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## A study into inter-planting fruit trees and grass in a frigid zone

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**Key words** : interplant , frigid zone , Heilongjiang province

**Introduction** Inter-planting crops is a method used in soil management . This study focuses on the effect of inter-planting crops on soil nutrition , surface temperature and air temperature with the use of both field and laboratory experiments . The results may highlight methods which will improve the popularity of inter-planting fruit tree and grass .

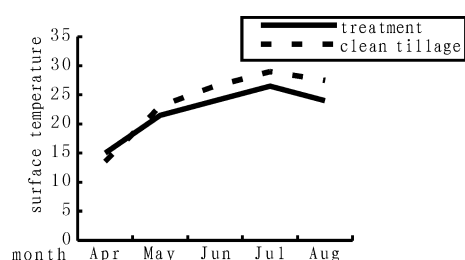
**Materials and methods** The study was conducted in Heilongjiang province , with *Poa annua* Linn planted in a *Prunus salicina* orchard , and *Bromus inermis* Leyss planted in a *Malus pumila* Mill orchard .

**Table 1** The analysis of soil nutrition .

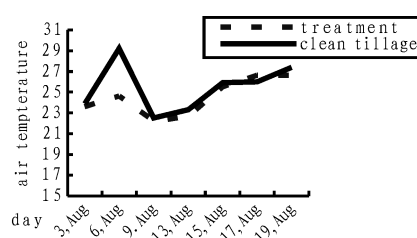
Treatment	Content of organic matter(%)	total nitrogen (%)	available Phosphorus(mg/kg)	available potassium(mg/kg)
<i>Prunus salicina</i> - <i>Poa annua</i> Linn	5.50	0.195	219.5	242.0
<i>Prunus salicina</i> -clean tillage	4.57	0.11	113.8	202.0
<i>Malus pumila</i> Mill- <i>Bromus inermis</i> Leyss	4.55	0.13	50.0	285.6
<i>Malus pumila</i> Mill -clean tillage	4.60	0.11	46.0	179.6

**Results** *Poa annua* Linn was planted in a *Prunus salicina* orchard , the analysis of results (Table 1) showed that the organic matter content , total nitrogen , available phosphorus and available potassium increased more than in the clean tillage orchard . *Bromus inermis* Leyss was planted in a *Malus pumila* Mill orchard , the analysis of results (Table 1) showed total nitrogen , available phosphorus and available potassium increased more than in the clean tillage orchard . As the results show in Table 1 , in April the surface temperature was higher than that recorded in the clean tillage treatment . From May to August , the surface temperature was higher than that recorded in the clear tillage treatment . As the results show in Table 2 , the daily average air temperature was lower than of that recorded in the clean tillage treatment .

**Conclusions** We can cautiously draw a conclusion that the inter-planting of fruit trees and grass can improve soil nutrition , early regrowth for fruit tree in spring . Further inter-planting was beneficial to tree root growth in summer and it can help avoid damage associated with high temperature thus potentially improving fruit quality .



**Plate 1** The effect of month temperature interplant on *Poa annua* . Linn . and *Prunus salicina* in orchard .



**Plate 2** The effect of daily temperature in summer interplant on *Poa annua* Linn .and *Prunus salicina* in orchard .

### Reference

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