Effect of plant protection products (PPP) on air quality in agriculture

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Wind drift in agriculture

- Spraying pesticides and sowing treated seeds can affect harmfully the air quality in agriculture
- Chemical plant protection products are commonly used in crop production in field conditions

Risks of wind drift

- Risks to aquatic organisms especially when pesticides are sprayed close to water bodies
- Risks to non-target terrestrial organisms and soil fauna
- Honeybee colony collapses in Germany 2008; ongoing debate about neonicotinoid pesticide's safety to honey bees when used in treated seeds and spraying
  → Seed treatment with neonicotinoids is prohibited in EU from 2014 based on EFSA risk analysis

How to prevent wind drift

- Adoption of IPM methods aiming to reduce the use of pesticides
- Spraying in windy weather should be avoided whenever possible
- Use of drift reducing nozzles
- Proper seed coating
- Buffer zones, fences and small forest areas to protect non-target organisms and water bodies

Finnish Safety and Chemicals Agency has determined risk based buffer zones for all PPPs to protect aquatic organisms. This procedure was based on spray drift.

- New buffer zones can be followed this season, but are mandatory in 2015
- Buffer zones are not needed, if there is a dence, approximately 5 meters high and 3-4 meters wide forest stand between the field and the waterway

PesticideLife project has focused on demonstration of chemical control and the need of it. The aim of the project is to develop and specify the methods of IPM to reduce the pesticide leaching and harms to the environment. Project is based on EU’s Framework Directive on the Sustainable Use of Pesticides (2009/128/EY) which also recommends minimizing spray drift of pesticides.

USE OF NOZZLES IN SPRAYING PPPs

<table>
<thead>
<tr>
<th></th>
<th>Flat spray nozzles</th>
<th>Drift reducing nozzles</th>
<th>Smaller buffer zones</th>
<th>Using drift reducing nozzles is mandatory</th>
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</thead>
<tbody>
<tr>
<td>Growth retardants</td>
<td>100 %</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Herbicides</td>
<td>90 %</td>
<td>5 %</td>
<td>5 %</td>
<td>-</td>
</tr>
<tr>
<td>Fungicides</td>
<td>25 %</td>
<td>37 %</td>
<td>38 %</td>
<td>-</td>
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<tr>
<td>Insecticides</td>
<td>4 %</td>
<td>36 %</td>
<td>60 %</td>
<td>-</td>
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</tbody>
</table>

References:
www.mtt.fi/pesticidelife/en

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