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**Technical regulations for pruning control of *Arceuthobium
sichuanense***

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(English Translation)

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard was proposed and managed by the National Forestry Pest Control Standardization Technical Committee (SAC/TC 522).

This standard was drafted. Beijing Forestry University, Qinghai Province Forest Disease and Pest Control and Quarantine General Station, Xianmi Forest Farm, Menyuan County, Qinghai Province.

1 Scope

This standard specifies the investigation of spruce dwarf mistletoe damage, pruning techniques, and evaluation of control effects.

This standard applies to pruning prevention of spruce dwarf mistletoe.

2 Terms and definitions

The following terms and definitions apply to this document.

Arceuthobium sichuanense A semi-organic species capable of photosynthesis and sexual reproduction, belonging to the genus *Arceuthobium* of the Viscaceae family. Parasitic seed plants absorb water and inorganic nutrients through a parasitic system that grows in the host plant, mainly harming *Picea* spp.

Arceuthobium sichuanense infestation Spruce dwarf mistletoe damage is infecting Qinghai spruce (*Picea crassifolia*), purple fruit spruce (*P. purpurea*), western Sichuan spruce (*P.*

host plants such as *likiangensis* var. *balfouriana*, *P. wilsonii*, *Pinus tabuliformis*, etc.

The spruce dwarf mistletoe plant appears on the host's branches, and completes its life history on the host spruce, which causes the parasitic spruce to expand, Sickness of side branches, formation of broom-like clumps, and other diseases that affect the healthy growth of spruce. The symptoms of spruce dwarf mistletoe are shown in Appendix A.

For physical characteristics and life history, see Appendix B.

3.1 Inspection

Spruce dwarf mistletoe should be from May to September every year, along the natural lines such as highways, forest trails, etc., to the edge of the forest within 50 m. A survey of tending the felled area and surrounding trees that year found that the spruce had chlorotic needles, broom-like bushes, yellow, red, or trees at the time of death, detailed records were made and the results of the investigation were entered in Appendix C.

3.2.1 Site setting

In the forests damaged by the spruce dwarf mistletoe, randomly select at least 3 small groups to set up spruce plots in the forest class.

Investigation on the occurrence (harmfulness) of dwarf mistletoe, the plot size is 30 m x 30 m. Fill in the basic information of the plot according to the forest survey results in the small class for the status table, see Appendix D.

3.2.2 Disease classification

The canopy is divided into upper, middle, and lower parts. According to the infection status of spruce dwarf mistletoe in each part, they are described as 0, 1, 2 from light to heavy Level, and add the three levels of the crown to obtain the dwarf mistletoe rating (DMR) of the entire tree, see Appendix E.

3.2.3 Site survey

Each tree was surveyed in the plot. According to the occurrence and harm of spruce dwarf mistletoe on each spruce, fill out a single tree survey before pruning Record form, see Appendix F.

4.1 Pruning time

Pruning will be carried out from November to February of that year.

4.2 Pruning per plant

For each injured tree, different pruning intensities are adopted according to different disease levels, see Appendix G.

4.3 Forest pruning

According to the different disease severity of the forest stands, corresponding pruning techniques are adopted, see Appendix H.

4.4 Pruning methods

When pruning, the diseased branches should be pruned along the trunk and the incision should be smooth. If the pruned branches are thin and there are no obvious nodules or collars, it should be close to the stem, cut vertically from the base of the branch. If the diameter of the repaired branch is greater than 3 cm, you should first saw from the bottom of the branch and then from the top the saw was lifted from the side, and finally the base of the branches was removed to avoid tearing the bark. For the operation method, refer to Appendix I.

4.5 Post-pruning treatment

The wound should be sealed with paint or preservative. The trimmed bushes should be cleaned up and concentrated for disposal.

5.1 Survey method

Select the stand that is close to the occurrence of parasitic damage in the pruning area to set the control area, and select a representative small class to set up the plot in the control area.

Refer to Section 3.2.1 for sample site settings.

5.2 Investigation time

Investigate once before pruning, and regularly after May to September every year after pruning. Investigate whether there are primary or secondary infestations in pruning plots and whether it caused secondary diseases and insect pests.

5.3 Investigation contents

Investigate the results of the plot after pruning, and fill in the single-wood survey record form after pruning, see Appendix F. According to the survey results before and after pruning, Fill in the statistical table of the spruce dwarf mistletoe pruning effect, see Appendix K. The calculation formula is shown in Appendix J.

5.4 Evaluation of control effect

Calculate the disease changes in the pruned area and the control area based on the disease index of the pruned area and the control area, for control effect, see Appendix J for calculation formula.

Appendix A

(Informative appendix) Symptoms of Spruce Dwarf Mistletoe

Figure A.1 Healthy Qinghai Spruce

Figure A.2 Qinghai spruce infected by spruce dwarf mistletoe

Appendix B

(Informative appendix) Biological Characteristics and Life History of Spruce Dwarf Mistletoe

B.1 Biological characteristics and life history of Spruce Dwarf Mistletoe Spruce dwarf mistletoe is a plant of the genus *Arceuthobium* in the Viscaceae family, commonly known as Dwarf mistletoe), a parasitic subshrub with a plant height of less than 20 cm. The plant is yellow or green, the surface is smooth, and the dioecious. Newborn the root grows from a sucker-like attachment formed by the swollen top of the seed germ, and wedge-shaped cells extend into the host cortex, reach the xylem, and the inner extension forms a wedge-shaped suction root. Branches opposite or whorled, stem nodes are cylindrical, internodes 1 mm to 6 mm, trunk base diameter 1 mm to 1.8 mm, Most of them are dorsally and densely erect, with pseudo-forked branches, and a few of them have chloroplasts and can carry out photosynthesis.

Spruce dwarf mistletoe is specifically parasitic on spruce plants such as Qinghai spruce, purple fruit spruce, western Sichuan spruce, Tibetan spruce, barberry the perimeter is relatively narrow, and parasitic pine was found in Qinghai for the first time. Currently mainly distributed in Qinghai, Gansu, Sichuan, Tibet and other places in China.

Dwarf mistletoe is an obligate host plant, and its life and reproduction must depend on the