

附件

# 林木良种名录

(中英文)

## 审定通过品种

### 西北杨 2 号

树种：杨树

学名：*Populus alba*×*P. tomentosa* ‘Xibeiyang 2’

类别：品种

通过类别：审定

编号：国 S-SV-PA-001-2019

申请人：西北农林科技大学

选育人：樊军锋、周永学、高建社、白小军、张锦梅、赵白玉、周玉泉、周飞梅、谢俊锋  
柴传林、刘永红、郭树杰、贾小明

### 品种特性

雄性，树干通直圆满，树皮光滑，灰绿色。陕西周至 8 年生西北杨 2 号平均树高 17.09m、胸径 19.33cm、材积 0.2214m<sup>3</sup>，材积生长量超过对照品种毛白杨 30 号 (0.1127m<sup>3</sup>) 96.45%。基本密度为 0.352g/cm<sup>3</sup>，顺纹抗压强度为 38.353Mpa，径向、弦向横纹抗压强度分别为 2.362Mpa、1.517Mpa，抗弯强度为 77.670Mpa，纤维长、宽、长宽比分别为 1204.28μm、28.16μm、43.95:1。

### 主要用途

可作为用材林树种。

### 栽培技术要点

植苗造林使用 1-3 年生苗木，株行距 (4.0-6.0) m×(4.0-6.0) m。栽植深度 40-60cm，起苗到栽植过程中防止苗木失水，栽时踩实，栽后立即浇水。栽植一年生苗要回剪苗梢 40-60cm，以提高成活率。

### 适宜种植范围

陕西、青海、山西杨树适宜栽培区域。

### 秦白杨 5 号

树种：杨树

学名：*Populus alba*×(*P. alba*×*P. glandulosa*) ‘Qinbaiyang 5’

类别：品种

通过类别：审定

编号：国 S-SV-PA-002-2019

申请人：西北农林科技大学

选育人：樊军锋、高建社、周永学、白小军、张锦梅、赵白玉、周玉泉、周飞梅、谢俊锋  
柴传林、刘永红、郭树杰、贾小明

## 品种特性

雄性，主干通直圆满，树皮光滑，青灰色，树冠宽卵形。陕西周至 8 年生秦白杨 5 号平均树高 18.33m、胸径 20.93cm、材积 0.2687m<sup>3</sup>，材积生长量超过对照毛白杨 30 号 (0.1127m<sup>3</sup>) 138.42%。基本密度为 0.313g/cm<sup>3</sup>，顺纹抗压强度为 31.899Mpa，径向、弦向横纹抗压强度分别为 2.079Mpa、1.054Mpa，抗弯强度为 67.840Mpa；纤维长、宽、长宽比分别为 1243.47μm、29.26μm、43.60:1。

## 主要用途

可作为用材林树种。

## 栽培技术要点

植苗造林多使用 1-3 年生苗木，株行距 (4.0-6.0) m×(4.0-6.0) m。栽植深度 40-60cm，起苗到栽植过程中防止苗木失水，栽时踩实，栽后立即浇水。栽植一年生苗要回剪苗梢 40-60cm，以提高成活率。

## 适宜种植范围

陕西、青海、山西杨树适宜栽培区域。

## ‘北林 5 号’杨

树种：杨树

学名： *Populus* ‘Beilin 5’

类别：品种

通过类别：审定

编号：国 S-SV-PB-003-2019

申请人：北京林业大学

选育人：康向阳、张平冬、李赟、樊明瑞、张有慧、宋连君、郭喜军、马晶、张锋、张亮、孙静、王振龙、田书勇、鲍正宗

## 品种特性

雌株，染色体数目为 2n=3x=57。树干通直，树皮灰绿色，光滑，分枝角小于或等于 45°。5 年生北林 5 号与对照毛白杨无性系 1319 相比，平均材积生长量 5.54m<sup>3</sup>/亩，超过对照 171.6%，木材基本密度 355.9kg/m<sup>3</sup>，比对照低 14.5%；纤维长度 0.929mm，超过对照 36.4%；综纤维素含量 82.61%，超过对照 1.7%；木质素含量 23.16%，比对照低 9.5%。

## 主要用途

可作为纸浆材树种。

## 栽培技术要点

春季造林为主，选择地势平坦、土层深厚的平川地，一般用当年生苗，起苗后重度修剪或截干；苗木长途运输时要蘸浆，并用毡布覆盖，以防止失水过多；造林前浸水 1-2 天，采用植穴造林，造林后及时浇水，第三年开始追肥，并修除粗大竞争枝；根据立地条件和轮伐期长短，造林密度一般为 500-1500 株/hm<sup>2</sup>。

## 适宜种植范围

河北、山西中南部、山东西北部地区的平原和河谷川地栽培。

## 白桦草河口种源

树种：白桦

学名：*Betula platyphylla*

类别：种源

通过类别：审定

编号：国 S-SP-BP-004-2019

申请人：东北林业大学

选育人：杨传平、刘桂丰、赵曦阳、张利民、尚福强、李腾、高元科、张红光、姜静、李开隆、王秀伟、李志新、王超、杨成君、陈波、马占元、徐成才、李旭辉、罗建新等

### 品种特性

树干通直。草河口种源在黑龙江帽儿山试验点的材积生长较种源群体均值高32.82%，总碳储量较种源群体均值高68.20%，在辽宁草河口试验点材积生长较种源群体均值高24.29%；总碳储量较种源群体均值高18.85%。不适合盐碱地造林。

### 主要用途

可用于营建速生丰产林或碳汇林。

### 栽培技术要点

选择阳缓坡（坡度 30°以下）、中坡位、土层 30cm 以上的立地造林。初植密度 2500 株/hm<sup>2</sup>。春季明穴造林为主，穴直径 30-60cm、深度 30-50cm 为宜。定植第 1 年抚育 2 次，第 2、3 年各抚育 1 次。

### 适宜种植范围

黑龙江、辽宁白桦适宜栽培区。

## 白桦小北湖种源

树种：白桦

学名：*Betula platyphylla*

类别：种源

通过类别：审定

编号：国 S-SP-BP-005-2019

申请人：东北林业大学

选育人：刘桂丰、杨传平、王秀伟、姜静、李开隆、张利民、尚福强、杨成君、王超、赵曦阳、李志新、李腾、高元科、张红光、陈波、马占元、徐成才、李旭辉、罗建新等

### 品种特性

树干通直，自然整枝能力强。在辽宁省草河口试验点，16年生小北湖种源胸径达10.01cm，14年生小北湖种源地上总碳储量为8.87kg，地下总碳储量达1.86kg，分别较种源群体均值高36.28%、58.37%和73.45%，遗传增益分别为22.36%、46.70%和58.76%。不适合盐碱地造林。

### 主要用途

可作为速生丰产林及碳汇林树种。

### 栽培技术要点

选择阳缓坡(坡度 30°以下)、中坡位、土层 30cm 以上的立地造林。初植密度 2500 株/hm<sup>2</sup>。春季明穴造林为主, 穴直径 30-60cm、深度 30-50cm 为宜。定植第 1 年抚育 2 次, 第 2、3 年各抚育 1 次。

### 适宜种植范围

黑龙江、辽宁白桦适宜栽培区。

## 中山杉 118

树种: 落羽杉

学名: ((*Taxodium distichum* × *T. mucronatum*) × *T. mucronatum*) 'Zhongshanshan 118'

类别: 品种

通过类别: 审定

编号: 国 S-SV-TD-006-2019

申请人: 江苏省中国科学院植物研究所

选育人: 殷云龙、陈永辉、於朝广、任凭、罗坤水

### 品种特性

半常绿, 4-10月叶色为青绿色, 11-12月叶色转变为黄色。树干通直圆满, 树冠塔形。在水深为1/4树高情况下可正常生长, 在pH<8.5、含盐量<0.3%时, 叶色无黄化现象。在江苏如东县, 24年生中山杉118树高和胸径分别为16.2m和37.8cm。

### 主要用途

可用于沿海滩涂盐碱地防护林、长江流域及湖泊低洼湿地造林、公路绿化及农田林网。

### 栽培技术要点

苗木移栽时随起随栽, 缩剪过长根系, 确保根系舒展, 浇足定根水。绿化造林适度深栽, 2.0m 以上大苗造林应适当疏枝。

### 适宜种植范围

江苏、重庆、江西落羽杉适宜栽培区。

## ‘聊红’槐

树种: 国槐

学名: *Sophora japonica* 'Liaohong'

类别: 品种

通过类别: 审定

编号: 国 S-SV-SJ-007-2019

申请人: 聊城大学

选育人: 邱艳昌、张秀省、黄勇、于守超、高祥斌、王小雷

### 品种特性

花旗瓣边缘浅粉红色, 翼瓣和龙骨瓣中下部淡堇紫色。北京地区花期为每年7月初到9月底。山东聊城地区每年胸径生长2.0cm, 当年嫁接苗高生长3.0m以上。

### 主要用途

可作为园林绿化树种。

### 栽培技术要点

采用全封闭包扎法进行嫁接繁殖。栽植选择较好的土壤条件，加强水肥管理，做好病虫害防治和抹芽工作，及时去除砧木上的萌生芽。

### 适宜种植范围

山东、河北、甘肃、陕西、天津、北京、河南国槐适宜栽培区。

### ‘中研 73 号’马大相思

树种：相思

学名：*Acacia mangium*×*A. auriculiformis* ‘Zhongyan 73’

类别：引种驯化品种

通过类别：审定

编号：国 S-EST-AM-008-2019

申请人：中国林业科学研究院林业研究所

选育人：宗亦臣、郑勇奇、陈国彪、许承荣、段福文、王维辉、黎君、施庭有、戴新华  
王清广、陈晓祥、洪小龙、何德镇、王振元、林坤保、吴云中、柯文生、高文学  
杨建新

### 品种特性

中国林业科学研究院林业研究所2008年由越南引进。干型通直，冠幅小且紧凑，根系有大量根瘤菌。6年生中研73号平均树高13.2m，平均胸径13.3cm，平均单株材积0.09m<sup>3</sup>，平均蓄积量75.73m<sup>3</sup>/hm<sup>2</sup>，基本密度为0.411-0.507g/cm<sup>3</sup>。

### 主要用途

可作为用材林树种。

### 栽培技术要点

春季造林，选择海拔 1000m 以下的山地丘陵，酸性土壤，土层深厚，排水良好；造林苗木苗高 20-30cm，地径≥0.3cm，株行距 2.5m×3.0m。定植后的第一年分别在 7-8 月份和 11-12 月份进行 2 次抚育除杂。

### 适宜种植范围

福建、广西、云南等南亚热带气候地区。

### 西南桦广西凭祥种源

树种：西南桦

学名：*Betula alnoides*

类别：种源

通过类别：审定

编号：国 S-SP-BA-09-2019

申请人：中国林业科学研究院热带林业研究所、中国林业科学研究院热带林业实验中心  
福建省林业科学研究院、保山市林业和草原技术推广站、勐腊县林业和草原局

选育人：曾杰、郭俊杰、贾宏炎、陈碧华、黄佳聪、朱先成、赵志刚、王春胜、郭文福  
杨晏平、方碧江、张劲松、李志真、陈伟、韩金发、王欢

## 品种特性

干形通直。在广西凭祥15年生平均胸径和树高分别可达16.92cm和14.64m，木材气干密度、顺纹抗压强度、抗弯强度、抗弯弹性模量、冲击韧性和硬度分别为0.599g/cm<sup>3</sup>、44.9MPa、102MPa、16910MPa、41kJ/m<sup>2</sup>和2790N。由湿材到全干和由湿材到气干的体积干缩率分别为11.9%和5.5%；由全干到湿材和由全干到气干体积湿胀率分别为14.0%和4.2%。

## 主要用途

可作为用材林树种。

## 栽培技术要点

在广东和福建南部以及广西中部和东部地区，宜春季造林、雨季补植；云南、广西西部应以雨季种植为主。造林地多采取全面清理方式，宜带垦和穴垦，带垦的宽度一般为0.6m-1.0m，穴垦穴径0.5m-0.7m、深0.3m-0.5m。造林前，施用过磷酸钙200-300g和氮磷钾复合肥100g做基肥；造林株行距2.0m×3.0m、3.0m×3.0m或2.0m×4.0m。造林后一般抚育3年，分别在雨季前和雨季后抚育两次。可与红锥、杉木等混交造林。

## 适宜种植范围

宜在广西大部、福建南部、云南西部年降雨量≥1000mm，冬季多雨，年均相对湿度≥80%，最适年均气温16℃-20℃的地区种植。

## 西南桦云南腾冲种源

树种：西南桦

学名：*Betula alnoides*

类别：种源

通过类别：审定

编号：国 S-SP-BA-010-2019

申请人：中国林业科学研究院热带林业研究所、中国林业科学研究院热带林业实验中心  
勐腊县林业和草原局、福建省林业科学研究院、保山市林业和草原技术推广站

选育人：曾杰、郭俊杰、贾宏炎、朱先成、陈碧华、黄佳聪、赵志刚、王春胜、陈国彪  
张劲松、杨晏平、陈伟、李志真、韩金发、郭文福、王欢

## 品种特性

干形通直。在福建省漳州市14年生平均胸径和树高分别可达23.46cm和19.02m，木材气干密度、顺纹抗压强度、抗弯强度、抗弯弹性模量、冲击韧性和硬度分别为0.750g/cm<sup>3</sup>、52.6MPa、111.9MPa、17090MPa、89kJ/m<sup>2</sup>和4910N。由湿材到全干和由湿材到气干的体积干缩率分别为15.4%和7.6%；由全干到湿材和由全干到气干体积湿胀率分别为18.8%和5.3%。

## 主要用途

可作为用材林树种。

## 栽培技术要点

在广东和福建南部以及广西中部和东部地区，宜春季造林、雨季补植；云南、广西西部应以雨季种植为主。造林地多采取全面清理方式，宜带垦和穴垦，带垦的宽度一般为0.6m-1.0m，穴垦穴径0.5m-0.7m、深0.3m-0.5m。造林前，施用过磷酸钙200-300g和氮磷钾

复合肥 100g 做基肥；造林株行距 2.0m×3.0m、3.0m×3.0m 或 2.0m×4.0m。造林后一般抚育 3 年，分别在雨季前和雨季后抚育两次。可与红锥、杉木等混交造林。

### 适宜种植范围

宜在广西大部、福建南部、云南西部等年降雨量≥1000mm，冬季多雨，年均相对湿度≥80%，最适年均气温 16℃-20℃的地区种植。

### ‘中林 1 号’楸树

树种：楸树

学名：*Catalpa bungei* ‘Zhonglin 1’

类别：无性系

通过类别：审定

编号：国 S-SC-CB-011-2019

申请人：中国林业科学研究院林业研究所

选育人：麻文俊、王军辉、杨桂娟、翟文继、赵鲲、负慧玲、张江涛、赵天宇、卢楠

### 品种特性

落叶高大乔木，主干通直，树冠呈卵形。在甘肃天水10年生胸径和树高分别为12.12cm和11.23m，遗传增益分别为9.69%和6.04%。气干密度为0.395g/cm<sup>3</sup>，基本密度为0.367g/cm<sup>3</sup>；抗压强度、抗弯强度和抗弯弹性模量分别为17.3MPa、48.1MPa、4857.5MPa。

### 主要用途

可作为用材林树种。

### 栽培技术要点

一般于 3 月至 4 月上旬栽植。适宜土层深厚（50-60cm 以上）、湿润、肥沃、疏松的中性土、微酸性土和土层深厚的钙质土；栽植穴径 50-60cm，深 50cm；做到随起苗随栽，栽植前，根系应在水中浸泡 1 天。幼龄期需加强抹芽、截顶、定主干等以栽培优质主干，同时加强修枝和浇水施肥。

### 适宜种植范围

河南、甘肃楸树适宜栽培区。

### ‘中林 5 号’楸树

树种：楸树

学名：*Catalpa bungei* ‘Zhonglin 5’

类别：无性系

通过类别：审定

编号：国 S-SC-CB-012-2019

申请人：中国林业科学研究院林业研究所

选育人：麻文俊、王军辉、杨桂娟、翟文继、赵鲲、负慧玲、张江涛、赵天宇、卢楠

### 品种特性

落叶高大乔木，主干通直，树冠呈阔卵形。在甘肃天水10年生胸径和树高分别为13.38cm和11.83m，遗传增益分别为17.89%和8.80%。气干密度为0.435g/cm<sup>3</sup>，基本密度为0.371g/cm<sup>3</sup>；抗压强度、抗弯强度和抗弯弹性模量分别为16.4MPa、44.0MPa、4724.9MPa。

## 主要用途

可作为用材林树种。

## 栽培技术要点

一般于3月至4月上旬栽植。适宜土层深厚（50-60cm以上）、湿润、肥沃、疏松的中性土、微酸性土和土层深厚的钙质土；栽植穴径50-60cm，深50cm；做到随起苗随栽，栽植前，根系应在水中浸泡1天。幼龄期需加强抹芽、截顶、定主干等以栽培优质主干，同时加强修枝和浇水施肥。

## 适宜种植范围

河南、甘肃楸树适宜栽培区。

## ‘燕杏’梅

树种：梅

学名：*Prunus mume* ‘Yanxing’

类别：品种

通过类别：审定

编号：国 S-SV-PM-013-2019

申请人：北京林业大学

选育人：张启翔、陈俊愉、陈瑞丹、李庆卫、马开峰、姜良宝、唐绂宸、王佳

## 品种特性

树冠长卵圆形。花态浅碗型至碟型，花朵单瓣，1-3朵生于短花枝、中花枝及束花枝上，少数生于长花枝上；花瓣5，花白色，花蕾淡水红色；花无香味。实验室内抗寒性测试中，半致死温度为-35℃。在北京地区，花期为3月底至4月初；在吉林公主岭地区，花期为4月底至5月初。

## 主要用途

可用作园林绿化树种。

## 栽培技术要点

选择3年生以上生长健壮大苗，春分前后栽植。3-5年生苗木，株行距2.0m×1.0m；5年以上大树，株行距4.0m×3.0m。种植前7-10天，需灌一次透水，种植后浇足定根水。浇水适度，忌积水，温差过大时，不宜喷水。

## 适宜种植范围

北京、吉林年平均气温4℃以上，年均降水量≥600mm，土壤类型为砂壤土、轻壤土到中壤土的地区。

## ‘花蝴蝶’梅

树种：梅

学名：*Prunus mume* ‘Huahudie’

类别：品种

通过类别：审定

编号：国 S-SV-PM-014-2019

申请人：北京林业大学

选育人：张启翔、陈俊愉、陈瑞丹、李庆卫、马开峰、姜良宝、唐绂宸、王佳



## 品种特性

树冠疏落，半开张形树体较紧凑。着花中等，1-2朵于各类花枝上。花色近白，仅近瓣顶正反面略具极浅紫堇晕斑，有时晕斑缺失；花态浅碗型，花瓣5，罕6；萼片5，淡绛紫色。实验室内抗寒性测试中，半致死温度为-35℃。在北京地区，花期为3月底。

## 主要用途

可用作园林绿化树种。

## 栽培技术要点

选择3年生以上生长健壮大苗，春分前后栽植。3-5年生苗木，株行距2.0m×1.0m；5年以上大树，株行距4.0m×3.0m。种植前7-10天，需灌一次透水，种植后浇足定根水。浇水适度，忌积水，温差过大时，不宜喷水。

## 适宜种植范围

北京、吉林年平均气温4℃以上，年均降水量≥600mm，土壤类型为砂壤土、轻壤土到中壤土的地区。

## ‘送春’梅

树种：梅

学名：*Prunus mume* ‘Songchun’

类别：品种

通过类别：审定

编号：国 S-SV-PM-015-2019

申请人：北京林业大学

选育人：陈俊愉、陈耀华、张启翔、陈瑞丹、李庆卫、马开峰、姜良宝、王佳

## 品种特性

树冠倒卵圆形。花色正反面均淡堇紫色，内浅外深颜色不均，无香；花繁密，1-2朵生于中花枝，少数生于长花枝和束花枝上。花蕾玫瑰粉红色，略扁球形，萼片5-6，多5；花重瓣3-4层，19-30瓣，浅碗型。在北京地区，花期为3月底至4月初。

## 主要用途

可用作园林绿化树种。

## 栽培技术要点

选择3年生以上生长健壮大苗，春分前后栽植。3-5年生苗木，株行距2.0m×1.0m；5年以上大树，株行距4.0m×3.0m。种植前7-10天，需灌一次透水，种植后浇足定根水。浇水适度，忌积水，温差过大时，不宜喷水。

## 适宜种植范围

北京、吉林年平均气温4℃以上，年均降水量≥600mm，土壤类型为砂壤土、轻壤土到中壤土的地区。

## ‘华仲 12 号’杜仲

树种：杜仲

学名：*Eucommia ulmoides* ‘Huazhong 12’

类别：品种

通过类别：审定

编号：国 S-SV-EU-016-2019

申请人：中国林业科学研究院经济林研究开发中心

选育人：杜红岩、王璐、杜庆鑫、刘攀峰、孙志强、杜兰英、岳慧、庆军、何凤

### 品种特性

树势中庸，树冠呈圆锥状，分枝角度 $35^{\circ}$ - $65^{\circ}$ ，树皮浅纵裂。叶长卵形，叶长11.8-17.5cm，叶宽6.5-10.6cm，叶基圆形；8年生地径8.0-10.4cm。1年生枝条呈浅红色至紫红色，节间长2.5-4.0cm；春季抽生嫩叶为浅红色，展叶后除叶背面和中脉为青绿色外，叶表面、侧脉以及枝条在生长季节逐步变成红色或紫红色。

### 主要用途

可作为园林绿化树种。

### 栽培技术要点

选用嫁接苗造林，作行道树种植株距为 3.0-4.0m，园景树株间距离 2.0-4.0m。幼树应促发萌条，修剪以短截为主，每年冬季将 1 年生枝条短截 1/4-1/3。6 龄以上的单株，对树冠内部萌发的徒长枝适当疏除。

### 适宜种植范围

河南、山东杜仲适宜栽培区。

## ‘华仲 13 号’杜仲

树种：杜仲

学名：*Eucommia ulmoides* ‘Huazhong 13’

类别：品种

通过类别：审定

编号：国 S-SV-EU-017-2019

申请人：中国林业科学研究院经济林研究开发中心

选育人：杜红岩、杜庆鑫、杜兰英、刘攀峰、王璐、岳慧、何凤、朱利利

### 品种特性

树势中庸，树冠圆头形，分枝角 $25^{\circ}$ - $35^{\circ}$ ，树皮浅纵裂。8年生地径7.5-9.8cm。枝条粗壮呈棱形，枝条节间长1.5-2.5cm；叶片宽椭圆形，表面粗糙，锯齿深凹；叶色浅绿色或绿色，叶纸质，单叶厚0.25mm，叶长12.2-15.4cm，叶宽8.0-10.2cm，叶柄长1.5-2.5cm。

### 主要用途

可作为园林绿化树种。

### 栽培技术要点

选用嫁接苗造林，授粉品种是华仲 1 号和华仲 5 号，配置比例 5%-10%。作行道树种植株距为 3.0-4.0m，园景树株距 2.0-4.0m，作为防护林可种植 3-5 行，栽植密度为 2.0m×3.0m 至 3.0m×4.0m，每亩 56-110 株。幼树应促发萌条，修剪以短截为主，每年冬季将 1 年生枝

条短截 1/4-1/3。6 龄以上的单株，对树冠内部萌发的徒长枝适当疏除。

### 适宜种植范围

河南、山东杜仲适宜栽培区。

### ‘紫圆’枣

树种：枣

学名： *Ziziphus jujuba* ‘Ziyuan’

类别：品种

通过类别：审定

编号：国 S-SV-ZJ-018-2019

申请人：河北农业大学

选育人：毛永民、王晓玲、申连英、贺永汉、刘文田、贺振礼、贺永苏、宋智慧、赵海明  
严金娥、王秀瑞、姜永为、褚新房、李艳辉、毛丽衡、胡亚岚、刘宏权

### 品种特性

树势中庸，树姿开张。果实扁圆形，果实成熟后紫红色，果皮光亮，平均单果重23.4g，鲜枣可食率96.0%，可溶性固形物含量26.5%，Vc含量340-380mg/100g，制干率62.7%，干枣含糖量77.6%。河北邢台9月下旬成熟。采前不落果，可在树上自然风干。一般年份裂果率<0.1%。平均株产14.3kg，盛果期亩产1100kg以上。

### 主要用途

可用于制干、加工。

### 栽培技术要点

栽植密度一般可采用 2.0m×4.0m、2.0m×5.0m 或 3.0m×5.0m 的株行距。树形可采用疏散分层形或小冠疏层形，树高控制在 3.0m 左右。夏季需要及时抹芽、摘心和拉枝等。病虫害主要防治枣锈病、绿盲蝽象、红蜘蛛等。施用有机肥或生物菌肥为主，有机肥以秋施最好，盛果期施有机肥 2.0-4.0m<sup>3</sup>/亩，在果实膨大期可追施磷钾肥，施肥后及时灌水。

### 适宜种植范围

河北、陕西枣适宜栽培区。

### ‘瑞都红玉’葡萄

树种：葡萄

学名： *Vitis vinifera* ‘Ruiduhongyu’

类别：品种

通过类别：审定

编号：国 S-SV-VV-019-2019

申请人：北京市林业果树科学研究院

选育人：徐海英、孙磊、闫爱玲、张国军、张瑛、龚林忠、鲁会玲、王慧玲、王晓玥  
任建成、韩佳宇、刘勇、景秋菊、曹雄军、肖丽珍、覃杨、胡禧熙、杨瑞华  
董畅、王柏林

### 品种特性

树势中庸或稍旺。果粉薄，果皮紫红或红紫色；果粒长椭圆形或卵圆形，果肉颜色无或

极浅，硬度中等，玫瑰香味淡或中等，平均单粒重5.5g。可溶性固形物含量18.2%，可滴定酸含量0.44%。果穗圆锥形，紧密度中或松，平均穗重404.71g。单株产量10-15kg，栽植第三年进入盛果期，亩产1500kg以上。在北京地区浆果始熟期7月中旬，成熟期8月6-12日，属早熟品种。

## 主要用途

鲜食。

## 栽培技术要点

篱架栽培时，应合理计划种植密度，大树成形后，及时间伐。冬剪以短梢和极短梢修剪为宜。花前轻摘心，同时去除卷须和副梢。在温室利用直立主干水平主蔓栽培时，将新梢与主蔓之间的角度控制在90°左右，在生产上应注意控制产量，每个枝条留1-2个花穗，开花前进行花穗整形，控制果穗大小在500g左右。注意提高结果部位，增加底部通风带。

## 适宜种植范围

广西、湖北、北京可露地或避雨设施栽植，黑龙江需要设施栽植。

## ‘辽砧106’苹果

树种：苹果

学名：*Malus pumila* ‘Liaozhen106’

类别：品种

通过类别：审定

编号：国 S-SV-MP-020-2019

申请人：辽宁省果树科学研究所、辽宁省林业科学研究院

选育人：杨锋、刘志、何明莉、闫忠业、姜孝军、金婧、张志涛、吕天星、王冬梅、黄金凤、王颖达、刘怡菲、汪成成、王潇仪、张宇明、宋占宝、张景娥、伊凯

## 品种特性

树势健壮，树姿半开张，萌芽力中等，四倍体，无融合生殖率93.5%。采种树定植3年即可采收少量种子，成龄单株采种量约7300粒，千粒重14.6g。嫁接‘富士系’、‘金冠’、‘寒富’、‘嘎拉’等品种建园成活率90%以上；嫁接树表现为半矮化性，成龄株高3.6m左右。

## 主要用途

可作为砧木品种。

## 栽培技术要点

适宜培育带分枝大苗建园，栽植穴80cm×80cm×80cm，或开深、宽各80cm的沟栽植，南北成行，株行距2.0m×4.0m。采用纺锤形整形修剪方法，以疏为主，疏缓结合，采取疏、刻、拉、割等措施，促发分枝，缓和树势。生长季行间生草、刈割埋压、树盘覆盖、及时疏松土壤，加强水肥管理。

## 适宜种植范围

辽宁沈阳康平、河北承德平泉以南苹果适宜栽培区。

## ‘岳阳红’苹果

树种：苹果

学名：*Malus pumila* ‘Yueyanghong’

类别：品种

通过类别：审定

编号：国 S-SV-MP-021-2019

申请人：辽宁省果树科学研究所、辽宁省林业科学研究院

选育人：刘志、闫忠业、黄金凤、姜孝军、王冬梅、金婧、张志涛、吕天星、张宇明

宋占宝、孟凡金、扈延伍、关丽霞、卜鹏图、杨锋、王颖达、何明莉、张景娥、伊凯

### 品种特性

树姿较开张，树冠圆锥形，树势中等。果实近圆形，平均单果重206g，果形指数0.85。果皮底色黄绿，近成熟时全面着鲜红色。果面光洁，果点小，果粉中等。果肉淡黄色，果肉去皮硬度10.1kg/cm<sup>2</sup>，可溶性固形物含量15%，总糖含量11.4%，总酸含量4.61g/kg。在辽宁熊岳地区9月下旬果实成熟。在5年生寒富树上高接，3年生平均株产12-18kg，平均亩产660-990kg。较耐贮藏，恒温库可贮至翌年5月。

### 主要用途

鲜食。

### 栽培技术要点

栽植株行距乔砧树以 3.0m×4.0m 为宜、矮砧树以 2.0m×4.0m 为宜。宜选择背风向阳、肥水条件较好的平原或坡度较小的坡地，土壤以沙壤土为宜。授粉品种可选用‘金冠’、‘藤牧 1 号’、‘嘎拉’、‘红王将’、‘岳帅’、‘首红’、‘寒富’等。树形选用细长纺锤形。合理花果管理控制负载量，加强水肥管理及时防控病虫害。一般在果实成熟前 12-15d 摘袋，果实着色最佳。

### 适宜种植范围

辽宁沈阳康平、河北承德平泉以南苹果适宜栽培区。

## ‘将军帽’柿

树种：柿

学名：*Diospyros kaki* ‘Jiangjunmao’

类别：品种

通过类别：审定

编号：国 S-SV-DK-022-2019

申请人：洛阳农林科学院

选育人：梁臣、刘丹、王治军、黄建伟、丁成会、张军、畅凌冰、尹华、魏素玲、韩风

### 品种特性

树姿直立，生长势强。果实形似古代将军的帽子，呈圆锥形、果顶凸尖，缢痕深而明显，位于果腰中下部，将果分成上下两层，基部圆形。平均单果重221g，果实成熟时呈橙黄色。果皮细而光滑，果粉多。成熟果实可溶性固形物含量14.5%，单宁含量1.22×10<sup>3</sup>mg/kg，蛋白质含量0.54g/100g，抗坏血酸含量11.5mg/100g，总酸含量1.10g/kg。嫁接苗定植后2年结果，4年单株产果量25.4kg，8年生树的单株产果量可达47.6kg。在河南洛阳地区11月上中旬成熟。

## 主要用途

鲜食及加工。

## 栽培技术要点

一般栽植株行距为 3.0m×4.0m、3.0m×5.0m，树形采用小冠疏层形；密植园可 2.0m×3.0m、2.0m×4.0m，宜采用纺锤型树形；降雨量大的年份，雨后喷施波尔多液防治炭疽病。

## 适宜种植范围

河南、山东柿树适宜栽培区。

## ‘豫皂 2 号’皂荚

树种：皂荚

学名：*Gleditsia sinensis* ‘Yuzao 2’

类别：品种

通过类别：审定

编号：国 S-SV-GS-023-2019

申请人：河南省林业科学研究院、博爱县怀德皂刺有限公司

选育人：范定臣、刘艳萍、高福玲、李保会、李耀学、杨伟敏、祝亚军、金钰、丁晓浩  
魏娟、赵拓、张玲等

## 品种特性

树体生长旺盛，主干明显且通直。6年生豫皂2号胸径为7.25cm、树高为5.84m。刺圆锥形、粗壮且下垂、下垂角度30°-45°，主要生长在主干和主枝基部，结刺无大小年现象。嫁接第2年开始有一定产量，第3-6年单株平均刺产量0.55kg、0.78kg、0.93kg、1.82kg（鲜重）；平均单刺长27.50cm、平均刺直径8.61mm、单刺分刺数18个、平均单刺重18.18g。刺中刺囊酸含量69.93μg/g、槲皮素含量193.45μg/g、总黄酮含量58.08mg/g、总多酚含量16.73mg/g。

## 主要用途

经济林品种，采收皂荚刺为主。

## 栽培技术要点

对土壤要求不严，栽植穴 50cm×50cm，栽植后立即浇透水；栽植密度为前五年按 2.0m×1.5m 的株行距进行定植，后期可进行移栽，株行距控制在 2.0m×3.0m 或 3.0m×4.0m 即可。每年浇水 3-5 次，施用复合肥（N：P：K=1：1：1）2-3 次，同时松土除草 2-3 次，并进行支撑、整形、修剪等栽培管理，培养主干形树型，以后每年结合采刺保持树型；每年 11 月采用采刺专用工具采收皂荚刺。注意防治蚜虫。

## 适宜种植范围

河南、安徽、山东、河北皂荚适宜栽培区。

## ‘中宁异’核桃

树种：核桃

学名：*Juglans major*×*J. regia* ‘Zhongningyi’

类别：品种

通过类别：审定

编号：国 S-SV-JM-024-2019

申请人：中国林业科学研究院林业研究所

选育人：张俊佩、裴东、奚声珂、孟丙南、徐虎智、郭志民、徐慧敏、许新桥

### 品种特性

核桃砧木品种，树势强健，顶端优势明显，干性通直。生长量超亲优势大于29%，与核桃嫁接亲和力大于95%。2年生‘清香’/‘中宁异’组合幼树树高、地径、冠幅、一年生枝长度、坐果率分别为176.5m、3.93cm、71.5cm、80.5cm、77.18%，单株产量为241.0g，核仁脂肪含量67.14%。木材的抗弯强度116.8MPa，径面硬度7120N，端面硬度8030N，弦面硬度7270N。

### 主要用途

可作为核桃砧木或用材林品种。

### 栽培技术要点

果园型用芽接法进行嫁接。营建纯园时，早实良种株行距（4.0-5.0）m×（5.0-6.0）m，晚实良种株行距（6.0-8.0）m×（10.0-12.0）m；营建间作园时，早实良种株行距（5.0-6.0）m×（6.0-8.0）m，晚实良种株行距：（6.0-8.0）m×（10.0-12.0）m。果材兼用可选3年以上无性系扦插苗砧木，高位嫁接（高度>1.5m），冬末春初进行定植，株行距（3.0-4.0）m×（6.0-8.0）m为宜。园林绿化可片状绿化、行道树两行或四行的栽植密度（4.0-5.0）m×（5.0-6.0）m，土肥水管理参照核桃园。

### 适宜种植范围

河南、山东、陕西年平均气温9-18℃核桃适宜栽植区。

## ‘华仲 11 号’杜仲

树种：杜仲

学名：*Eucommia ulmoides* ‘Huazhong 11’

类别：品种

通过类别：审定

编号：国 S-SV-EU-025-2019

申请人：中国林业科学研究院经济林研究开发中心

选育人：杜红岩、刘攀峰、王璐、杜庆鑫、杜兰英、岳慧、朱利利、庆军

### 品种特性

雄株，树皮浅纵裂型，冠形呈圆锥状。嫁接苗或高接换头后2-3年开花，4-5年进入盛花期，雄花6-11枚簇生于当年生枝条基部，雄蕊长0.8-1.2cm，每芽雄蕊86-108个，盛花期每亩可产鲜雄花200-300kg；雄花氨基酸含量17.76%。加工成雄花茶后，雄蕊坚挺不弯曲，茶体美观。在河南省，雄花期3月下旬至4月上旬。

### 主要用途

可用于营建杜仲雄花茶园。

### 栽培技术要点

栽植密度2.0m×3.0m-4.0m×4.0m，每亩42-110株。春季采集雄花时，将开花枝留3-8个芽；夏季5-6月份，在当年生枝条基部进行环剥或环割，环剥宽度0.3-1.0cm，留0.2-0.5cm的营养带。每3-5年将开花枝组逐步回缩短截一轮。5月下旬-6月下旬进行主干和主枝的环剥、环割。

## 适宜种植范围

河南、山东杜仲适宜栽培区。

## ‘华仲 14 号’杜仲

树种：杜仲

学名：*Eucommia ulmoides* ‘Huazhong 14’

类别：品种

通过类别：审定

编号：国 S-SV-EU-026-2019

申请人：中国林业科学研究院经济林研究开发中心

选育人：杜红岩、杜兰英、杜庆鑫、刘攀峰、王璐、岳慧、孙志强、朱利利

## 品种特性

果实椭圆形，果实长 4.32-5.38cm，宽 1.70-1.91cm；种仁长 1.45-1.97cm，宽 0.23-0.30cm，成熟果实千粒重 111.2g，为华仲 6 号的 1.56 倍。种仁粗脂肪含量 29%~32%，其中  $\alpha$ -亚麻酸含量 61%-65%。果实 9 月中旬至 10 月中旬成熟。河南灵宝地区盛产期单株平均产果量 3.62kg。果皮和种仁不易剥离。

## 主要用途

可用于营建杜仲果园。

## 栽培技术要点

适宜的授粉品种是‘华仲 5 号’杜仲，配置比例 5%-10%。栽植密度 2.0m×3.0m-4.0m×4.0m，每亩 42-110 株。适宜的树形结构为自然开心形和两层疏散开心形。留主枝 3-4 个，主枝与主干垂直角度 50°-70°。5 月下旬至 6 月下旬对主干或主枝进行环剥，环剥宽度 1.0-1.5cm，上下留 1.0-2.0cm 宽的营养带。

## 适宜种植范围

河南、山东杜仲适宜栽培区。

## ‘华仲 5 号’杜仲

树种：杜仲

学名：*Eucommia ulmoides* ‘Huazhong 5’

类别：品种

通过类别：审定

编号：国 S-SV-EU-027-2019

申请人：中国林业科学研究院经济林研究开发中心

选育人：杜红岩、李芳东、傅建敏、杜兰英、乌云塔娜、朱景乐、郭书荣、刘智勇、李福海、彭兴龙

## 品种特性

主干通直，树冠成卵圆形。幼树皮光滑，成年树皮纵裂纹。嫁接苗建园第 18 年胸径 17.6cm，树皮含胶率 5.53%，树皮杜仲胶密度 14.37mg/cm<sup>3</sup>。树皮松脂素二葡萄糖苷含量 0.18%-0.35%，‘华仲 1 号’杜仲含量为 0.14%-0.29%。山西省闻喜县盛花期雄花单株平均产量 3.56kg（鲜重）。



## 主要用途

经济林品种。

## 栽培技术要点

栽植密度 2.0m×2.0m-3.0m×3.0m，每亩 75-167 株。应于每年苗木发芽前完成定植。田间管理需剥皮前 1 周将杜仲树浇透 1 次水，生长季节的 4-9 月份可剥皮，而 5-6 月份效果最好。注意剥皮方法和剥后保护，加强肥水管理及及时防治病虫害。

## 适宜种植范围

河南、湖北、湖南、山西杜仲适生省区。

## ‘华仲 6 号’杜仲

树种：杜仲

学名：*Eucommia ulmoides* ‘Huazhong 6’

类别：品种

通过类别：审定

编号：国 S-SV-EU-028-2019

申请人：中国林业科学研究院经济林研究开发中心

选育人：杜红岩、李芳东、杜兰英、李福海、傅建敏、杨绍彬、朱景乐、李烽、彭兴龙  
郭书荣、金世海、汪跃峰、刘智勇、马克义、李少娜

## 品种特性

花期 3 月中下旬至 4 月中旬。栽植后 3-4 年开花，第 5 年进入盛果期，山西闻喜县盛果期单株平均产果量 3.01kg（鲜重），果实平均千粒质量 70.9g；湖南长沙县盛果期单株平均产果量 3.23kg（鲜重），果实平均千粒质量 72.1g。

## 主要用途

适宜营建杜仲胶果园。

## 栽培技术要点

适宜的授粉品种是‘华仲 1 号’和‘华仲 5 号’杜仲，配置比例 5%-10%。栽植密度 2.0m×3.0m-4.0m×4.0m，每亩 42-110 株。适宜的树形结构为自然开心形和两层疏散开心形。留主枝 3-4 个，主枝与主干垂直角度 50°-70°。5 月下旬至 6 月下旬对主干或主枝进行环剥，环剥宽度 1.0-1.5cm，上下留 1.0-2.0cm 宽的营养带。

## 适宜种植范围

河南、陕西、湖南、山西杜仲适生省区。

## ‘华仲 7 号’杜仲

树种：杜仲

学名：*Eucommia ulmoides* ‘Huazhong 7’

类别：品种

通过类别：审定

编号：国 S-SV-EU-029-2019

申请人：中国林业科学研究院经济林研究开发中心

选育人：李芳东、杜红岩、李福海、杜兰英、傅建敏、段经华、朱景乐、刘攀峰、张悦

乌云塔娜、许殿锋、孟伟、张改香、王安军、赖正武

### 品种特性

花期3月中下旬至4月中旬。栽植后3-4年开花，第5年进入盛果期，山西闻喜县盛果期单株平均产果量3.16kg（鲜重），果实平均千粒质量80.8g；湖南长沙县盛果期单株平均产果量3.23kg（鲜重），果实平均千粒质量79.2g。

### 主要用途

适宜营建杜仲胶果园。

### 栽培技术要点

授粉品种是‘华仲1号’杜仲，配置比例5%-10%。栽植密度2.0m×3.0m-4.0m×4.0m，每亩42-110株。适宜的树形结构为自然开心形和两层疏散开心形。留主枝3-4个，主枝与主干垂直角度50°-70°。5月下旬至6月下旬对主干或主枝进行环剥，环剥宽度1.0-1.5cm，上下留1.0-2.0cm宽的营养带。

### 适宜种植范围

河南、陕西、湖南、山西杜仲适生省区。

### ‘华仲8号’杜仲

树种：杜仲

学名：*Eucommia ulmoides* ‘Huazhong 8’

类别：品种

通过类别：审定

编号：国S-SV-EU-030-2019

申请人：中国林业科学研究院经济林研究开发中心

选育人：李芳东、杜红岩、傅建敏、杨绍彬、杜兰英、周道顺、郭书荣、刘昌勇、郭玉生  
薛建林、杜玉霞、王炜炜、邓小京、张朝晖、王海亮

### 品种特性

花期3月中下旬至4月中旬。栽植后3-4年开花，第5年进入盛果期，山西闻喜县盛果期单株平均产果量3.26kg（鲜重），果实平均千粒质量76.8g；湖南长沙县盛果期单株平均产果量3.13kg（鲜重），果实平均千粒质量82.2g。

### 主要用途

适宜营建杜仲胶果园。

### 栽培技术要点

授粉品种‘华仲1号’杜仲，配置比例5%-10%。栽植密度2.0m×3.0m-4.0m×4.0m，每亩42-110株。适宜的树形结构为自然开心形和两层疏散开心形。留主枝3-4个，主枝与主干垂直角度50°-70°。5月下旬至6月下旬对主干或主枝进行环剥，环剥宽度1.0-1.5cm，上下留1.0-2.0cm宽的营养带。需加强水肥管理。

### 适宜种植范围

河南、陕西、湖南、山西杜仲适生省区。

## ‘华仲 9 号’杜仲

树种：杜仲

学名：*Eucommia ulmoides* ‘Huazhong 9’

类别：品种

通过类别：审定

编号：国 S-SV-EU-031-2019

申请人：中国林业科学研究院经济林研究开发中心

选育人：杜红岩、李芳东、杨绍彬、杜兰英、周道顺、傅建敏、乌云塔娜、李福海、段经华、朱景乐、张悦、刘攀峰、宋丽霞、韩军旺、伊焕

### 品种特性

花期3月中下旬至4月中旬。栽植后3-4年开花，第5年进入盛果期，山西闻喜县盛果期单株平均产果量2.96kg（鲜重），果实平均千粒质量73.5g；湖南长沙县盛果期单株平均产果量3.17kg（鲜重），果实平均千粒质量72.6g。

### 主要用途

适宜营建杜仲胶果园。

### 栽培技术要点

授粉品种‘华仲 1 号’杜仲，配置比例 5%-10%。栽植密度 2.0m×3.0m-4.0m×4.0m，每亩 42-110 株。适宜的树形结构为自然开心形和两层疏散开心形。留主枝 3-4 个，主枝与主干垂直角度 50°-70°。5 月下旬至 6 月下旬对主干或主枝进行环剥，环剥宽度 1.0-1.5cm，上下留 1.0-2.0cm 宽的营养带。4 月下旬至 5 月上旬易发生落果，需加强营养。

### 适宜种植范围

河南、陕西、湖南、山西杜仲适生省区。

## ‘华仲 10 号’杜仲

树种：杜仲

学名：*Eucommia ulmoides* ‘Huazhong 10’

类别：品种

通过类别：审定

编号：国 S-SV-EU-032-2019

申请人：中国林业科学研究院经济林研究开发中心

选育人：杜红岩、李芳东、杜兰英、乌云塔娜、刘攀峰、王璐、朱景乐、朱高浦、徐兰成、薛宝林、张松涛

### 品种特性

花期3月中下旬至4月中旬。栽植后3-4年开花，第5年进入盛果期，山西闻喜县盛果期单株平均产果量1.56kg（鲜重），果实平均千粒质量71.9g；湖南长沙县盛果期单株平均产果量1.77kg（鲜重），果实平均千粒质量70.6g。

### 主要用途

适宜营建杜仲胶果园。

### 栽培技术要点

授粉品种是‘华仲 1 号’杜仲和‘华仲 5 号’杜仲，配置比例 5%-10%。栽植密度 2.0m×3.0m-4.0m×4.0m，每亩 42-110 株。适宜的树形结构为自然开心形和两层疏散开心形。

留主枝 3-4 个，主枝与主干垂直角度 50°-70°。5 月下旬至 6 月下旬对主干或主枝进行环剥，环剥宽度 1.0-1.5cm，上下留 1.0-2.0cm 宽的营养带。

### 适宜种植范围

河南、湖北、湖南、山西杜仲适生省区。

## 认定通过品种

### 小胡杨 2 号

树种：杨树

学名：*Populus simonii*×*P. euphratica* ‘Xiaohuyang 2’

类别：无性系

通过类别：认定 2 年（2020 年 4 月 26 日—2022 年 4 月 25 日）

编号：国 R-SC-PS-01-2019

申请人：张海龙、梁海荣

选育人：张海龙、梁海荣

### 品种特性

树冠卵形或广卵形，干部树皮光滑。一年生叶呈倒披针形，叶表绿色，叶背淡绿稍带白色，成年后叶型为倒披针形、椭圆形、菱形及卵形，叶缘上端有稀疏、中部有较密较深的锯齿。在宁夏盐池县 6 年生小胡杨 2 号平均胸径 10.0cm、平均株高 10.0m，较胡杨平均胸径高出 45%。

### 主要用途

可用于营建景观林、生态林。

### 栽培技术要点

采用两根一杆、三根二杆苗造林，造林地选土壤通透性好，具灌溉条件最佳，无灌溉条件应选地下水位深 < 2.0m 较适宜；土壤解冻，苗木发芽前造林。造林密度 4.0×5.0m 为宜，造林后一周内浇水一次，雨季来临之前再浇水一次，造林第 2 年及其以后每年春季浇水一次。造林第 3 年秋季修枝一次。

### 适宜种植范围

内蒙古、甘肃、宁夏胡杨适宜栽培区。

**注：通过认定的林木良种，认定期满后不得作为良种继续使用，应重新进行林木品种审定。**

## 更正

‘深秋红’沙棘（国 S-SV-HR-013-2018）将选育人张建国、段爱国、罗红梅、孙广树、赵江、何彩云、周闯、刘娟娟更正为黄铨、李忠义、梁九鸣、张建国、段爱国、罗红梅、孙广树、赵江、何彩云、周闯、刘娟娟。

# National list of genetically improved tree varieties

## Certified Varieties

### **Xibei yang 2**

**Species:** Poplar

**Scientific name:** *Populus alba* × *P. tomentosa* ‘Xibei yang 2’

**Type of material:** Variety

**Category of certification:** Certified

**Registration No.:** Guo S-SV-PA-001-2019

**Applicant:** Northwest A&F University

**Breeders:** Fan Junfeng, Zhou Yongxue, Gao Jianshe, Bai Xiaojun, Zhang Jinmei, Zhao Ziyu, Zhou Yuquan, Zhou Feimei, Xie Junfeng, Chai Chuanlin, Liu Yonghong, Guo Shujie, Jia Xiaoming

#### **Characteristics:**

Trees are male, with straight and round trunk, smooth and grayish-green bark. In Zhouzhi of Shaanxi Province, on an average 8-year-old trees of ‘Xibei yang 2’ are 17.09 m in height, 19.33 cm in DBH and 0.2214 m<sup>3</sup> in volume. The individual volume is 96.45% larger than that of ‘Maobai yang 30’ (0.1127 m<sup>3</sup>) taken as a control. The wood basic density is 0.352 g/cm<sup>3</sup>, the compression strength parallel to grain is 38.353 Mpa, the radial and chordwise compression strengths perpendicular to grain are 2.362 Mpa and 1.517 Mpa, respectively. The bending strength is 77.670 Mpa. The fiber length, fiber width and fiber aspect ratio are 1204.28 μm, 28.16 μm, and 43.95:1, respectively.

#### **Main use:**

It can be used as timber tree.

#### **Silvicultural techniques:**

One- to three-year-old trees are used for planting at a spacing of (4.0-6.0) × (4.0-6.0) m and a planting depth of 40-60 cm. Care should be taken to protect the young trees from dehydration during the process from lifting to planting. Treading down is suggested at planting with immediate watering after planting. For the planting of one-year-old trees, tips of the young trees should be cut back 40-60 cm, in order to improve the survival rate.

#### **Suitable areas for planting:**

Areas suitable for growing poplar trees are in Shaanxi, Qinghai and Shanxi provinces.

### **Qinbai yang 5**

**Species:** Poplar

**Scientific name:** *Populus alba* × (*P. alba* × *P. glandulosa*) ‘Qinbai yang 5’

**Type of material:** Variety

**Category of certification:** Certified

**Registration No.:** Guo S-SV-PA-002-2019

**Applicants:** Northwest A&F University

**Breeders:** Fan Junfeng, Gao Jianshe, Zhou Yongxue, Bai Xiaojun, Zhang Jinmei, Zhao Ziyu, Zhou Yuquan, Zhou Feimei, Xie Junfeng, Chai Chuanlin, Liu Yonghong, Guo Shujie, Jia Xiaoming

#### **Characteristics:**

Trees are male, with straight and round trunk, smooth and steel gray bark, and broadly ovate crown. In Zhouzhi of Shaanxi Province, on an average 8-year-old trees of ‘Qinbai yang 5’ are

18.33 m in height, 20.93 cm in DBH and 0.2678 m<sup>3</sup> in volume. The individual volume is 138.42% larger than that of 'Maobaiyang 30' (0.1127 m<sup>3</sup>) taken as a control. The wood basic density is 0.313 g/cm<sup>3</sup>, the compression strength parallel to grain is 31.899 Mpa, the radial and chordwise compression strengths perpendicular to grain are 2.079 Mpa and 1.054 Mpa respectively, and the bending strength is 67.840 Mpa. The fiber length, fiber width and fiber aspect ratio are 1243.47 μm, 29.26 μm, and 43.60:1 respectively.

**Main use:**

It can be used as timber tree.

**Silvicultural techniques:**

One- to three-year-old trees are used for planting at a spacing of (4.0-6.0) × (4.0-6.0) m and a planting depth of 40-60 cm. Care should be taken to protect the young trees from dehydration during the process from lifting to planting. Treading down is suggested at planting with immediate watering right after planting. For the planting of one-year-old trees, tips of the young trees should be cut back 40-60 cm, in order to improve the survival rate.

**Suitable areas for planting:**

Areas suitable for growing poplar trees are in Shaanxi, Qinghai and Shanxi provinces.

**Beilin 5**

**Species:** Poplar

**Scientific name:** *Populus* 'Beilin 5'

**Type of material:** Variety

**Category of certification:** Certified

**Registration No.:** Guo S-SV-PB-003-2019

**Applicants:** Beijing Forestry University

**Breeders:** Kang Xiangyang, Zhang Pingdong, Li Yun, Fan Mingrui, Zhang Youhui, Song Lianjun, Guo Xijun, Ma Jing, Zhang Feng, Zhang Liang, Sun Jing, Wang Zhenlong, Tian Shuyong, Bao Zhengzong

**Characteristics:**

Trees are female, with 2n=3x=57 chromosomes, straight and round trunk, smooth and grayish-green bark, and branching angles less than or equal to 45 degrees. On an average, 5 year old trees of 'Beilin 5' are 5.54 m<sup>3</sup>/mu in volume growth, 171.6% larger than that of 'Maobaiyang 1319', taken as a control. The wood basic density is 355.9 kg/m<sup>3</sup>, 14.5% lower than the control. The fiber length is 0.929 mm, 36.4% longer than the control. The holo-cellulose content is 82.61%, which is 1.7% higher than the control. The lignin content is 23.16%, which is 9.5% lower than the control.

**Main use:**

It can be used as pulpwood tree.

**Silvicultural techniques:**

Tree planting is mainly done in spring in plain areas with flat terrain and deep soil. One-year old trees are usually used for planting, which are heavily trimmed or stem-cut after lifting. For the transportation to long distance mud treatment is needed for the roots and coverage with felt-cloth to prevent excessive water loss. 1-2 days of soaking in water is conducted prior to planting. Trees are planted in the planting holes with timely watering as necessary. Fertilization starts from the third year with pruning of big and competitive branches. The stocking density is normally 500-1500 trees/ hm<sup>2</sup> based on site conditions and rotation age.

**Suitable areas for planting:**

Plain areas and river valleys are in Hebei, central south Shanxi and northwest Shandong.

## **Caohekou Provenance of Birch**

**Species:** Birch

**Scientific name:** *Betula platyphylla*

**Type of material:** Provenance

**Category of certification:** Certified

**Registration No.:** Guo S-SP-BP-004-2019

**Applicants:** Northeast Forestry University

**Breeders:** Yang Chuanping, Liu Guifeng, Zhao Xiyang, Zhang Limin, Shang Fuqiang, Li Teng, Gao Yuanke, Zhang Hongguang, Jiang Jing, Li Kailong, Wang Xiuwei, Li Zhixin, Wang Chao, Yang Chengjun, Chen Bo, Ma Zhanyuan, Xu Chengcai, Li Xuhui, Luo Jianxin

### **Characteristics:**

The trunk is straight. The volume growth and total carbon storage of Caohekou Provenance are respectively 32.82% and 68.2% larger than the average of all provenances used in the experiment at Maoershan experimental Station of Heilongjiang Province, and respectively 24.29% and 18.85% larger than the average at Caohekou experimental station of Liaoning Province. It is not suitable for afforestation in saline-alkali soil.

### **Main use:**

It can be used for fast-growing and high-yielding forest or for carbon sink forest.

### **Silvicultural techniques:**

Sunny gentle slopes (<30°) are suitable, with 30 cm soil depth of the middle part of slopes. The initial stocking density is 2500 trees/hm<sup>2</sup>. The main model is spring planting with planting holes of 30-60 cm wide and 30-50 cm deep. Tending is conducted twice in the first year after planting, and once in the 2<sup>nd</sup> and 3<sup>rd</sup> year.

### **Suitable areas for planting:**

Areas suitable for growing birch are in Heilongjiang, Liaoning provinces.

## **Xiaobeihu Provenance of *Betula***

**Species:** Birch

**Scientific name:** *Betula platyphylla*

**Type of material:** Provenance

**Category of certification:** Certified

**Registration No.:** Guo S-SP-BP-005-2019

**Applicants:** Northeast Forestry University

**Breeders:** Liu Guifeng, Yang Chuanping, Wang Xiuwei, Jiang Jing, Li Kailong, Zhang Limin, Shang Fuqiang, Yang Chengjun, Wang Chao, Zhao Xiyang, Li Zhixin, Li Teng, Gao Yuanke, Zhang Hongguang, Chen Bo, Ma Zhanyuan, Xu Chengcai, Li Xuhui, Luo Jianxin

### **Characteristics:**

It bears straight trunk and strong natural-pruning. In Caohekou experimental station of Liaoning province, the average DBH of 16-year-old trees of 'Xiaobeihu' is 10.01 cm. The total above- and below-ground carbon storage of 14-year-old trees of 'Xiaobeihu' is 8.87 kg and 1.86 kg respectively. They are 36.28%, 58.37% and 73.45% larger than that of the average of all provenances, respectively. The genetic gains are 22.36%, 46.70% and 58.76%, respectively. The variety is not suitable for afforestation in saline-alkali soil.

### **Main use:**

It can be used both as fast-growing timber and carbon sink timber.

### **Silvicultural techniques:**

Sunny gentle slopes (<30°), and the middle part of slopes with soil depth more than 30 cm are suitable for planting. The initial stocking density is 2500 trees/hm<sup>2</sup>. The main model is spring planting with planting holes of 30-60 cm wide and 30-50 cm deep. Tending is conducted twice in the first year after planting, and once in the 2<sup>nd</sup> and 3<sup>rd</sup> year.



**Suitable areas for planting:**

Areas suitable for growing birch are in Heilongjiang, Liaoning provinces.

**Zhongshanshan 118**

**Species:** *Taxodium distichum*

**Scientific name:** (*(Taxodium distichum* × *T. mucronatum*) × *T. mucronatum*) 'Zhongshanshan 118'

**Type of material:** Variety

**Category of certification:** Certified

**Registration No.:** Guo S-SV-TD-006-2019

**Applicants:** Institute of Botany, Jiangsu Province and Chinese Academy of Sciences

**Breeders:** Yin Yunlong, Chen Yonghui, Yu Chaoguang, Ren Ping, Luo Kunshui

**Characteristics:**

Semi-evergreen, the leaf color is cyan green from April to October, and turns into yellow from November to December. It bears straight stem with tower-formed crown. It can grow normally in water with a depth of 1/4 of the tree height. In conditions with pH<8.5 and salt content <0.3%, there is no yellowing of the leaf color. In Rudong County of Jiangsu Province, the trees at 24 years of age are on an average 16.2 m in height and 37.8 cm in DBH.

**Main use:**

It can be used for protection forest in saline-alkali land in coastal mud flats, it is suitable to compete afforestation of low-lying wetland in Yangtze River basin and lake, and the afforestation of highway and farmland forest grids.

**Silvicultural techniques:**

Trees are planted shortly after lifting during the process of transplanting. Long roots are cut back to allow them free stretch. Sufficient water is applied for rooting. Deep planting can be applied as appropriate. Appropriate branch pruning is applied to those trees taller than 2.0 m.

**Suitable areas for planting:**

Areas suitable for growing *Taxodium distichum* are in Jiangsu, Chongqing and Jiangxi provinces.

**Liaohong**

**Species:** *Sophora japonica*

**Scientific name:** *Sophora japonica* 'Liaohong'

**Type of material:** Variety

**Category of certification:** Certified

**Registration No.:** Guo S-SV-SJ-007-2019

**Applicants:** Liaocheng University

**Breeders:** Qiu Yanchang, Zhang Xiusheng, Huang Yong, Yu Shouchao, Gao Xiangbin, Wang Xiaolei

**Characteristics:**

The banner petal has a light pink margin, the middle and lower part of the wing and the keel petals are colored in light purple pansy. The flowering period is from early July to the end of September in Beijing. In Liaocheng of Shandong province, the annual growth of DBH is 2.0 cm, and the height growth of grafted plants is more than 3.0 m.

**Main use:**

It can be used for gardening, landscaping.

**Silvicultural techniques:**

Propagation is done by grafting with complete wrapping, and the sites with good soil conditions are selected for planting. Fertilizer and water management are strengthened along with pest and

disease control, as well as budding is done to, promptly remove the buds on rootstocks.

**Suitable areas for planting:**

Areas suitable for growing *Sophora japonica* are in Shandong, Hebei, Gansu, Shaanxi, Tianjin, Beijing and Henan.

**Zhongyan 73**

**Species:** Acacia

**Scientific name:** *Acacia mangium* × *A. auriculiformis* 'Zhongyan 73'

**Type of material:** Domesticated exotic variety

**Category of certification:** Certified

**Registration No.:** Guo S-EST-AM-008-2019

**Applicants:** Research Institute of Forestry Chinese Academy of Forestry

**Breeders:** Zong Yichen, Zheng Yongqi, Chen Guobiao, Xu Chengrong, Duan Fuwen, Wang Weihui, Li Jun, Shi Tingyou, Dai Xinhua, Wang Qingguang, Chen Xiaoxiang, Hong Xiaolong, He Dezhen, Wang Zhenyuan, Lin Kunbao, Wu Yunzhong, Ke Wensheng, Gao Wenxue, Yang Jianxin

**Characteristics:**

The variety was introduced from Vietnam in 2008. Bearing straight stem with small and dense crown. The root system of trees is full of abundant rhizobia. On an average 6-year-old trees of 'Zhongyan 73' are 13.2 m in height, 13.3 cm in DBH and 0.09 m<sup>3</sup> in volume. The average standing volume is 75.73 m<sup>3</sup>/hm<sup>2</sup> and the basic wood density is 0.411-0.507 g/cm<sup>3</sup>.

**Main use:**

It can be used as timber tree.

**Silvicultural techniques:**

Trees are usually planted in spring. Planting sites are selected in mountains and hills below 1000m elevation, with deep and acidic soil and good drainage. Trees are planted at a spacing of 2.5 m × 3.0 m, using young stocks with a height of 20-30 cm and ground diameter of 0.3 cm or above. During the first year after planting, tending and weeding is applied twice July-August and November-December.

**Suitable areas for planting:**

South subtropical regions are in Fujian, Guangxi and Yunnan provinces.

**Pingxiang Provenance of *Betula***

**Species:** *Betula alnoides*

**Scientific name:** *Betula alnoides*

**Type of material:** Provenance

**Category of certification:** Certified

**Registration No.:** Guo S-SP-BA-09-2019

**Applicants:** Research Institute of Tropical Forestry, Chinese Academy of Forestry, Tropical Forestry Experimental Center of Chinese Academy of Forestry, Fujian Academy of Forestry, Baoshan Forestry and Grassland Technology Promotion Station, Mengla County Forestry and Grassland Administration

**Breeders:** Zeng Jie, Guo Junjie, Jia Hongyan, Chen Bihua, Huang Jiacong, Zhu Xiancheng, Zhao Zhigang, Wang Chunsheng, Guo Wenfu, Yang Yanping, Fang Bijiang, Zhang Jinsong, Li Zhizhen, Chen Wei, Han Jinfa, Wang Huan

**Characteristics:**

The tree is straight with round stem. In Pingxiang of Guangxi province, the average DBH and tree height of 15-year-old trees of the provenance are 16.92 cm and 14.64 m, respectively. The air-dry

wood density, compression strength parallel to grain, bending strength, bending modulus, impact toughness and hardness are 0.599 g/cm<sup>3</sup>, 44.9 MPa, 102MPa, 16910MPa, 41kJ/m<sup>2</sup> and 2790N, respectively. The volume shrinkage from wet wood to full dry and from wet wood to air dry are 11.9% and 5.5% respectively. The volume moisture expansion rate from all-dry to wet and from full dry to air dry is 14.0% and 4.2%, respectively.

**Main use:**

It can be used as timber tree.

**Silvicultural techniques:**

In the south of Guangdong and Fujian province as well as the central and eastern parts of Guangxi province, it is appropriate to plant trees in spring with replanting in rainy season. In Yunnan province and western Guangxi, trees are mainly planted in the rainy season. Planting sites are usually completely cleared and prepared in strips and holes, respectively in size of 0.6 m-1.0 m wide and 0.5 m-0.7 m wide by 0.3 m-0.5 m deep. Before planting, 200-300 g superphosphate and 100 g NPK compound fertilizer were applied as basal fertilizer. The planting spacing is 2.0 m × 3.0 m, 3.0 m×3.0 m or 2.0 m×4.0 m. Tending is usually applied for 3 years after planting, before and after the rainy season. Trees can be planted in mixture with *Castanopsis hystrix* and *Cunninghamia lanceolata*.

**Suitable areas for planting:**

It is suitable to grow the trees in most regions of Guangxi, southern Fujian, and western Yunnan with annual rainfall ≥1000 mm, rainy winter, average annual relative humidity ≥80%, and the most suitable annual average temperature of 16 °C -20 °C.

**Tengchong Provenance of *Betula***

**Species:***Betula alnoides*

**Scientific name:** *Betula alnoides*

**Type of material:** Provenance

**Category of certification:** Certified

**Registration No.:** Guo S-SP-BA-010-2019

**Applicants:** Research Institute of Tropical Forestry, Chinese Academy of Forestry, Tropical Forestry Experimental Center of Chinese Academy of Forestry, Mengla County Forestry and Grassland Administration, Fujian Academy of Forestry, Baoshan Forestry and Grassland Technology Promotion Station

**Breeders:** Zeng Jie, Guo Junjie, Jia Hongyan, Zhu Xiancheng, Chen Bihua, Huang Jiacong, Zhao Zhigang, Wang Chunsheng, Chen Guobiao, Zhang Jinsong, Yang Yanping, Chen Wei, Li Zhizhen, Han Jinfu, Guo Wenfu, Wang Huan

**Characteristics:**

The tree is straight with round stem. In Pingxiang of Guangxi province, the average DBH and tree height of 14-year-old trees of the provenance are 23.46 cm and 19.02 m, respectively. The air-dry wood density, compression strength parallel to grain, bending strength, bending modulus, impact toughness and hardness are 0.750 g/cm<sup>3</sup>, 52.6 MPa, 111.9 MPa, 17090 MPa, 89 kJ/m<sup>2</sup> and 4910 N, respectively. The volume shrinkage from wet wood to full dry and from wet wood to air dry are 15.4% and 7.6% respectively. The volume moisture expansion rate from all-dry to wet and from full dry to air dry is 18.8% and 5.3%, respectively.

**Main use:**

It can be used as timber tree.

**Silvicultural techniques:**

In the south of Guangdong and Fujian province as well as the central and eastern parts of Guangxi province, it is appropriate to plant trees in spring with replanting in rainy season. In Yunnan province and western Guangxi, trees are mainly planted in the rainy season. Planting sites are

usually completely cleared and prepared in strips and holes, respectively in size of 0.6 m-1.0 m wide and 0.5 m-0.7 m wide by 0.3 m-0.5 m deep. Before planting, 200-300 g superphosphate and 100 g NPK compound fertilizer can be applied as basal fertilizer. The planting spacing is 2.0 m × 3.0 m, 3.0 m×3.0 m or 2.0 m×4.0 m. Tending is usually applied for 3 years after planting, before and after the rainy season. Trees can be planted in mixture with *Castanopsis hystrix* and *Cunninghamia lanceolata*.

**Suitable areas for planting:**

It is suitable to grow the trees in most areas of Guangxi, southern Fujian, and western Yunnan with annual rainfall ≥1000 mm, rainy winters and annual average relative humidity ≥80%, The most suitable annual average temperature is 16 °C -20 °C

**Zhonglin 1**

**Species:** *Catalpa bungei*

**Scientific name:** *Catalpa bungei* ‘Zhonglin 1’

**Type of material:** Clone

**Category of certification:** Certified

**Registration No.:** Guo S-SC-CB-011-2019

**Applicants:** Research Institute of Forestry, Chinese Academy of Forestry

**Breeders:** Ma Wenjun, Wang Junhui, Yang Guijuan, Zhai Wenji, Zhao Kun, Yun Huiling, Zhang Jiangtao, Zhao Tianyu, Lu Nan

**Characteristics:**

The trees are deciduous and tall, the trunk is straight and the crown is oval. In Tianshui of Gansu Province, on an average, 10-year-old trees are 11.23 m in height, 12.12 cm in DBH with a genetic gain of 9.69% and 6.04% respectively. The air dry wood density is 0.395 g/cm<sup>3</sup>, and the basic wood density is 0.367 g/cm<sup>3</sup>. The compressive strength, bending strength and bending modulus are 17.3 MPa, 48.1 MPa and 4857.5 MPa, respectively.

**Main use:**

It can be used as timber tree.

**Silvicultural techniques:**

It is usually planted in March to early April. Suitable soils are deep (above 50-60cm), moist, fertile and loose neutral soil and slightly acidic soil, as well as deep calcareous soil. The planting hole should be of 50-60 cm wide by 50 cm deep. Planting is done right after lifting or after a treatment by immersing the root system in water for 1 day. Bud removal, topping off and stem cut-off are needed to allow development of main stem with high quality. At the same time pruning, watering and fertilization are also intensified.

**Suitable areas for planting:**

Areas suitable for growing *Catalpa bungei* are in Henan and Gansu province.

**Zhonglin 5**

**Species:** *Catalpa bungei*

**Scientific name:** *Catalpa bungei* ‘Zhonglin 5’

**Type of material:** Clone

**Category of certification:** Certified

**Registration No.:** Guo S-SC-CB-012-2019

**Applicants:** Research Institute of Forestry, Chinese Academy of Forestry

**Breeders:** Ma Wenjun, Wang Junhui, Yang Guijuan, Zhai Wenji, Zhao Kun, Yun Huiling, Zhang Jiangtao, Zhao Tianyu, Lu Nan

**Characteristics:**

The trees are deciduous and tall, the trunk is straight and the crown is broad oval. In Tianshui of

Gansu Province, on an average 10-year-old trees are 11.83 m in height, 13.38 cm in DBH with a genetic gain of 17.89% and 8.80%, respectively. The air dry wood density is 0.435 g/cm<sup>3</sup>, and the basic wood density is 0.371 g/cm<sup>3</sup>. The compressive strength, bending strength and bending modulus are 16.4 MPa, 44.0 MPa and 4724.9 MPa, respectively.

**Main use:**

It can be used as timber tree.

**Silvicultural techniques:**

The variety is usually planted in March to early April. Suitable soils are deep (above 50-60cm), moist, fertile and loose neutral soil and slightly acidic soil, as well as deep calcareous soil. The planting holes are 50-60 cm wide by 50 cm deep. Planting is done right after lifting or after a treatment by immersing the root system in water for 1 day. Bud removal, topping off and stem cut-off are needed to allow development of main stem with high quality, At the same time pruning, watering and fertilization are also intensified.

**Suitable areas for planting:**

Areas suitable for growing *Catalpa bungei* are in Henan and Gansu provinces.

## **Yanxing**

**Species:** *Prunus mume*

**Scientific name:** *Prunus mume* 'Yanxing'

**Type of material:** Variety

**Category of certification:** Certified

**Registration No.:** Guo S-SV-PM-013-2019

**Applicants:** Beijing Forestry University

**Breeders:** Zhang Qixiang, Chen Junyu, Chen Ruidan, Li Qingwei, Ma Kaifeng, Jiang Liangbao, Tang Fuchen, Wang Jia

**Characteristics:**

It bears ovoid crown. Flower shape ranges from shallow bowl-like to plate-like, 1-3 single flowers on short, medium, bunched flower branches, few on long flower branches; petals 5, flowers white, flower buds light pink; flowers not fragrant. In laboratory cold resistance test the half-lethal temperature is -35 °C. In Beijing area, the flowering period is from late March to early April. In Gongzhuling area of Jilin province, the flowering period is from late April to early May.

**Main use:**

It can be used as gardening and landscaping tree.

**Silvicultural techniques:**

Healthy vigorous young trees of more than 3 years old are selected for planting around the vernal equinox. For 3-5 years old young plants the plant spacing is 2.0 m×1.0 m. For trees of more than 5 years old, plant spacing is 4.0 m×3.0 m. Adequate water should be applied 7-10 days before planting and once again after planting for promoting rooting. Irrigation should be applied properly to avoid water logging. Water should not be applied when temperature fluctuates excessively.

**Suitable areas for planting:**

Areas with annual average temperature above 4 °C, annual average precipitation ≥600 mm, sandy loam and light to medium loam in Beijing and Jilin are suitable for plantation.

## **Huahudie**

**Species:** *Prunus mume*

**Scientific name:** *Prunus mume* 'Huahudie'

**Type of material:** Variety

**Category of certification:** Certified

**Registration No.:** Guo S-SV-PM-014-2019

**Applicants:** Beijing Forestry University

**Breeders:** Zhang Qixiang, Chen Junyu, Chen Ruidan, Li Qingwei, Ma Kaifeng, Jiang Liangbao, Tang Yan, Wang Jia

**Characteristics:**

It bears sparse crown with, half-open tree form. It shows moderate flower setting with, 1-2 flowers on various flower branches. Flower color is nearly white, only near the top of the petal. Very light violet halo spots on both sides of the petals, and sometimes the halo spots are absent; Flower shallow bowl-shaped, petals 5, rarely 6; sepal 5 and colored in light dark reddish purple. In laboratory cold resistance test, the half-lethal temperature is -35 °C. In Beijing area, the flowering period is at the end of March.

**Main use:**

It can be used as gardening and landscaping tree.

**Silvicultural techniques:**

Healthy and vigorous young trees of more than 3 years old are selected for planting around the vernal equinox. For 3-5 years old young plants the plant spacing is 2.0 m×1.0 m. For trees of more than 5 years old, plant spacing is 4.0 m×3.0 m. Adequate water is applied 7-10 days before planting and once again after planting to promote rooting. Irrigation is applied properly to avoid water logging. No water is applied when temperature fluctuates excessively.

**Suitable areas for planting:**

Areas with annual average temperature above 4 °C, annual average precipitation ≥600 mm, sandy loam, and light to medium loam are in Beijing and Jilin.

## **Songchun**

**Species:***Prunus mume*

**Scientific name:** *Prunus mume* ‘Songchun’

**Type of material:** Variety

**Category of certification:** Certified

**Registration No.:** Guo S-SV-PM-015-2019

**Applicants:** Beijing Forestry University

**Breeders:** Chen Junyu Chen Yaohua, Zhang Qixiang, Chen Ruidan, Li Qingwei, Ma Kaifeng, Jiang Liangbao, Wang Jia

**Characteristics:**

Crown is obovate. Flowers are in light violet color on both sides with uneven intensities, light inside and dark outside and without fragrance; Flowers are dense, with 1-2 on medium-length flower branches, while few on long and bunched branches. Flower buds are rose-pink and slightly oblate, sepals are 5-6, frequently 5. Double flowers are shallow bowl-shaped with 19-30, petals in 3-4 layers. In Beijing , the flowering period is from late March to early April.

**Main use:**

It can be used for gardening and landscaping.

**Silvicultural techniques:**

Healthy are vigorous young trees of more than 3 years old are selected for planting around the vernal equinox. For 3-5 years old young plants the plant spacing is 2.0 m×1.0 m; For trees of more than 5 years old, plant spacing is 4.0 m×3.0 m. Adequate water is applied 7-10 days before planting and once again after planting to promote rooting. Irrigation is applied properly to avoid water logging. No water is applied when temperature fluctuates excessively.

**Suitable areas for planting:**

Areas with annual average temperature above 4 °C, annual average precipitation  $\geq 600$  mm, sandy loam, and light to medium loam are in Beijing and Jilin.

**Huazhong 12**

**Species:** *Eucommia ulmoides*

**Scientific name:** *Eucommia ulmoides* ‘Huazhong 12’

**Type of material:** Variety

**Category of certification:** Certified

**Registration No.:** Guo S-SV-EU-016-2019

**Applicants:** Non-timber Forestry Research and Development Center, Chinese Academy of Forestry

**Breeders:** Du Hongyan, Wang Lu, Du Qingxin, Liu Panfeng, Sun Zhiqiang, Du Lanying, Yue Hui, Qing Jun, He Feng

**Characteristics:**

The tree possess moderate vigor with conical crown, with a branching angle between 35°-65°, and longitudinal shallow cracks on the bark. Leaves are oblate (11.8-17.5 cm long and 6.5-10.6 cm wide), with leaf round base; Ground diameter is 8.0-10.4 cm of 8 year old trees. The 1-year-old branches are reddish to purplish red, and the internode length is 2.5-4.0 cm. Young spring leaves are in light red color, and leaf surface, lateral veins and branches gradually become red or purplish red in growing season after the leaves are fully open except the leaf back and the mid veins are cyan green.

**Main use:**

It can be used for gardening and landscaping.

**Silvicultural techniques:**

Grafted plants are used for planting, with a tree to tree distance of 3.0-4.0m for street trees and 2.0-4.0m for landscape trees. Young trees are treated to produce sprouts, pruning is done mainly with short cut-offs, removing 1/4-1/3 of the current year branches in winter every year. For individual plants over 6 years old, the sucker-growths inside the crown are removed in time.

**Suitable areas for planting:**

Areas suitable for growing *Eucommia ulmoides* are in Henan and Shandong provinces.

**Huazhong 13**

**Species:** *Eucommia ulmoides*

**Scientific name:** *Eucommia ulmoides* ‘Huazhong 13’

**Type of material:** Variety

**Category of certification:** Certified

**Registration No.:** Guo S-SV-EU-017-2019

**Applicants:** Non-timber Forestry Research and Development Center, Chinese Academy of Forestry

**Breeders:** Du Hongyan, Du Qingxin, Du Lanying, Liu Panfeng, Wang Lu, Yue Hui, He Feng, Zhu Lili

**Characteristics:**

It shows moderate growth vigor with conical crown, with a branching angle of 35°-65°, and bark of shallow longitudinal cracks. Ground diameter is 7.5-9.8 cm of 8 year old trees. Branches are stout and angular with internodes of 1.5-2.5 cm in length. Leaf blades are broadly elliptic, with rough surface and serrated deep concaves; Leaves are light green or green, papery, with 0.25 mm thick, 12.2-15.4 cm long, 8.0-10.2 cm wide, and petioles are 1.5-2.5 cm long.

**Main use:**

It can be used for gardening and landscaping.

**Silvicultural techniques:**

Grafted trees are used for planting. The pollination varieties are 'Huazhong 1' and 'Huazhong 5', with a proportion of 5-10%. The plant spacing is 3.0-4.0 m for street trees and 2.0-4.0 m for landscape trees. For shelter forest, trees are planted in 3-5 rows, with a planting density of 2.0 m×3.0 m to 3.0 m×4.0 m, 56-110 trees per mu. Young trees are treated to promote sprouting and pruning is done mainly with short cut-offs, with 1/4-1/3 of the current year branches are cut in winter every year. For individual plants over 6 years old, the sucker-growths inside the crown are removed in time.

**Suitable areas for planting:**

Areas suitable for growing *Eucommia ulmoides* are in Henan and Shandong province.

**Ziyuan**

**Species:** Jujube

**Scientific name:** *Ziziphus jujuba* 'Ziyuan'

**Type of material:** Variety

**Category of certification:** Certified

**Registration No.:** Guo S-SV-ZJ-018-2019

**Applicants:** Hebei Agricultural University

**Breeders:** Mao Yongmin, Wang Xiaoling, Shen Lianning, He Yonghan, Liu Wentian, He Zhenli, He Yongsu, Song Zhihui, Zhao Haiming, Yan Jine, Wang Xiurui, Jiang Yongwei, Chu Xinfan, Li Yanhui, Mao Liheng, Hu Yalan, Liu Hongquan

**Characteristics:**

It comes with moderate growth vigor and open tree form. The fruit is oblate, purplish red after ripening with bright peel. The average weight of single fruit is 23.4 g, the edible rate of fresh jujube is 96.0%, the soluble solid content is 26.5%, the Vc content is 340-380 mg/100g, the drying rate is 62.7%, and the sugar content of dried jujube is 77.6%. The fruit matures in late September in Xingtai, Hebei province. The fruits do not fall before collection, and can be dried naturally on trees. In general, the cracking rate is less than 0.1% and the average yield is 14.3 kg/tree, 1100 kg/mu at peak production.

**Main use:**

Can be used for dry fruit and processed fruit products.

**Silvicultural techniques:**

The planting density is usually 2.0 m×4.0 m, 2.0 m×5.0 m or 3.0 m×5.0 m plant spacing. Tree form is managed as sparse stratification or sparse stratification in small crowns, and the tree height is controlled at about 3.0 m. In summer bud removal, top removal and branch pulling are applied as necessary. Jujube rust, green stinkbug and red spider are the main disease and pests. Fertilization is applied mainly with organic or biological fertilizers, application of organic fertilizers is best in autumn, organic fertilizer of 2.0-4.0 m<sup>3</sup>/mu is applied during the peak fruit production, During the fruit expansion stage phosphate fertilizer is applied with timely irrigation.

**Suitable areas for planting:**

Areas suitable for growing jujube trees are in Hebei and Shaanxi provinces.

**Ruiduhongyu**

**Species:** Grape

**Scientific name:** *Vitis vinifera* 'Ruiduhongyu'

**Type of material:** Variety

**Category of certification:** Certified



**Registration No.:** Guo S-SV-VV-019-2019

**Applicants:** Beijing forestry and fruit trees institute

**Breeders:** Xu Haiying, Sun Lei, Yan Ailing, Zhang Guojun, Zhang Ying, Gong Linzhong, Lu Huiling, Wang Huiling, Wang Xiaoyue, Ren Jiancheng, Han Jiayu, Liu Yong, Jing Qiuju, Cao Xiongjun, Xiao Lizhen, Qin Yang, Hu Xixi, Yang Ruihua, Dong Chang, Wang Bailin.

**Characteristics:**

The tree bears moderate to slightly strong growth vigor. The fruit powder is thin, the peel is purplish red or reddish purple; The fruit is oblong or oval in shape, flesh non colored or very light in color, medium hardness, light to moderate rose fragrance, average dingle fruit weight of 5.5 g, soluble solid content of 18.2%, and titratable acid content of 0.44%. Fruit cluster in conic form with an average cluster weight of 404.71 g and fruit yield of individual vines of 10-15 kg/mu. The third year after planting enters the peak period of fruit production, with a yield of more than 1500 kg/mu. Fruit starts to ripen since mid July and fully ripen during August 6-12 in Beijing areas. So, it is an early ripening variety.

**Main use:**

Used as freshly served fruit.

**Silvicultural techniques:**

Appropriate planting density should be used when hedge frame cultivation. is employed. Timely thinning is performed when the trees grow up. Winter pruning of short shoots and very short shoots is appropriate. Gent topping is done before flowering, removing tendrils and secondary tips at the same time. In greenhouse cultivation with vertical trunk and horizontal main tendrils, the angle between the new shoot and main tendrils should be controlled at about 90°. In production, attention should be paid to control the yield. 1-2 flower panicles are kept for each branch. Before flowering, the flower panicles should be reshaped, and the fruit panicle size should be controlled at about 500 g. Pay attention to rise the positions of fruit setting, in order to increase the space for bottom ventilation .

**Suitable areas for planting:**

Cultivated in open field or in rain shelter facilities are in Guangxi, Hubei and,, Beijing, Facility cultivation is needed in Heilongjiang.

**Liaozhen 106**

**Species:** Apple

**Scientific name:** *Malus pumila* 'Liaozhen106'

**Type of material:** Variety

**Category of certification:** Certified

**Registration No.:** Guo S-SV-MP-020-2019

**Applicants:** Liaoning fruit tree research institute, Liaoning academy of forestry sciences

**Breeders:** Yang Feng, Liu Zhi, He Mingli, Yan Zhongye, Jiang Xiaojun, Jin Jing, Zhang Zhitao, Lv Tianxing, Wang Dongmei, Jin Feng, Wang Yingda, Liu Yifei, Wang Xiaoyi, Zhang Yuming, Song Zhanbao, Zhang Jing, Yi Kai

**Characteristics:**

It shows healthy and vigorous growth, with half-open tree form, moderate bud germination, tetraploid and the asexual reproduction rate is 93.5%. A small amount of seeds can be collected from seed trees 3 years after planting. About 7,300 seeds per tree can be collected from mature seed trees, and the 1000-seed weight is 14.6g. Grafted varieties of 'Fuji', 'Golden Delicious', 'Hanfu' and 'Gala' can have a survival rate of more than 90%. The grafted trees are semi - dwarfing, mature trees have a height of about 3.6 m.

**Main use:**

It can be used as a rootstock variety.

**Silvicultural techniques:**

It is suitable for orchards using large branching saplings, with planting holes in size of 80 cm×80 cm × 80 cm, or planting ditches of 80 cm wide and 80 cm deep, with south-north rows at a spacing of 2.0 m × 4.0 m. Trees are pruned to spindle-form, mainly to thin branches, supplemented with slowing-down of growth, Pruning is done mainly by thinning, carving, pulling and girdling, to promote branching and inhibit growing vigor. In the growing season, weeding and covering around the trees is applied. Soil is timely loosened with intensified water and fertilization management.

**Suitable areas for planting:**

Areas suitable for growing apple trees are in Kangping of Shenyang, Liaoning and the south of Pingquan of Chengde, Hebei province.

**Yueyanghong**

**Species:** Apple

**Scientific name:** *Malus pumila* 'Yueyanghong'

**Type of material:** Variety

**Category of certification:** Certified

**Registration No.:** Guo S-SV-MP-021-2019

**Applicants:** Liaoning fruit tree research institute, Liaoning academy of forestry sciences

**Breeders:** Liu Zhi, Yan Zhongye, Huang Jinfeng, Jiang Xiaojun, Wang Dongmei, Jin Jing, Zhang Zhitao, Lv Tianxing, Zhang Yuming, Song Zhanbao, Meng Fanjin, Hu Yanwu, Guan Lixia, Bu Pengtu, Yang Feng, Wang Yingda, He Mingli, Zhang Jinge, Yi Kai

**Characteristics:**

It comes in open tree form, conical crown, and moderate growth vigor. Fruit is nearly round, with an average fruit weight of 206 g and a fruit shape index of 0.85, Base skin color is yellowish green turning into fully bright red when nearly mature. The fruit surface is smooth with small fruit dots and moderate fruit powders. Yellow flesh, with a peeled hardness of 10.1 kg/cm<sup>2</sup>, soluble solids content of 15%, total sugar content of 11.4% and total acid content of 4.61 g/kg. In Xiongyue of Liaoning, the fruit ripens in late September. The variety top-grafted on 5-year-old 'Hanfu', the average yield of 3-year-old trees is 12-18 kg and the average yield per mu is 660-990kg. The fruit is durable for storage, and can be stored in storehouse at constant temperature until May of the following year.

**Main use:**

Used as freshly served fruits.

**Silvicultural techniques:**

A spacing of 3.0 m 4.0 m is appropriate for growing the fruit trees for top grafting, and a spacing of 2.0 m 4.0 m for low grafting. Plain land or gentle slope land with leeward sunny positions with favorable fertility and water conditions, and sandy loam soil are selected for growing the trees. 'Golden Delicious', 'Mato 1', 'Gala', 'Hongwangjiang', 'Yue shuai', 'Red Chief Delicious', 'Hanfu' can be used as pollination varieties. Trees are pruned to long spindled form. Flower and fruits are properly managed to control the reproductive load, management of water and fertilizer are intensified with timely disease and pest control.

**Suitable areas for planting:**

Areas suitable for growing apple trees are in Kangping of Shenyang, Liaoning province and the south of Pingquan of Chengde, Hebei province.

**Jiangjunmao**

**Species:** persimmon

**Scientific name:** *Diospyros kaki* 'Jiangjunmao'

**Type of material:** Variety

**Category of certification:** Certified

**Registration No.:** Guo S-SV-DK-022-2019

**Applicants:** Luoyang Academy of Agriculture and Forestry Sciences

**Breeders:** Liang Chen, Liu Dan, Wang Zhijun, Huang Jianwei, Ding Cheng hui, Zhang Jun, Chang Lingbing, Yin Hua, Wei Suling, Han Feng

**Characteristics:**

It shows upright habitat and, strong growth vigor. The shape of the fruit is similar to the cap of ancient generals. It is conical in shape and has a convex tip on the top of the fruit. The constriction is deep and obvious. The average fruit weight is 221 g and the fruit is orange when ripe. The fruit skin is thin and smooth, with a lot of fruit powder. The content of soluble solid, tannin, protein, ascorbic acid and total acid are 14.5%, 1.22×10<sup>3</sup> mg/kg, 0.54 g/100g, 11.5 mg/100g and 1.10 g/kg respectively. Grafted trees start fruiting 2 years after transplanting, and the fruit yield per tree is 25.4 kg 4 years after transplanting, and up to 47.6 kg 8 years after transplanting. The fruit ripens early to mid-November in Luoyang, Henan province.

**Main use:**

The fruits are used for fresh-eating and processing.

**Silvicultural techniques:**

A spacing of 3.0 m×4.0 m, 3.0 m×5.0 m is used for general planting, and the tree form is kept in small crown with sparse layers. A spacing of 2.0 m×3.0 m, 2.0 m×4.0 m is used for densely planted orchards, and tree form is kept in spindle shape. In years of high rainfall, Bordeaux solution is sprayed to prevent anthrax.

**Suitable areas for planting:**

Areas suitable for growing persimmon trees are in Henan and Shandong provinces.

## **Yuzao 2**

**Species:** Chinese honey locust

**Scientific name:** *Gleditsia sinensis* ‘Yuzao 2’

**Type of material:** Variety

**Category of certification:** Certified

**Registration No.:** Guo S-SV-GS-023-2019

**Applicants:** Henan Academy of Forestry, Boai County Huaide *Gleditsia Sinensis* Limited Company

**Breeders:** Fan Dingchen, Liu Yanping, Gao Fuling, Li Baohui, Li Yaoxue, Yang Weimin, Zhu Yajun, Jin Yu, Ding Xiaohao, Wei Juan, Zhao Tuo, Zhang Ling

**Characteristics:**

It shows strong growth vigor, evident and straight trunk. 6-year-old trees of the variety had a DBH of 7.25cm and a height of 5.84 m. The spines are conical, stout and pendulous, with a pendulous angle of 30°-45°. The spines grow mainly at the base of the trunk and main branches. Trees start to produce a certain amount of spines in the second year after grafting, and in the third to sixth years. The average spine yield per plant is 0.55 kg, 0.78 kg, 0.93 kg and 1.82 kg (fresh weight) respectively. The average length of spines is 27.50 cm, the average diameter of spines is 8.61 mm, the average number of branch-spines of a single spine is 18, and the average weight of single spine is 18.18 g. The contents of acanthic acids, quercetins, total flavones, and total polyphenols are 69.93 g/g, 193.45 g/g, 58.08 mg/g, and 16.73 mg/g respectively.

**Main use:**

It is a non-timber product variety, mainly used for spine production for medicinal uses.

**Silvicultural techniques:**

Requirements for soil conditions are not strict. The planting hole is 50cm × 50cm, and application of adequate water is immediately after planting. The plant spacing is 2.0 m×1.5 m for the first five

years, and transplanting can be done in later period to maintain a spacing of 2.0 m×3.0 m or 3.0 m×4.0 m. Water is applied 3-5 times a year, compound fertilizer (N: P: K= 1:1:1) 2-3 times together with soil scarification and weeding for 2-3 times. The measures of supporting, shaping, and pruning are conducted to develop tree form with main trunk. The tree form is maintained in combination of spine collection in the following years. Spines are harvested in November each year with a special tool for spine collection. Attention paid to aphids.

**Suitable areas for planting:**

Areas suitable for growing Chinese honey locusts are in Henan, Anhui, Shandong, Hebei provinces.

**Zhongningyi**

**Species:** walnut

**Scientific name:** *Juglans major* × *J. regia* ‘Zhongningyi’

**Type of material:** Variety

**Category of certification:** Certified

**Registration No.:** Guo S-SV- JM -024-2019

**Applicants:** Research Institute of Forestry of the Chinese Academy of Forestry

**Breeders:** Zhang Junpei, Pei Dong, Xi Shengke, Meng Bingnan, Xu Huzhi, Guo Zhimin, Xu Huimin, Xu Xinqiao

**Characteristics:**

It is a rootstock variety, with strong growth vigor, evident apical dominance, and straight trunk. Heterosis of growth is more than 29% over parents and the compatibility is greater than 95% when grafted with walnut. Tree height, ground diameter, crown width, length of 1-year-old branch and fruit setting rate of 2-year-old 'Qingxiang'/'Zhongningyi' grafting combination are 176.5 m, 3.93 cm, 71.5 cm, 80.5 cm and 77.18%, respectively. The average individual tree yield is 241.0 g and the nucleoli fat content is 67.14%. The bending strength of the wood is 116.8 MPa, the diametral hardness is 7120 N, the end hardness is 8030 N, and the chord hardness is 7270 N.

**Main use:**

It can be used for stock production or timber production.

**Silvicultural techniques:**

Orchard is established through bud grafting. For orchard establishment, a spacing of (4.0-5.0) m × (5.0-6.0) m is suitable for early fruiting varieties, and (6.0-8.0) m × (10.0-12.0) m is suitable for later fruiting varieties. For establishment of inter-cropping orchard, a spacing of (5.0-6.0) m × (6.0-8.0) m is required for early fruiting varieties and (6.0-8.0) m × (10.0-12.0) m for later fruiting varieties. For combined production of both fruit and timber, more than 3 years old cutting propagated clones can be used as the rootstock for top grafting (height >1.5m), and the grafted trees are transplanted in late winter and early next spring, at a appropriate spacing of (3.0-4.0) m × (6.0-8.0) m. Block plantings can be used for landscaping and 2 or 4 rows of plantings are used for roadside trees, with a spacing of (4.0-5.0) m × (5.0-6.0) m. The management of soil, fertilizer and water refer to the management of walnut orchards.

**Suitable areas for planting:**

Areas with average annual temperature of 9-18 °C suitable for growing walnut trees are in Henan, Shandong and Shaanxi provinces.

**Huazhong 11**

**Species:** *Eucommia ulmoides*

**Scientific name:** *Eucommia ulmoides* ‘Huazhong 11’

**Type of material:** Variety

**Category of certification:** Certified

**Registration No.:** Guo S-SV-EU-025-2019

**Applicants:** Non-timber Forestry Research and Development Center, Chinese Academy of Forestry

**Breeders:** Du Hongyan, Liu Panfeng, Wang Lu, Du Qingxin, Du Lanying, Yue Hui, Zhu Lili, Qing Jun

**Characteristics:**

Male trees grow with shallow longitudinal cracks on bark and conical crown. Grafted trees start flowering 2-3 years after planting or top grafting and peak in 4-5 years. 6-11 male flowers get clustered at the base of the current year branches, with stamen length of 0.8-1.2 cm and 86 to 108 stamen per flower bud. During peak of flowering the production of fresh male flowers is 200-300 kg/mu. The amino acid content of male flower is 17.76%. After processing into male flower tea, the stamen is firm and not bent, displaying a beautiful looking. In Henan province, the male flowering period is from late March to early April.

**Main use:**

*Eucommia ulmoides* can be used to establish tea garden of the male flowers

**Silvicultural techniques:**

The planting density is 2.0 m×3.0 m to 4.0 m×4.0 m, with 42-110 trees per mu. When the male flowers are collected in spring, 3-8 buds are left on the flowering branches. From May to June, girdling is conducted with 0.3-1.0 cm wide at the base of the current year branches leaving a 0.2-0.5 cm wide nutrient zone. Every 3-5 years, the flowering branches are cut back for one whorl. Girdling is conducted on the stem or main branches from late May to late June.

**Suitable areas for planting:**

Areas suitable for growing *Eucommia ulmoides* are in Henan and Shandong provinces.

## **Huazhong 14**

**Species:** *Eucommia ulmoides*

**Scientific name:** *Eucommia ulmoides* 'Huazhong 14'

**Type of material:** Variety

**Category of certification:** Certified

**Registration No.:** Guo S-SV-EU-026-2019

**Applicants:** Non-timber Forestry Research and Development Center, Chinese Academy of Forestry

**Breeders:** Du Hongyan, Du Lanying, Du Qingxin, Liu Panfeng, Wang Lu, Yue Hui, Sun Zhiqiang, Zhu Lili.

**Characteristics:**

Fruit is elliptic, 4.32-5.38 cm long and 1.70-1.91 cm wide. The kernel is 1.45-1.97 cm long and 0.23-0.30 cm wide, and the 1000-grain weight of the mature fruit is 111.2 g, 1.56 times of that of the 'Huazhong 6'. The crude fat content of seed kernel is 29%~32%, and the content of  $\alpha$ -linoleic acid is 61% ~ 65%. The fruit ripens from mid-September to mid-October. The average fruit yield per tree is 3.62 kg in the peak period in Lingbao area, Henan province. The peel and kernel cannot be easily separated.

**Main use:**

It can be used to establish *Eucommia ulmoides* orchards.

**Silvicultural techniques:**

The suitable pollination variety is 'Huazhong 5' with a proportion of 5%-10%. Planting density is 2.0 m×3.0 m to 4.0 m×4.0 m, with 42-110 trees per mu. The suitable tree form is natural open-heart form and two layers of sparse open-heart form. 3-4 main branches are maintained at a vertical angle with the trunk of 50°-70°. Girdling is conducted on the stem or main branches from late May to late June, with a width of 1.0 cm to 1.5 cm, leaving a nutrient belt of 1.0 cm to 2.0 cm

wide above and below the girdling.

**Suitable areas for planting:**

Areas suitable for growing *Eucommia ulmoides* are in Henan and Shandong provinces.

**Huazhong 5**

**Species:** *Eucommia ulmoides*

**Scientific name:** *Eucommia ulmoides* ‘Huazhong 5’

**Type of material:** Variety

**Category of certification:** Certified

**Registration No.:** Guo S-SV-EU-027-2019

**Applicants:** Non-timber Forestry Research and Development Center, Chinese Academy of Forestry

**Breeders:** Du Hongyan, Li Fangdong, Fu Jianmin, Du Lanying, Wu Yuntana, Zhu Jingle, Guo Shurong, Liu Zhiyong, Li Fuhai, Peng Xinglong

**Characteristics:**

It grows with straight trunk and ovoid crown. Bark is smooth on young trees, with longitudinal cracks on mature trees. 18 year old grafted trees have an average DBH of 17.6 cm, the gutta-percha content in bark is 5.53% and the gutta-percha density in bark is 14.37 mg/cm<sup>3</sup>. The content of pinoresinol diglucoside (PDG) in bark is 0.18%-0.35%, while it is 0.14%-0.29% in ‘Huazhong 1’. The average weight of male flowers per tree at blooming period is 3.56 kg (fresh weight) in Wenxi County, Shanxi Province.

**Main use:**

It is a variety of economic trees.

**Silvicultural techniques:**

The planting density is 2.0 m×2.0 m to 3.0 m×3.0 m, with 75-167 trees per mu. Tree planting should be completed before germination each year. Adequate water is applied 1 week before bark peeling, Bark peeling is conducted in the growing season from April to September, and the best period for bark peeling is May-June. Attention should be paid to the peeling method and the protection after peeling. Fertilizer and water management is intensified with timely disease and pest control.

**Suitable areas for planting:**

Areas suitable for growing *Eucommia ulmoides* are in Henan, Hubei, Hunan and Shanxi provinces.

**Huazhong 6**

**Species:** *Eucommia ulmoides*

**Scientific name:** *Eucommia ulmoides* ‘Huazhong 6’

**Type of material:** Variety

**Category of certification:** Certified

**Registration No.:** Guo S-SV-EU-028-2019

**Applicants:** Non-timber Forestry Research and Development Center, Chinese Academy of Forestry

**Breeders:** Du Hongyan, Li Fangdong, Du Lanying, Li Fuhai, Fu Jianmin, Yang Shaobin, Zhu Jingle, Li Feng, Peng Xinglong, Guo Shurong, Jin Shihai, Wang Yuefeng, Liu Zhiyong, Ma Keyi, Li Shaona

**Characteristics:**

The flowering period is from mid-late March to mid-April. Flowering starts from the 3rd to the 4th year after planting, and peak fruiting period starts at the 5th year. During peak fruiting period

in Wenxi County, Shanxi Province, the average weight of individual tree is 3.01 kg (fresh weight), the average weight of 1000-fruits is 70.9 g, while it is 3.23 kg (fresh weight) and 72.1 g respectively in Changsha county, Hunan province.

**Main use:**

It is suitable for the establishment of gutta-percha orchard.

**Silvicultural techniques:**

The suitable pollination varieties are ‘Huazhong1’ and ‘Huazhong5’, with a proportion of 5%-10%. The planting density is 2.0 m×3.0 m to 4.0 m×4.0 m with 42-110 trees per mu. The suitable tree form is natural open-heart form and two layers of sparse open-heart form. 3-4 main branches are maintained, with an angle of 50°-70° with the main stem. Girdling is conducted on the stem or main branches from late May to late June, with a width of 1.0 cm to 1.5 cm, and the a nutrient belt of 1.0 cm to 2.0 cm wide is left above and below the girdling.

**Suitable areas for planting:**

Areas suitable for growing *Eucommia ulmoides* are in Henan, Shannxi, Hunan and Shanxi provinces.

### **Huazhong 7**

**Species:** *Eucommia ulmoides*

**Scientific name:** *Eucommia ulmoides* ‘Huazhong 7’

**Type of material:** Variety

**Category of certification:** Certified

**Registration No.:** Guo S-SV-EU-029-2019

**Applicants:** Non-timber Forestry Research and Development Center, Chinese Academy of Forestry

**Breeders:** Li Fangdong, Du Hongyan, Li Fuhai, Du Lanying, Fu Jianmin, Duan Jinghua, Zhu Jingle, Liu Panfeng, Zhang Yue, Wu Yuntana, Xu Dianfeng, Meng Wei, Zhang Gaixiang, Wang Anjun, Lai Zhengwu

**Characteristics:**

The flowering period is from mid-late March to mid-April. Flowering starts from the 3rd to the 4th year after planting, and peak fruiting period starts at the 5th year. During peak fruiting period in Wenxi County, Shanxi Province, the average weight of individual tree is 3.16 kg (fresh weight), the average weight of 1000-fruits is 80.8 g, while it is 3.23 kg (fresh weight) and 79.2 g respectively in Changsha county, Hunan province.

**Main use:**

It is suitable for the establishment of gutta-percha orchard.

**Silvicultural techniques:**

The pollination variety is ‘Huazhong1’, with a proportion of 5%-10%. The planting density of this tree is 2.0 m×3.0 m to 4.0 m×4.0 m with 42-110 trees per mu. The suitable tree form is natural open-heart form and two layers of sparse open-heart form. 3-4 main branches are maintained at an angle of 50°-70° with the main stem. Girdling is conducted on the stem or main branches from late May to late June, with a width of 1.0 cm to 1.5 cm, leaving a nutrient belt of 1.0 cm to 2.0 cm wide above and below the girdling.

**Suitable areas for planting:**

Areas suitable for growing *Eucommia ulmoides* are in Henan, Shannxi, Hunan and Shanxi provinces.

### **Huazhong 8**

**Species:** *Eucommia ulmoides*

**Scientific name:** *Eucommia ulmoides* ‘Huazhong 8’

**Type of material:** Variety

**Category of certification:** Certified

**Registration No.:** Guo S-SV-EU-030-2019

**Applicants:** Non-timber Forestry Research and Development Center, Chinese Academy of Forestry

**Breeders:** Li Fangdong, Du Hongyan, Fu Jianmin, Yang Shaobin, Du Lanying, Zhou Daoshun, Guo Shurong, Liu Changyong, Guo Yusheng, Xue Jianlin, Du Yuxia, Wang Weiwei, Deng Xiaojing, Zhang Chaohui, Wang Hailiang

**Characteristics:**

The flowering period is from mid-late March to mid-April. Flowering starts from the 3rd to the 4th year after planting, and peak fruiting period starts at the 5th year. During peak fruiting period in Wenxi County, Shanxi Province, the average weight of individual tree is 3.26 kg (fresh weight), the average weight of 1000-fruits is 76.8 g, while it is 3.13 kg (fresh weight) and 82.2 g respectively in Changsha county, Hunan province.

**Main use:**

It is suitable for the establishment of gutta-percha orchard.

**Silvicultural techniques:**

The pollination variety is ‘Huazhong1’, with a proportion of 5%-10%. The planting density of this tree is 2.0 m×3.0 m to 4.0 m×4.0 m, and there are 42-110 trees per mu. The suitable tree form is natural open-heart form and two layers of sparse open-heart form. 3-4 main branches are maintained with a angle of 50°-70° to the main stem. Girdling is conducted on the stem or main branches from late May to late June, with a width of 1.0 cm to 1.5 cm, leaving a nutrient belt of 1.0 cm to 2.0 cm wide above and below the girdling. Water and fertilizer management need to be strengthened.

**Suitable areas for planting:**

Areas suitable for growing *Eucommia ulmoides* are in Henan, Shannxi, Hunan and Shanxi provinces.

## Huazhong 9

**Species:** *Eucommia ulmoides*

**Scientific name:** *Eucommia ulmoides* ‘Huazhong 9’

**Type of material:** Variety

**Category of certification:** Certified

**Registration No.:** Guo S-SV-EU-031-2019

**Applicants:** Non-timber Forestry Research and Development Center, Chinese Academy of Forestry

**Breeders:** Du Hongyan, Li Fangdong, Yang Shaobin, Du Lanying, Zhou Daoshun, Fu Jianmin, Wu Yuntana, Li Fuhai, Duan Jinghua, Zhu Jingle, Zhang Yue, Liu Panfeng, Song Lixia, Han Junwang, Yi Huan

**Characteristics:**

The flowering period is from mid-late March to mid-April. Flowering starts from the 3rd to the 4th year after planting, and peak fruiting period starts at the 5th year. During peak fruiting period in Wenxi County, Shanxi Province, the average weight of individual tree is 2.96 kg (fresh weight), the average weight of 1000-fruits is 73.5 g, while it is 3.17 kg (fresh weight) and 72.6 g respectively in Changsha county, Hunan province.

**Main use:**

It is suitable for the establishment of gutta-percha orchard.

**Silvicultural techniques:**



The pollination variety is ‘Huazhong1’, with a proportion of 5%-10%. The planting density of this tree is 2.0 m×3.0 m to 4.0 m×4.0 m with 42-110 trees per mu. The suitable tree form is natural open-heart form and two layers of sparse open-heart form. 3-4 main branches are maintained on the main stem at an angle of 50°-70°. Girdling is conducted on the stem or main branches from late May to late June, with a width of 1.0 cm to 1.5 cm, leaving a nutrient belt of 1.0 cm to 2.0 cm wide above and below the girdling. From late April to early May, fruits are easy to fall, and, therefore, nutrients application should be intensified.

**Suitable areas for planting:**

Areas suitable for growing *Eucommia ulmoides* are in Henan, Shannxi, Hunan and Shanxi provinces.

**Huazhong 10**

**Species:** *Eucommia ulmoides*

**Scientific name:** *Eucommia ulmoides* ‘Huazhong 10’

**Type of material:** Variety

**Category of certification:** Certified

**Registration No.:** Guo S-SV-EU-032-2019

**Applicants:** Non-timber Forestry Research and Development Center, Chinese Academy of Forestry

**Breeders:** Du Hongyan, Li Fangdong, Du Lanying, Wu Yuntana, Liu Panfeng, Wang Lu, Zhu Jingle, Zhu Gaopu, Xu Lancheng, Xue Baolin, Zhang Songtao

**Characteristics:**

The flowering period is from mid-late March to mid-April. Flowering starts from the 3rd to the 4th year after planting, and peak fruiting period starts at the 5th year. During peak fruiting period in Wenxi County, Shanxi Province, the average weight of individual tree is 1.56 kg (fresh weight), the average weight of 1000-fruits is 71.9 g, while it is 1.77 kg (fresh weight) and 70.6 g respectively in Changsha County, Hunan Province.

**Main use:**

It is suitable for the establishment of gutta-percha orchard.

**Silvicultural techniques:**

The pollination varieties are ‘Huazhong1’ and ‘Huazhong5’, with a proportion of 5%-10%. The planting density of this tree is 2.0 m×3.0 m to 4.0 m×4.0 m with 42-110 trees per mu. The suitable tree form is natural open-heart form and two layers of sparse open-heart form. 3-4 main branches are maintained with a vertical angle of 50°-70° to the main stem. Girdling is conducted on the stem or main branches from late May to late June, with a width of 1.0 cm to 1.5 cm, leaving a nutrient belt of 1.0 cm to 2.0 cm wide above and below the girdling

**Suitable areas for planting:**

Areas suitable for growing *Eucommia ulmoides* are in Henan, Hubei, Hunan and Shanxi provinces.

**Pre-certified varieties**

**Xiaohuyang 2**

**Species:** Poplar

**Scientific name:** *Populus simonii* × *P. euphratica* ‘Xiaohuyang 2’

**Type of material:** Clone

**Category of certification:** Pre-certified for 2 years (2020.4.26-2022.4.25)

**Registration No.:** Guo R-SC-PS-001-2019

**Applicants:** Zhang Hailong, Liang Hairong

**Breeders:** Zhang Hailong, Liang Hairong

**Characteristics:**

The tree crown is ovate or broadly ovate, and the bark of stem is smooth. One-year-old leaves are oblanceolate. The upper surface of leaves is green and the back of leaves is light green to slight white. The leaves of mature trees are oblanceolate, ellipse, diamond and ovate, with sparse sawteeth at the upper edge and dense deep sawteeth at middle edge of leaves. In Yanchi county, Ningxia province, the average DBH and plant height of 6 year sold 'Xiaohuyang 2' are 10.0 cm and 10.0 m respectively, which is 45% higher than the average DBH of *Populus euphratica*.

**Main use:**

It can be used for landscape forest and ecological forest.

**Silvicultural techniques:**

Young trees with two-year-old roots and one-year-old stem or with three-year-old roots and two-year-old stem are used for planting in areas with good soil permeability and the best irrigation facilities. If irrigation condition is not available, the appropriate areas would be those with underground water level < 2.0 m. The appropriate planting spacing is 4.0 m×5.0 m. Trees are watered within a week after planting, watered again before the rainy season. Watering should be done once every spring for the second year after planting and thereafter. Pruning is performed once in autumn of the 3rd year after planting.

**Suitable areas for planting:**

Areas suitable for growing *Populus euphratica* are in Inner Mongolia, Ningxia and Gansu province.

**Notes:**

**The pre-certified varieties may not be used as improved varieties after expiration and need to be certified again.**

**Amendments**

The breeders of *Hippophae rhamnoides* 'Shenqihong' (Guo S-SV-HR-013-2018), Zhang Jianguo, Duan Aiguo, Luo Hongmei, Sun Guangshu, Zhao Jiang, He Caiyun, Zhou Chuang, Liu Juanjuan are amended as Huang Quan, Li Zhongyi, Liang Jiuming, Zhang Jianguo, Du Aiguo, Luo Hongmei, Sun Guangshu, Zhao Jiang, He Caiyun, Zhou Chuang, Liu Juanjuan.