TUBER BULKING (LB)</td>
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<td>CHECK (Control)</td>
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EXPERIMENTAL DESIGN

- Factorial Arrangement of Treatments in RCBD

- Treatment Replication: 4 times
RESULTS AND DISCUSSION
Effect of Simulated Hail Defoliation on % Total Tuber Yield Loss

Norkotah TX278

% Total Tuber Yield Loss

- TI
- EB
- LB

- 33%
- 66%
- 99%
Effect of Simulated Hail Defoliation on % Marketable (> 4 oz.) Tuber Yield Loss

- TI
- EB
- LB

Marketable Tuber Yield Loss:
- 33%
- 66%
- 99%

Norkotah TX278
Effect of Simulated Hail Defoliation on % Premium Size (> 10 oz.) Tuber Yield Loss

Norkotah TX278

% Premium Size Yield Loss

- TI
- EB
- LB

- 33%
- 66%
- 99%
Response of Russet Norkotah to Time of Hail Damage – Yield Loss

Norkotah TX278

% Yield Loss

- Total
- > 4 oz.
- > 10 oz.

TI
EB
LB
Specific Gravity Measurement
Effect of Simulated Hail Defoliation on Tuber Specific Gravity

![Graph showing the effect of simulated hail defoliation on tuber specific gravity. The graph compares Tuber Specific Gravity for different defoliation levels (33%, 66%, 99%) and potato varieties TI, EB, and LB. The graph indicates that defoliation reduces specific gravity, with the control group having the highest values.](image-url)
Russet Nugget

David Holm, Courtesy photo
Effect of Simulated Hail Defoliation on
% Total Tuber Yield Loss

Russet Nugget

% Total Yield Loss

33%
66%
99%

TI
EB
LB

% Total Yield Loss
Effect of Simulated Hail Defoliation on % Marketable (> 4 oz.) Tuber Yield Loss
Effect of Simulated Hail Defoliation on % Premium Size (> 10 oz.) Tuber Yield Loss

Russet Nugget

% Premium Size Yield Loss

TI  EB  LB

33%  66%  99%
Response of Russet Nugget to Time of Hail Damage – Yield Loss

Russet Nugget

% Yield Loss

Total | > 4 oz. | > 10 oz.

- TI
- EB
- LB

0 10 20 30 40 50 60 70

> 4 oz. > 10 oz.
Effect of Simulated Hail Defoliation on Tuber Specific Gravity

![Bar chart showing the effect of simulated hail defoliation on tuber specific gravity. The chart compares control and defoliation levels at 33%, 66%, and 99%. The specific gravities range from 1.065 to 1.11.](image)
There was progressive reduction in total and marketable tuber yield as simulated hail defoliation intensified at tuber initiation or at early tuber bulking for both cultivars.

The highest yield loss occurred when hail defoliation happened during early tuber bulking in both cultivars.
Yield reduction was minimal, and sometimes insignificant for total and marketable tuber yields when simulated hail defoliation occurred at late tuber bulking.
Management decision more critical when hail defoliation occurs during early tuber bulking.

For medium to late cultivars such as Russet nugget, one has to manage the crop to push for more premium size tuber yield if hail defoliation occurs at late tuber bulking.