Pre- and post-harvest losses pose a risk of household food insecurity among small-scale farmers in Nepal

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**Objective**

To estimate the extent of pre- and post-harvest loss (PPHL) during the rainy and dry seasons and its association with household food security among farmers in Nepal.

**Methods**

**Data:** Cross-sectional, PoSHAN Community Studies, 2016

**Target population:** 3,433 farming households with crop production in past year

**Farmer classification and sample:**
- Marginal (<0.5 hectares (ha)) =57%
- Subsistence (>=0.5 to <1.0 ha) =22%
- Small commercial (>=1.0 to < 5.0 ha) =21%

**Household food insecurity:** Assessed by using Household Food Insecurity Access Scale

- **PPHL:** self-reported by farmers in the 2 main seasons (dry and rainy) in the year prior to the survey
- PPHL estimated for four food groups:
  - cereals/lentils
  - cash-crops
  - fruits, and
  - vegetables

**Analysis:** Logistic regression with robust variance, stratified by farmer type- to estimate adjusted odds ratio (AOR) and 95% confidence intervals (CI) between PPHL and household food insecurity

Models adjusted for head of household education and occupation, wealth quintile, farmer group membership, visit history by an agricultural extension worker, pre-defined agricultural practices in the past 12 months, and local environments (presence of permanent markets and paved roads), and agro-ecological region.
## Results

### Table 1: Association of harvest loss of cereals/lentils with household food insecurity among different farmer types in Nepal, 2016 (N=3433)

<table>
<thead>
<tr>
<th>Types of cereal harvest loss (* p&lt;0.05)</th>
<th>Marginal (n=1965)</th>
<th>Subsistence (n=767)</th>
<th>Small commercial (n=701)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AOR (95% CI)</td>
<td>AOR (95% CI)</td>
<td>AOR (95% CI)</td>
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<tr>
<td><strong>1. Pre-harvest loss</strong></td>
<td></td>
<td></td>
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<tr>
<td>Preharvest loss (in any season)</td>
<td>2.1 (1.42-3.13)*</td>
<td>1.54 (0.78-3.04)</td>
<td>2.51 (1.02-6.18)*</td>
</tr>
<tr>
<td>Preharvest loss during rainy season</td>
<td>1.9 (1.13-3.17)*</td>
<td>1.62 (0.94-2.79)</td>
<td>0.76 (0.45-1.28)</td>
</tr>
<tr>
<td>Preharvest loss during dry season</td>
<td>1.74 (1.29-2.35)*</td>
<td>1.31 (0.73-2.34)</td>
<td>2.43 (1.12-5.29)*</td>
</tr>
<tr>
<td><strong>2. Post-harvest loss</strong></td>
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<tr>
<td>Post harvest loss (in any season)</td>
<td>0.95 (0.62-1.47)</td>
<td>1.04 (0.62-1.76)</td>
<td>1.01 (0.57-1.78)</td>
</tr>
<tr>
<td>Post harvest loss during rainy season</td>
<td>1.66 (1.05-2.63)*</td>
<td>1.84 (1.08-3.12)*</td>
<td>1.11 (0.54-2.3)</td>
</tr>
<tr>
<td>Post harvest loss during dry season</td>
<td>0.73 (0.47-1.15)</td>
<td>1.11 (0.61-2.01)</td>
<td>0.74 (0.41-1.32)</td>
</tr>
</tbody>
</table>

In adjusted regression models, no significant risk of PPHL of cash crops, fruits, and vegetables on food insecurity among any farmer types (table not shown).

### Conclusion:

- Pre- and post-harvest loss of cereals was associated with greater odds of food insecurity
- Further studies are needed given uncertain causality and to establish magnitude of pre and post-harvest loss