Martials and Methods

Study site
- Setouchi Field Science Center, Saijo Station (34° 23'N, 132° 43'E), Hiroshima University, Japan
- Italian ryegrass (Lolium multiflorum Lam.) meadow (1.8 ha)
- Seeded in October and harvested twice in mid-May and early-June

Field data measurements (2 growing seasons)
- 2010: Oct Nov Dec Jan Feb Mar Apr May Jun
- 2011: Oct Nov Dec Jan Feb Mar Apr May Jun

Results and Discussions

Estimation of BM and LAI

<table>
<thead>
<tr>
<th>Vegetation Indices</th>
<th>In BM</th>
<th>In LAI</th>
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<tbody>
<tr>
<td>NDVI</td>
<td>R²</td>
<td>RMSE</td>
</tr>
<tr>
<td>SAVI</td>
<td>R²</td>
<td>RMSE</td>
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<tr>
<td>MSR</td>
<td>R²</td>
<td>RMSE</td>
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Suitable VIs to estimate BM and LAI using the device
- NDVI was most appropriate VI in the pooled dataset, however SAVI shows better performance in each measurement.

Relationship with BM and LAI and NDVI and SAVI
- Due to the saturation in high biomass, it need to consider for practical application in late growing season.

Conclusion

Applicability under cloudy weather
- The device could works well most of weather condition except for snowy day.

The limitation of the device
- Saturate effects of Vegetation Indices on high biomass stage, however most of important practices for management such as fertilizer and pesticide application are decided in early to mid growing season. The device is still powerful.