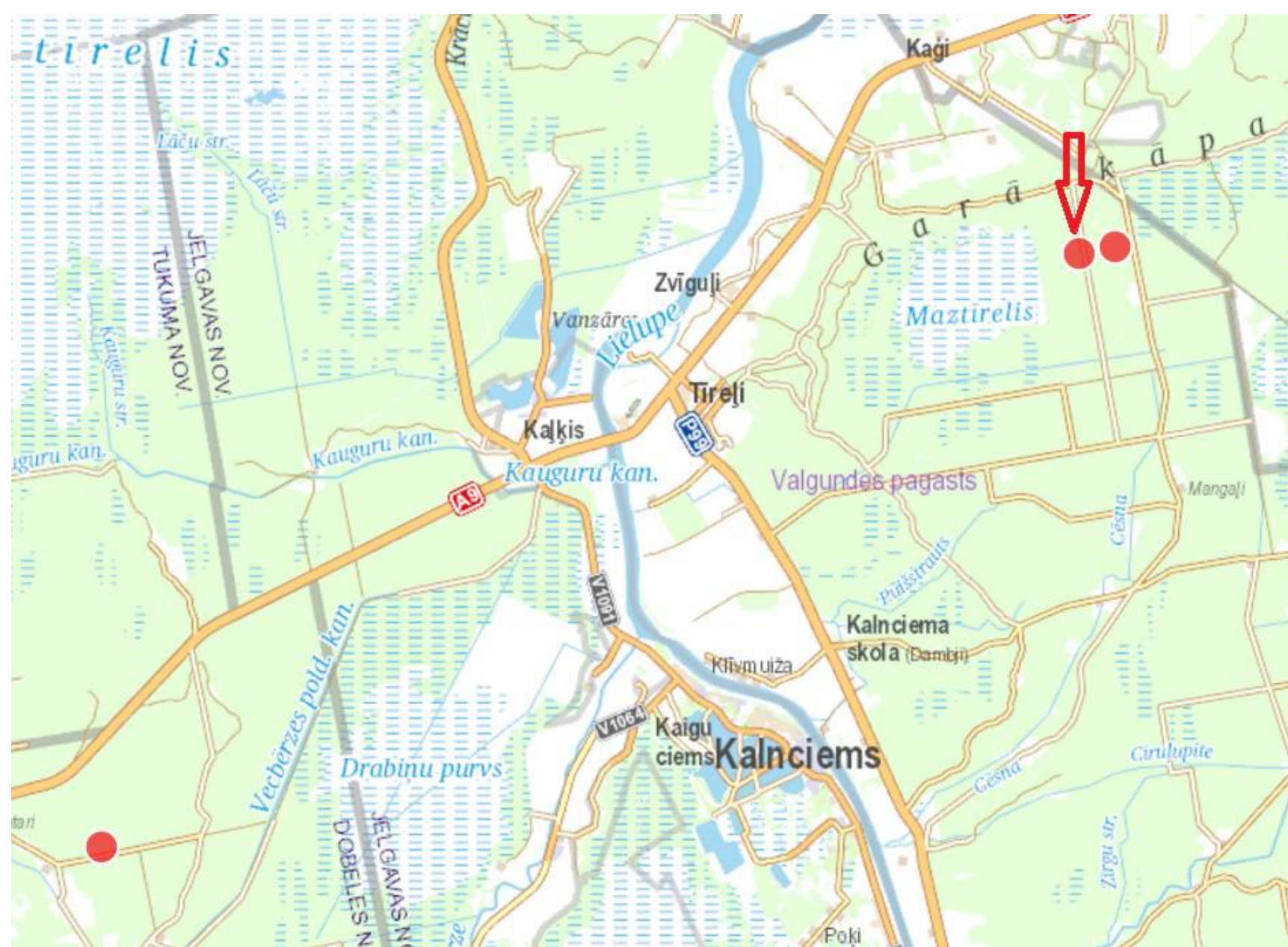
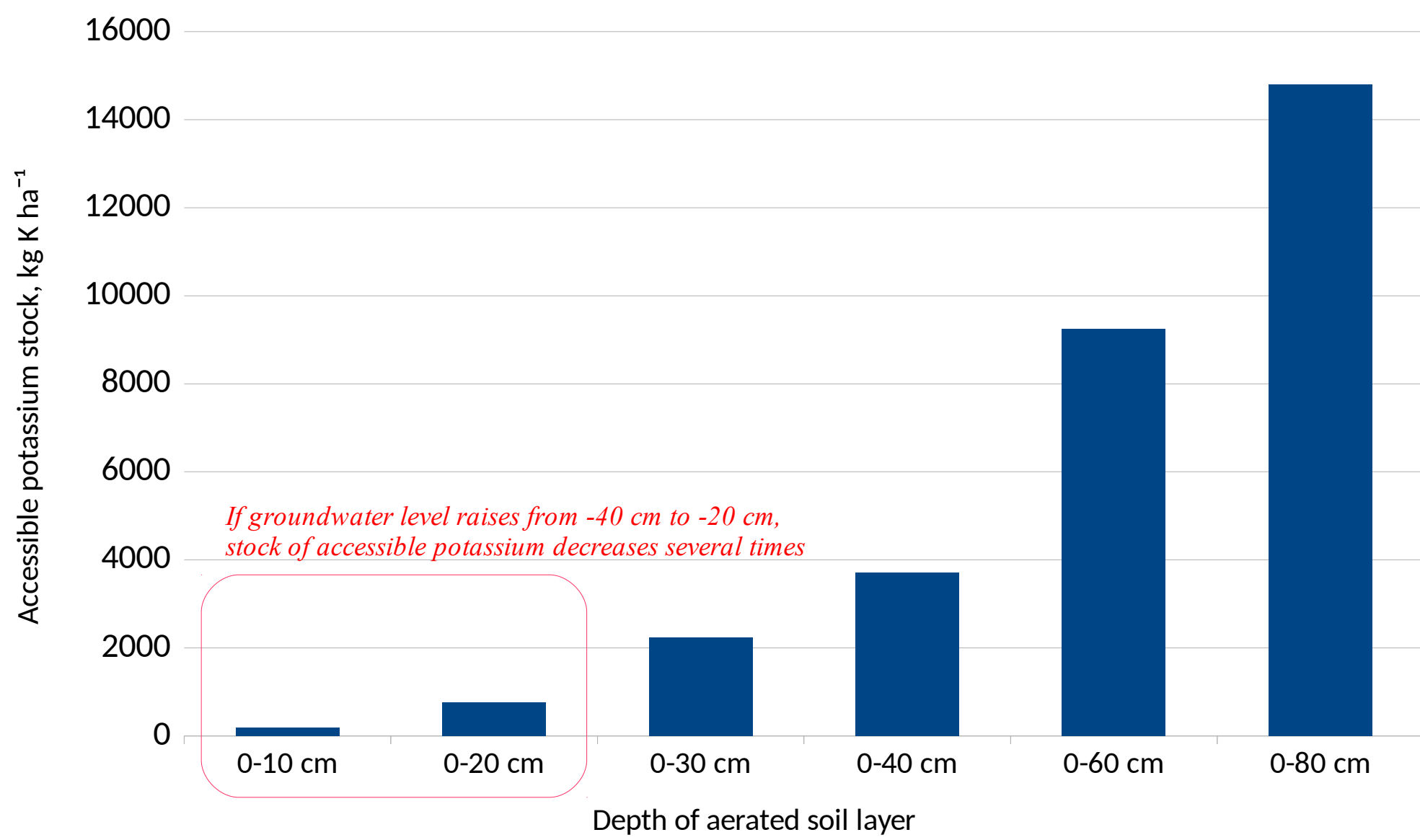


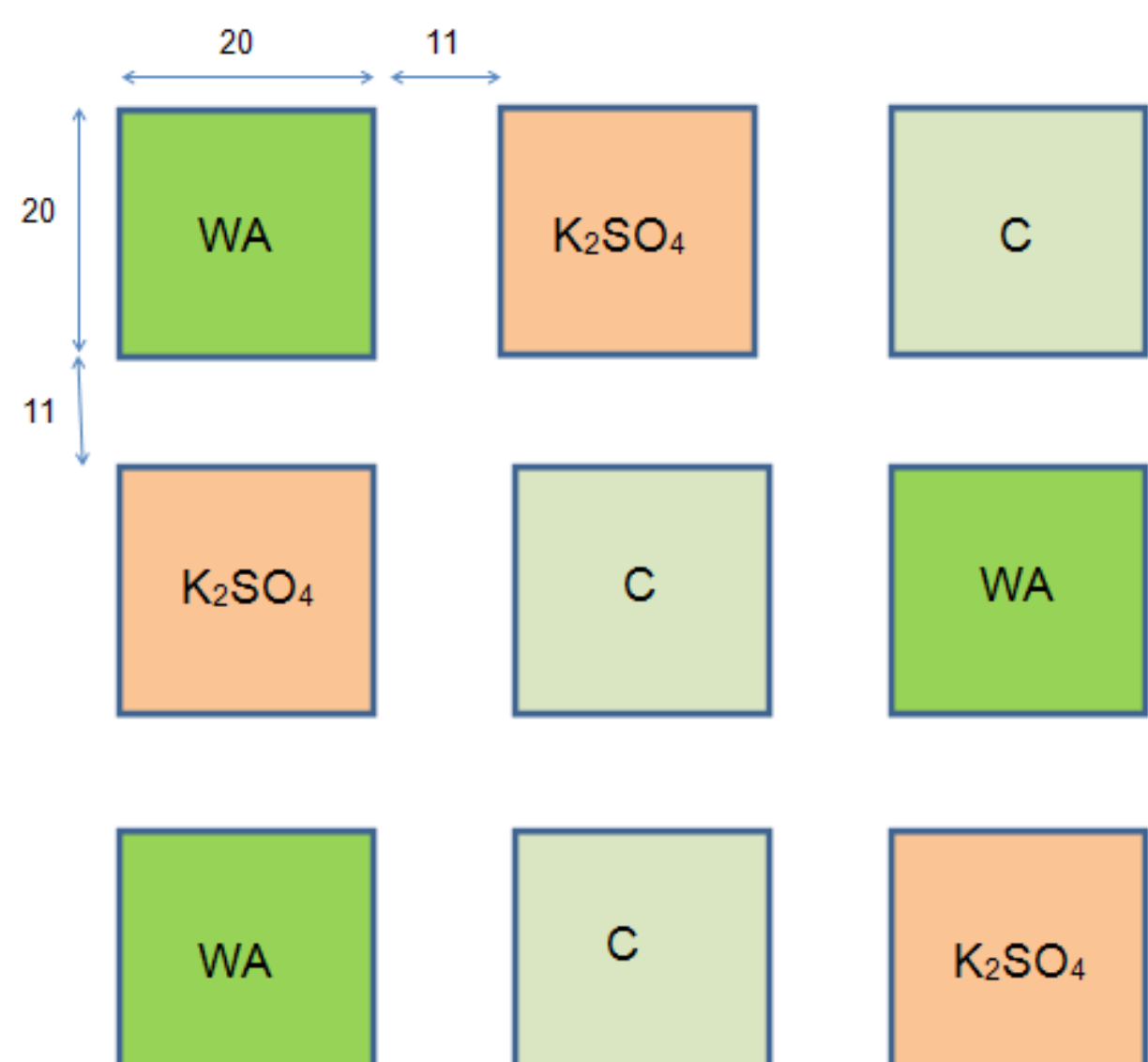
“Healing” of spruce stands damaged by insects



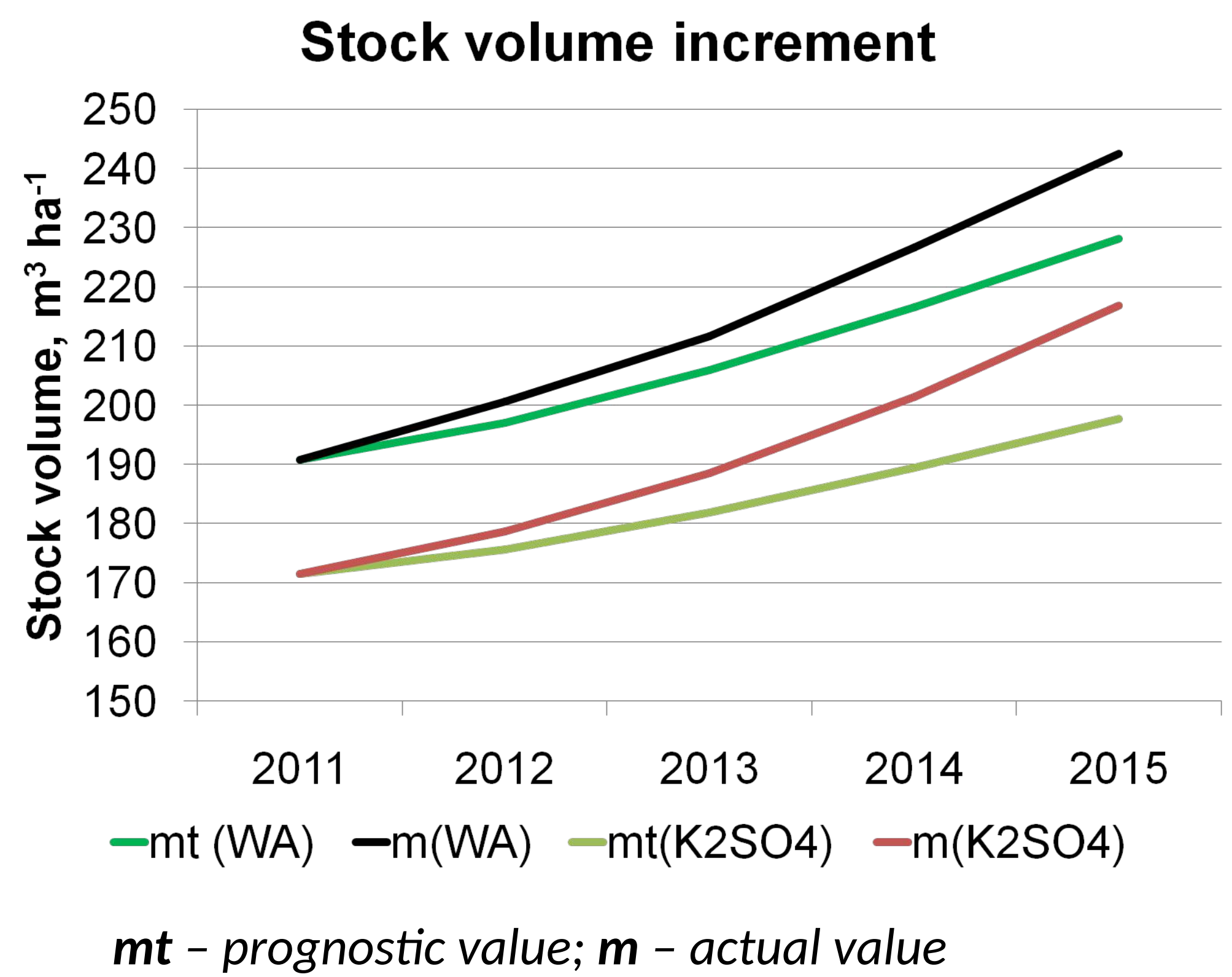
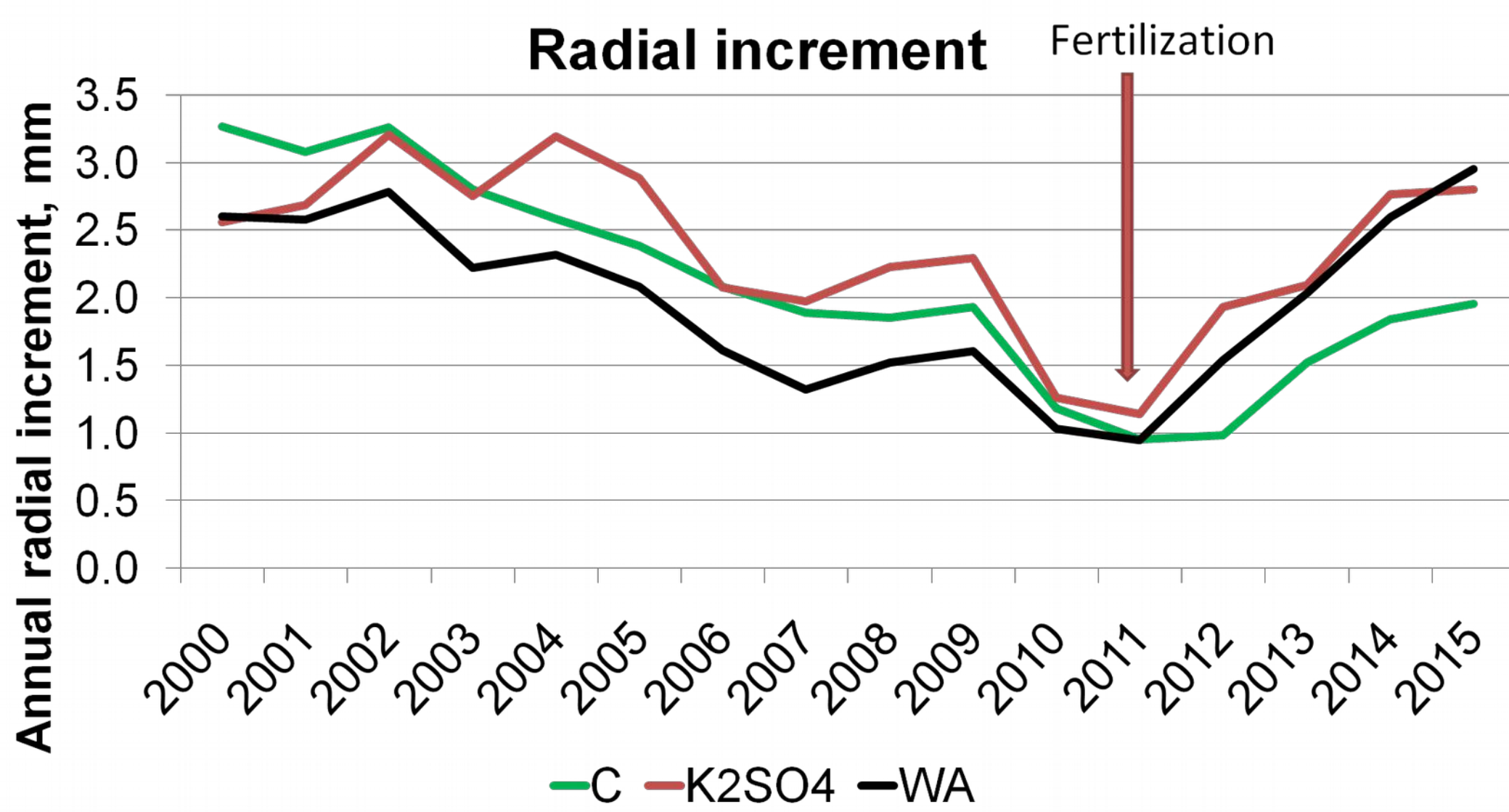
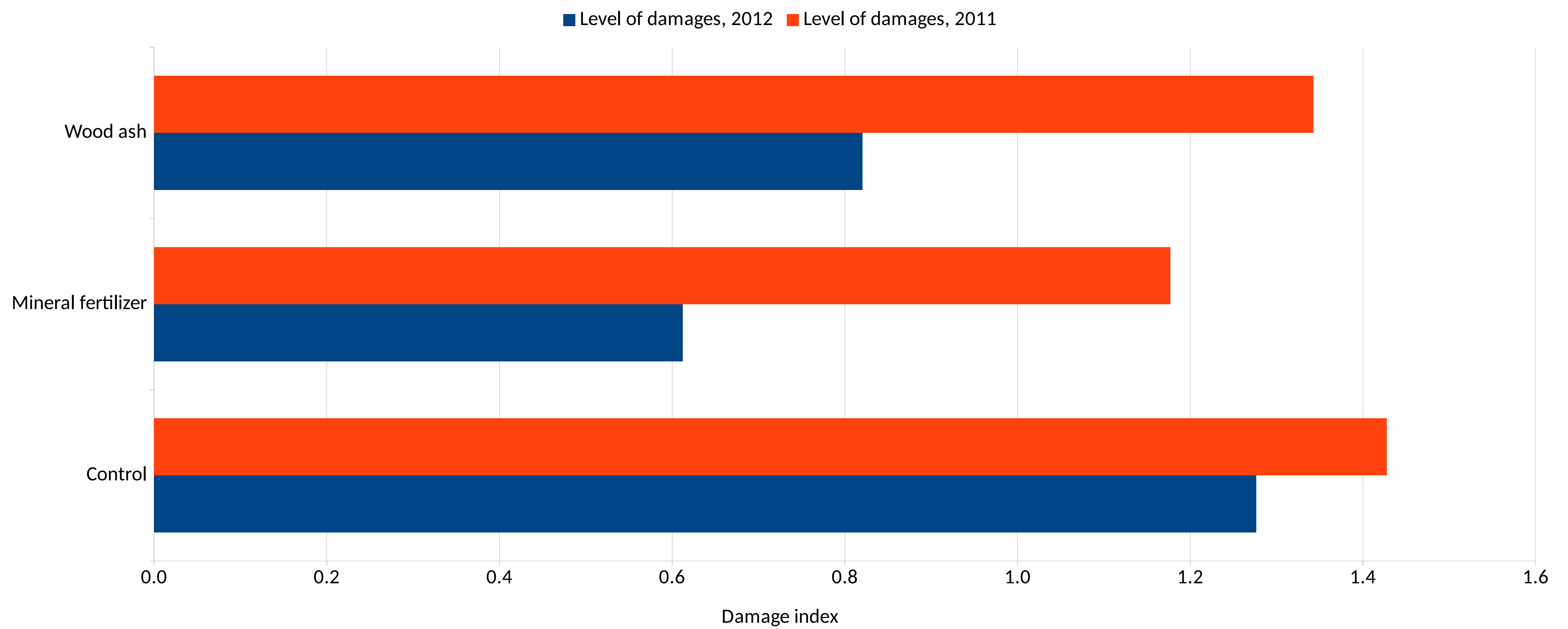
- Dieback of Norway spruce stands in 2010-2011, mostly on drained soils.
- Massive proliferation of spruce bud scale (*Physokermes piceae*) was observed.
- Temporal shortage of potassium was hypothesised as factor favouring weakening of spruces.
- Three middle aged Norway spruce stands on drained soils damaged by bud scale insect were selected for fertilization trials:
 - similar doses of potassium (60 kg K ha⁻¹) in both – wood ash (2.5 t ha⁻¹) and K₂SO₄ (145 kg ha⁻¹) treatments, were applied;
 - the fertilizer application was done manually in June, 2011;
 - level of crown damage was estimated in a range from 0 (healthy) to 3 (almost defoliated) before and after application;
 - increment core samples four years after application were collected to determine additional diameter and volume increment.

Content of plant nutrients in fertilizers, g kg⁻¹

| Element | Wood ash | K ₂ SO ₄ |
|---------|----------|--------------------------------|
| P | 10.9 | - |
| K | 31.6 | 420 |
| Ca | 224.8 | - |
| Mg | 30.9 | - |
| Mn | 3.1 | - |
| Fe | 4.6 | - |
| Na | 1.6 | - |
| S | - | 180 |



“Healing” of spruce stands damaged by insects



- Already after first year substitutional recovery of tree foliage was observed on fertilized plots.
- Significant radial growth increase was observed in all 3 spruce stands, both – after wood ash and potassium sulphate treatments.
- Four years after the application of the fertilizers, the cumulative additional stock volume increment varied from 8.5 m³ ha⁻¹ to 19.2 m³ ha⁻¹ in wood ash treated plots and from 9.7 m³ ha⁻¹ to 17.2 m³ ha⁻¹ in potassium sulphate treated plots; however, no statistically significant differences between treatments were found.

