THE RIGHT SPRUCE

The spruce varieties can be a unique feature to the commercial landscape providing you do your homework. Not all spruce is right for all areas.

by Douglas J. Chapman

Spruce can be a unique asset to the commercial and home landscapes if all factors—environmental tolerance, soil requirements, and insects and diseases—are considered.

Picea, which adapt best to the Northeast and Great Lakes region, include Norway, Engelmann, White, Colorado, Serbian, and Oriental Spruce. Colorado Spruce, due to overplanting and disease (for example, Cytospora Canker), should be used only sparingly. Each of these conifers has a preferred niche in the landscape.

Norway Spruce

Norway Spruce (*Picea abies*) is a European native, the most important conifer species for the European landscape and timber industry. It grows over a wide range of soil conditions, preferring cool, well-drained soils.

It needs a high humidity, thus is adapted particularly well for the Great Lakes, New York, and New England areas. Norway Spruce is particularly cold hardy, reportedly tolerant of temperatures down to minus 72 degrees F.

When young, it has a somewhat stiff, formal habit of growth, becoming a graceful, upright-arching tree at maturity. *Picea abies* effectively reaches 60 feet in height with a spread of 20 to 30 feet. There are reports of Norway Spruce, under native conditions, growing considerably larger, but one must know effective landscape height, not ultimate height, in native conditions.

Norway Spruce has been cultivated and improved selections made over such a long time period that many unique cultivars exist.

Two particularly outstanding cultivars include *Picea abies* 'Maxwellii,' a dwarf rounded plant and *Picea abies* 'Nidiformis' (Nest Spruce), a plant which reaches three to six feet in height and spread. Certainly, Norway Spruce is high on the list of desirable landscape species.

Englemann Spruce

Engelmann Spruce (*Picea engelmannii*) is native to the western United States. It is particularly hardy, tolerant of temperatures to minus 90 degrees F. Engelmann, a rather formal, dense plant, serves as an outstanding ornamental. It reaches 40 to 50 feet in height with a 10 to 20 foot width.

This plant grows best in extremely well-drained soils but does require frequent rain or a high water table. Among the spruce, it is probably the most resistant to sulfur-dioxide. Engelmann Spruce is difficult to obtain but should be listed as one of the truly outstanding ornamental spruce types.

White Spruce

White Spruce (*Picea glauca*) is best suited to northern areas, specifically northern Michigan, New England, and Ontario. It thrives in cool, moist soils, adapting to a wide range of pH from 5 to 7.5. It is resistant to chlorides (salts) and is tolerant of sun or shade conditions. These features make it particularly well suited to natural landscapes throughout the northeast and northcentral U.S.

Colorado Spruce, due to over-planting and disease (for example, Cytospora Canker), should be used only sparingly.

Its habit is rather loose and open—40 to 50 feet in height at maturity with a spread of 15 to 20 feet.

White Spruce is uniquely suited to commercial or park landscapes. It is particularly tolerant of many urban problems such as low-oxygen or heavy soils, and varied light conditions.

Colorado Spruce

Colorado Spruce (*Picea pungens*) thrives over a wide range of conditions. Its rather formal, dense habit, reaching 40 to 60 feet with a spread of 20 to 30 feet in the Great Lakes region.

It is tolerant of clay to droughty, well-drained soils.

Picea pungens is particularly subject to desiccation during the winter months. Although it is the most readily-available spruce in the trade, it is also the most susceptible to Cytospora Canker.

When Colorado Spruce reaches 25 to 30 years of age, it frequently contracts *Cytospora kunzei* and declines. Due to this disease problem, the use of Colorado Spruce should be reduced dramatically.

Serbian Spruce

Serbian Spruce (*Picea omorika*) in the landscape is probably the most notable specimen spruce. It reaches 50 to 60 feet in height and has a spread between 15 and 20 feet. It thrives in well-drained soils but adapts to a wide range of soil conditions.

It is quite formal and is particularly well suited to either the home or commercial landscape. Of all the spruce, it seems the least susceptible to Cytospora Canker which should encourage its use.

Oriental Spruce

Oriental Spruce (*Picea orientalis*) is a truly outstanding spruce with a very dense habit. It reaches 50 to 60 feet in height with a 20 to 30 foot spread.

It is tolerant to a wide range of soil conditions but is not dependably hardy, thus should be grown only in areas such as southern Ontario, southern New England States, southern New York, Ohio, Indiana, and Illinois. Its color is an outstanding lime green.

Oriental Spruce is not a host to many catastrophic insect and disease problems.

As a landscape tree, Oriental Spruce is truly unique. *Picea orientalis* certainly has a place throughout the southern Northeast and middle Atlantic States. It is, however, the least cold temperature hardy of all the spruce discussed above.

Disease controls

There are numerous insect and disease problems which can affect the spruce types but probably the most single catastrophic problem is

Cytospora Canker (*Cytospora kunzei*).

You can control this weak pathogen by pruning out cankered branches and fertilizations.

The symptoms include single branches thinning and dying with white resinous ooze appearing on the branch or trunk.

There is no presently-known fungicide that is effective in control of the disease. Laemmlen reported one way to reduce the chance for infection would be not to prune during the spring months.

His studies suggested the major spore responsible for primary innoculation is ascospore. These ascospores are released during the spring months, thus partial control might be to avoid spring pruning.

A total review of the conditions that encourage Cytospora Canker of spruce shows it is a weak pathogen and, in fact, a disease of older, stressed, or injured trees. Further, some spruce are more resistant to this particular disease.

Knowing this information, there are several things we can do. First, one should be alerted to relative resistance of species. Spruce ranked from least to most susceptible are: Serbian, Engelmann, Oriental, Norway, White, and Colorado Spruce.

This simple listing is one good reason why we should reduce the number of Colorado Spruce used in the landscape.

For many years Cytospora Canker has been known to be a disease of weakened or stressed trees.

Stress

Recently, Schoeneweiss reported drought to be one possible reason for increased susceptibility, but he further stated at a seminar held at Michigan State University that the key for infection and ultimately, canker formation, is stress.

Therefore, frequent watering and fertilizing would help reduce the chances of this infection. Furthermore, since ascospores are released during the spring, spruce pruning should be de-emphasized during the spring months.

Lastly, as spruce trees become older and slow down in vigor, they are more susceptible to infection.

There are many factors to consider when using spruce: susceptibility to insects and diseases; tolerance to chlorides; tolerance to wet or dry soils; and climatic adaption.

Relative susceptibility to Cytospora Canker is the major pathogenic consideration.

One should keep in mind that diversity, no spring pruning, and use of all spruce types in the landscape reduces the chances of any one species being devastated.

When considering diseases and environmental tolerance, each spruce has a niche in the landscape. **WT&T**

REFERENCES

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