

# Jack pine (Pj) - *Pinus banksiana*

Tree Species > Jack pine



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# BC Distribution of Jack pine (Pj)

Range of Jack pine



Jack pine in May has an abundance of male strobili that will shed pollen in a matter of days

## Geographic Range and Ecological Amplitudes

### Description

Jack pine is a small- to medium-sized (rarely >30 m tall), evergreen, boreal conifer, with a sparse, variable crown and spreading branches at maturity. It is the most widely distributed pine species in Canada, and an important timber species for pulp and lumber in central and eastern Canada.

### Geographic Range

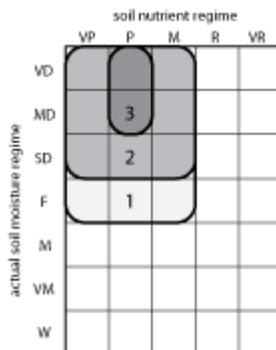
Geographic element:

Eastern North American/mainly Central and Atlantic and marginally Cordilleran

Distribution in Western North America:

(north) and central in the Cordilleran region

### Ecological Amplitudes



generalized edaphic amplitude of jack pine according to actual soil moisture and nutrient regimes

#### Climatic amplitude:

subarctic - montane boreal - cool temperate

#### Orographic amplitude:

montane

Occurrence in biogeoclimatic zones:

(northeastern BWBS)

#### Edaphic Amplitude

Range of soil moisture regimes:

**very dry - moderately dry** - slightly dry - (fresh)

Range of soil nutrient regimes:

**very poor - poor** - medium; psammophyte, oxylophyte

Jack pine grows best on acid soils, typically in high quartz-sands where calcium and magnesium are supplied in very small quantities; thus, it could be considered a psammophyte and oxylophyte. Jack pine does not grow on alkaline soils and grows poorly on calcium-rich soils. In contrast to lodgepole pine, jack pine does not grow in acid bogs.



## Tolerance and Damaging Agents

### Root System Characteristics

Jack pine develops a taproot as a seedling and maintains it to maturity. In deep, well-drained soils the roots may penetrate below 270 cm. The bulk of the roots consist of laterals confined largely to the upper 46 cm of the soil. Roots of jack pine are associated with both ecto- and endo-mycorrhizae.

### Tolerances

tolerance to	tolerance class	comments
low light	L	partial shade may be beneficial in the establishment period
frost	H	frequent in subarctic climates
heat	H	frequent on insolated sites
water deficit	H	tolerates severely water-deficient sites
water surplus	L	absent on waterlogged sites; may tolerate a short-term inundation
nutrient (mainly N) deficiency	H	very frequent on very poor and poor sites

### Damaging Agents

damaging agent	resistance class	comments
snow	L	low resistance and resilience, results in poor crown form
wind	H	firmly rooted
risk class		
fire	H	fires are frequent in the northern boreal forest
insect	H	jack pine budworm and white pine weevil
fungi	M	western gall rust; root and butt rots not a major concern (e.g., red ring rot and Armillaria root disease)

**Associated tree species and successional role**

In British Columbia, jack pine grows in even-aged, post-fire forests in pure or mixed-species stands. It is present in early and intermediate stages of secondary succession on fire-disturbed sites.

<b>associated tree species</b>	<b>occurrence class</b>	<b>major area of occurrence</b>
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white spruce (& hybrids)	L	northeastern BWBS
black spruce	L	northeastern BWBS

<b>characteristic</b>	<b>interpretive comments class</b>
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**Silvical Characteristics**

reproduction capacity	H	cone production at an age of <10 years
seed dissemination capacity	L	seed dispersion <100 m from the parent tree; Predominantly serotinous cones which open when the temperature is >27 °C
potential for natural regeneration in low light	L	practically nil; a shade-intolerant species
potential for natural regeneration in the open	H	especially after wildfires
potential initial growth rate (<5 years)	H	about 5 cm in the first growing season, up to 90 cm in the fifth growing season
response of advance regeneration to release	na	advance regeneration does not develop in the absence of adequate light and seedbeds
self-pruning capacity in dense stands	M	dense stands are unusual
crown spatial requirements	H	typically forms a wide irregular crown
light conditions beneath closed-canopy, mature stands	H	associated with well-developed understory vegetation
potential productivity	M	site index functions for B.C. are not available; site index (50 yr @ bh) <20 m and timber yields close

to 250 m<sup>3</sup> in 50 years on the most productive sites; growth decline after about 80 years

longevity

M

<200 years

## Genetics and Notes

### Genetics

The various environments in which jack pine grows over its wide range have provided ample opportunities for differentiation and natural selection. In British Columbia, it hybridizes with lodgepole pine (*P. x murraybanksiana* Righter & Stockwell).

### Notes

Jack pine is one of the least productive North American pines but valuable timber crop species in central and eastern Canada. Rotation periods used for the clearcutting system vary between 40 and 80 years. It was introduced to Europe where its performance was rather disappointing. More detailed silvics information is given by:

Rudolph, T.D. and P.R. Laidly. 1990. *Pinus banksiana*. Pp. 280-293 in R.M. Burns and B.H. Honkala (technical coordinators) *Silvics of North America*, Vol. 1. Agri. Handbook 654, USDA For. Serv., Washington, D.C.