

附件

草品种名录

(中英文)

1. ‘淮扬4号’紫花苜蓿

草种名称：紫花苜蓿

学名：*Medicago sativa* ‘Huaiyang 4’

品种类别：育成品种

编号：国 S-BV-MS-001-2020

申报单位：扬州大学

选育人：魏臻武、武自念、王仪明、吕林有、张兵

品种特性

多叶型苜蓿，群体多叶率 50%以上。复叶 5-7 小叶，以 7 叶居多，单株多叶率为 79%。株型直立，茎秆较粗，分枝数 30-70 个，自然高度 100-130 cm。江淮地区每年可刈割 4-7 次，平均干草产量为 11479 kg/hm²，粗蛋白含量为 20.2%。

主要用途

用作牧草，刈割利用。

栽培技术要点

浅耕灭茬，播前进行种子处理，接种根瘤菌。一般进行条播，行距 15-30 cm，播种深度 1-2 cm。江淮地区一般秋播，播种量 18.75 kg/hm²。可以结合整地施基肥，亦可在后期追肥，一般以磷、钾肥为主，少施氮肥或不施。田间管理注重苗期杂草的防除以及生育期芽虫等病虫害的防治。现蕾或初花期刈割，留茬 5-6 cm。

适宜种植范围

适宜长江中下游地区种植。

2. ‘中天3号’杂花苜蓿

草种名称：杂花苜蓿

学名：*Medicago varia* ‘Zhongtian 3’

品种类别：育成品种

编号：国 S-BV-MV-002-2020

申报单位：中国农业科学院兰州畜牧与兽药研究所

选育人：杨红善、段慧荣、周学辉、王春梅、朱新强、常根柱、路远、张茜、崔光欣

品种特性

豆科多年生草本植物。根系发达，株型直立或半直立，株高 80 -135 cm。乳白色花占 90%左右，少有紫色、淡紫色和浅黄色。在西北干旱、半干旱地区越冬率为 90%以上，人工草地干草产量为 11947.6 kg/hm²-15232.2 kg/hm²，种子产量为 310.6 kg/hm²-713.8 kg/hm²，初花期粗蛋白含量为 18.86%。

主要用途

牧草和生态修复草兼用，既可用于退化草地补播或撂荒地、贫瘠土地改良，也可用于人工草地种植。

栽培技术要点

退化草地、撂荒地改良可与其它草种混播。人工草地播种前要精细整地，保持土壤墒情。春播或夏秋播。收草田以条播为宜，也可撒播，行距 12-25 cm，播种量 18 kg/hm²-75 kg/hm²。种子田可稀条播或穴播，稀条播行距 70-100 cm，播种量 4.5-15 kg/hm²，穴播行距 70-100 cm，穴株距 15-30 cm，每穴 6-10 粒种子，播种深度 1-2 cm。收草田在初花期刈割利用，种子田在 75%左右荚果成熟时即可收获。

适宜种植范围

适宜黄土高原、内蒙古中西部、陕西、山西、宁夏、新疆及北方相似气候区域种植。

3. ‘中科 5 号’羊草

草种名称：羊草

学名：*Leymus chinensis* ‘Zhongke 5’

品种类别：育成品种

编号：国 S-BV-LC-003-2020

申报单位：中国科学院植物研究所

选 育 人：刘公社、齐冬梅、陈双燕、刘辉、李晓霞、程丽琴、董晓兵、高利军、王岩
赵强、侯升林

品种特性

禾本科多年生草本。具发达的地下横走根茎，株型紧凑，平均株高 109 cm。干草产量为 6245 kg/hm²-8123 kg/hm²，种子产量 236 kg/hm²。适宜在年降水量 300-650 mm、含盐量 0.4% 以下的土壤生长，播种当年最大覆盖度为 31%-55%。

主要用途

牧草和生态修复草兼用，主要用于我国北方天然草场补播改良、退化草地生态修复、盐碱地改良、人工草地建设等。

栽培技术要点

人工草地播前深耕除杂草，随整地施有机肥 750 kg/hm²。春播，播种量 60-90 kg/hm²，盐碱地可适当加大播种量。条播，行距 15-20 cm，播深 1-3 cm。生态修复可与其他草籽混播，多为免耕补播，亦可撒播，羊草用种量 7.5-30 kg/hm²。拔节前追施氮磷钾复合肥 300 kg/hm²，刈割后追施尿素 225 kg/hm²，返青期、拔节期、越冬前以及施肥的同时配合灌溉。

适宜种植范围

适宜我国东北、西北和华北地区及青藏高原适宜地区种植。

4. ‘中科 7 号’羊草

草种名称：羊草

学名：*Leymus chinensis* ‘Zhongke 7’

品种类别：育成品种

编号：国 S-BV-LC-004-2020

申报单位：中国科学院植物研究所

选 育 人：齐冬梅、刘公社、刘辉、陈双燕、程丽琴、李晓霞、董晓兵、侯升林、高利军、王岩、赵强、姚戎

品种特性

禾本科多年生草本。具发达的地下横走根茎，主要分布于地表 5-10 cm。地下生物量最高达 9134 kg/hm²，干草产量为 5660 kg/hm² -7188 kg/hm²，种子产量 279 kg/hm²。适宜在年降水量 300-650 mm、含盐量 0.4% 以下的土壤生长，播种当年最大覆盖度为 33%-59%。

主要用途

生态修复草、牧草兼用，主要用于我国北方天然草场补播改良、退化草地生态修复、盐碱地改良、人工草地建设等。

栽培技术要点

人工草地播前深耕除杂草，随整地施有机肥 750 kg/hm²。适宜春播，播种量 60-90 kg/hm²，盐碱地可适当加大播种量。条播，行距 15-20 cm，播深 1-3 cm。用于生态修复可与其他草籽混播，多为免耕补播，亦可撒播，羊草用种量为 7.5-30 kg/hm²。拔节前追施氮磷钾复合肥 300 kg/hm²，刈割后追加尿素 225 kg/hm²，返青期、拔节期、越冬前以及施肥的同时配合灌溉。

适宜种植范围

适宜我国东北、西北和华北地区及青藏高原适宜地区种植。

5. ‘甘绿 1 号’百脉根

草种名称：百脉根

学名： *Lotus corniculatus* ‘Ganlv 1’

品种类别：育成品种

编号：国 S-BV-LCO-005-2020

申报单位：甘肃创绿草业科技有限公司

选 育 人：曹致中、柴惠、闫向忠、崔亚飞、姜华

品种特性

豆科百脉根属多年生草本。须根系发达，分枝多，明黄色花中有少量金黄色花。对土壤要求不严，pH 5.0-8.2 范围内均能生长。生育期为 84-90 d 左右，较原始亲本提前 10 d 左右成熟。在甘肃河西及类似地区能收二茬种子，平均种子产量为 597.7 kg/hm²，平均干草产量为 9083 kg/hm²，平均粗蛋白含量为 17.1%。

主要用途

主要用于生态修复、水土保持、土壤改良。

栽培技术要点

土地深耕，耙平，使土粒细碎。3 月下旬至 8 月上旬播种，条播，行距 15-30 cm，播种量 5-10 kg/hm²，播种深度 1 cm。苗期保持地表湿润，注意杂草防除。开花期不要缺水，越冬前灌足冬水。结荚 30 d 左右，当荚果由绿变红，大部分变黄，少量开始裂荚时及时收获种子。收草时在盛花期收获，可以刈割 2-3 茬。

适宜种植范围

适宜我国华北、西北大部分地区种植。

6. ‘中林育1号’野牛草

草种名称：野牛草 学名：*Buchloe dactyloides* ‘Zhonglinyu 1’
品种类别：育成品种 编号：国 S-BV-BD-006-2020
申报单位：中国林业科学研究院林业研究所
选育人：钱永强、孙振元、韩蕾、巨关升、刘俊祥

品种特性

多年生低矮暖季型草本植物。匍匐茎发达且分枝多，匍匐茎直径 0.12 cm，节间长度 7.3 cm 左右，单节分株数 4-9 个。叶片深绿、被毛，叶片长 22.4-29.3 cm，叶片宽 2.6-3 mm。建植 45-60 d 盖度可达 85%，在华北地区越冬成活率达 100%。

主要用途

主要用于退化草原生态修复、公园绿地建设等。

栽培技术要点

退化草原生态修复：机械植苗，雨季前穴植，株行距 1m×1m，随种随压实，充分灌溉，建植成活后常规管理；免耕补播，可与其它草种混播，野牛草用种量为 7.5-15 kg/hm²。绿地建植：建植前首先清除杂草，整平地面后，按株行距 30cm×30cm 穴植，然后培土镇压、整平。建植一周内保证土壤湿润，之后正常管理。

适宜种植范围

适宜华北地区低养护、困难立地建植。

7. ‘鲁滨1号’沟叶结缕草

草种名称：沟叶结缕草 学名：*Zoysia matrella* ‘Lubin 1’
品种类别：育成品种 编号：国 S-BV-ZM-007-2020
申报单位：鲁东大学
选育人：傅金民、徐筱、范树高、王广阳、殷燕玲

品种特性

禾本科结缕草属多年生草本。具地下根茎和匍匐茎，节间短，节上产生不定根。异花授粉，主要通过营养器官繁殖。叶宽 2.77 mm，密度为 708 个/100 cm²，全年绿期 242-259 days。在滨海盐碱地建植后，0-10 cm 土层含盐量下降 50%-60%，有机质增加 18%-47%。

主要用途

主要用于海滨盐碱地生态修复、草坪绿化。

栽培技术要点

暖季型草，适于 5-10 月种植，6-9 月最优。采用草茎栽植法繁殖，在滨海盐碱地采用铺

主要用途

主要用于生态修复、盐碱地改良、生态旅游观赏。

栽培技术要点

播种前冷水浸种 12 h 以上催芽。春季大棚育苗，将催芽种子拌入 2-3 倍细沙混合后播于营养钵中，每钵 10 粒左右，覆盖细土 2-3 mm。苗高 10 cm 时揭去大棚薄膜，2 周后移栽。春季 5-6 月移栽，秋季 10 月上、中旬移栽。带土起苗，按株行距 1.5 m×3 m 穴栽，穴直径 40 cm、深度 30 cm。栽后浇透水，除草，施肥（有机肥 3-5 kg/穴），锈病喷施波尔多液防治。

适宜种植范围

我国北方年降雨量 130-400 mm 的干旱半干旱地区、荒漠戈壁、盐碱地种植。

10. ‘西乌珠穆沁’羊草

草种名称：羊草

学名：*Leymus chinensis* ‘Xiwuzhumuqin’

品种类别：野生驯化品种

编号：国 S-WDV-LC-010-2020

申报单位：中国农业科学院草原研究所

选 育 人：武自念、侯向阳、李志勇、常春、黄帆

品种特性

禾本科多年生草本植物。具有发达的地下横走根茎，根茎节间长 3-5 cm，集中分布在 10-15 cm 土层。茎秆直立，主茎粗 0.2 cm，株高 90-115 cm，叶层高 60-75 cm。种子土培发芽率 85% 以上，平均种子产量 250.43 kg/hm²，平均干草产量 8174 kg/hm²，花期粗蛋白含量为 14.97%。

主要用途

生态修复草、牧草兼用，主要用于退化草地补播改良、草原生态修复及人工草地建设。

栽培技术要点

秋翻地，深度 20 cm 以上，彻底灭除杂草后，翻后及时耙地和压地，有条件时可进行灌溉、施基肥。春播、夏播、秋播均可，以 6-7 月雨季播种最好，秋播不得迟于 8 月下旬。条播，行距 40-50 cm，播量 10-20 kg/hm²，播深 1.5-2 cm，播后及时镇压，以利出苗。常规田间管理，播种当年，不宜放牧。

适宜种植范围

适宜在我国内蒙古及其相邻省区种植。

11. ‘雅江’老芒麦

草种名称：老芒麦

学名：*Elymus sibiricus* ‘Yajiang’

品种类别：野生驯化品种

编号：国 S-WDV-ES-011-2020

申报单位：四川农业大学、四川省草原科学研究院、西南民族大学

选 育 人：马啸、白史且、苟文龙、闫利军、陈仕勇、刘琳、赵俊茗、雷雄、张建波、刘伟

品种特性

禾本科披碱草属多年生草本。根系发达，分蘖能力强，株高 100-135 cm。叶长 8-25 cm，叶宽 7-15 mm，种子千粒重 3.8-4.2 g。在川西高原生育期 150-160 d，越冬率 97.4%。平均干草产量 8485.6 kg/hm²，平均种子产量 1346.4 kg/hm²，抽穗期粗蛋白含量 9.3%。

主要用途

牧草和生态修复草兼用，主要用于青藏高原海拔 3700 m 以下地区退化草原生态修复及人工草地建设。

栽培技术要点

选择肥力适中、土层深厚的地块整地，结合整地施复合肥 150-225 kg/hm² 或腐熟的牛羊粪 15000-20000 kg/hm² 做底肥。4 月中旬至 5 月中旬播种，条播或撒播，条播播量 22.5-30 kg/hm²，行距 30 cm，撒播播量 30-37.5 kg/hm²，播种深度 2-3 cm。在分蘖拔节期，可追施化肥 45-75 kg/hm²。抽穗期或盛花期进行刈割利用，留茬 5 cm。

适宜种植范围

适宜在青藏高原海拔 3700 m 以下、降雨量 500 mm 以上的地区种植。

12. ‘麦洼’老芒麦

草种名称：老芒麦

学名：*Elymus sibiricus* ‘Maiwa’

品种类别：野生驯化品种

编号：国 S-WDV-ES-012-2020

申报单位：四川省草原科学研究院

选育人：白史且、张昌兵、李达旭、游明鸿、鄢家俊、闫利军、季晓菲、陈丽丽、常丹

品种特性

禾本科披碱草属多年生草本。须根系，茎秆疏丛直立，株高 100-130 cm。叶长 9.8 cm、叶宽 9.6 mm，穗紫红色，种子千粒重 3.6-3.9 g。在川西高原生育期 133 d，生长天数 157 d。平均种子产量 1802.9 kg/hm²，平均干草产量 5146.57 kg/hm²，抽穗期粗蛋白含量 9.6%。

主要用途

牧草和生态修复草兼用，主要用于青藏高原东部退化草原生态修复及人工草地建设。

栽培技术要点

青藏高原东部在 5 月至 6 月中旬播种，种子生产以条播（行距 40 cm）为宜，播量 15.0-22.5kg/hm²，牧草生产可条播（行距 30-40 cm）亦可撒播，播种量 27.0-37.5 kg/hm²，播深 1-2 cm。分蘖期追施尿素 75 kg/hm² 加复合肥 45 kg/hm²。牧草利用一般在花期至灌浆期刈割，留茬 5-6 cm；种子收获在 80% 进入蜡熟期开始，收种后需及时刈割残茬。

适宜种植范围

适于青藏高原东部及北方寒冷湿润地区种植，降雨量在 600 mm 以上为最适区域。

13. ‘康南’垂穗披碱草

草种名称：垂穗披碱草 学名：*Elymus nutans* ‘Kangnan’
品种类别：野生驯化品种 编号：国 S-WDV-EN-013-2020
申报单位：西南民族大学、四川农业大学
选 育 人：陈仕勇、张新全、马啸、冯光燕、陈有军

品种特性

禾本科披碱草属多年生草本。须根系，根系发达，株高 125-148 cm。叶长 9-18 cm，叶宽 7-12 mm。小穗多偏于穗轴一侧，略带紫色，长 20-28 cm，种子千粒重 3.3-3.8 g。川西高原生育期达到 150-160 d。干草产量为 5000-8000 kg/hm²，种子产量为 1000-1600 kg/hm²。

主要用途

牧草和生态修复草兼用，主要用于青藏高原东部退化草原生态修复及人工草地建设。

栽培技术要点

在青藏高原地区为春播，气候稍暖地区可以早播或者夏播，在川西北高原最适宜播种期为 4 月中旬至 5 月中旬。撒播、条播均可，条播播种量 30-37.5 kg/hm²，行距 20-30 cm，播种深度 3-5 cm，撒播时播种量 37.5-45 kg/hm²。注意苗期的田间管理，适时中耕除草。抽穗期或开花期刈割利用，留茬高度在 5-8 cm。

适宜种植范围

适宜于青藏高原东南缘及内蒙古东部年降雨量 400 mm 以上地区种植。

14. ‘盐池’沙芦草

草种名称：沙芦草 学名：*Agropyron mongolicum* ‘Yanchi’
品种类别：野生驯化品种 编号：国 S-WDV-AM-014-2020
申报单位：宁夏大学
选 育 人：伏兵哲、兰剑、高雪芹、谢应忠、许兴、马红彬、彭文栋、杨发林

品种特性

禾本科冰草属多年生草本。根系发达，须根具沙套；茎秆直立，株高 78-95 cm；分蘖数 95 个，茎粗 1.68 mm。叶片长 10-12 cm，叶片宽 2-3 mm，叶片灰绿色；种子千粒重 2.43 g，发芽率 70%，在盐池地区生育期 120 d 左右，生长期 230 d 以上。一年可刈割 2 次，平均干草产量为 6900 kg/hm²，平均种子产量为 694.1 kg/hm²。抽穗期的盖度能够达到 97.7%。

主要用途

生态修复草和牧草兼用，主要用于退化草原补播改良，生态修复、边坡防护、水土保持和人工草地种植等。

栽培技术要点

精细整地和防除杂草，结合整地施底肥磷酸二胺 375-450 kg/hm²。人工草地在 4-5 月或 7-8 月播种，天然草原补播在 7 月初至 8 月中旬雨季来临时播种。人工草地：条播，行距 20-30 cm，播量 22.5 kg/hm²；种子田：条播，行距 30-40 cm，播种量 12-22.5 kg/hm²；天然草原补

播：条播或撒播，播量 22.5-30 kg/hm²。苗期及时铲除杂草，播种当年不施肥，春季返青或刈割后根据土壤肥力情况施入磷酸二胺 375-525 kg/hm²。

适宜种植范围

适宜我国西北、华北年降水量 200-400 mm 温带干旱半干旱地区种植。

15. ‘黔南’山麦冬

草种名称：山麦冬 学名：*Liriope spicata* ‘Qiannan’
品种类别：野生驯化品种 编号：国 S-WDV-LS-015-2020
申报单位：贵州省草业研究所、四川省草原科学研究院
选 育 人：范国华、谢彩云、左相兵、张文、张建波

品种特性

百合科山麦冬属多年生草本。具地下茎，花期株高 50-70 cm。叶基生，叶长 30-68 cm，叶宽 4-8 mm。千粒重 56.5 g，种子产量 900 kg/hm²。喜温暖湿润气候，肥沃土壤上生长良好。四季常绿，具多数花，花淡紫色，6 月初花葶出现，7 月初为盛花期，花序观赏期 56 d 以上。

主要用途

观赏草，主要用于风景林下，公路复层绿化带以及城市公共绿地和庭院绿化。

栽培技术要点

通常采用分株法栽培，多在春季种植，每个株丛分 3-5 株，每株 10-15 枚叶片，株行距 25 cm×25 cm，栽植深度 7-10 cm。在移栽和秋季分施氮肥 150-225 kg/hm²，群落形成前除杂 1-3 次。在南方雨季，注意黑斑病防治，一般发病初期用 1:100 波尔多液防治，每 10 d 喷一次，连续喷 3-4 次。

适宜种植范围

适宜亚热带中低海拔地区及相似气候区种植。

16. ‘雷司令’白三叶

草种名称：白三叶 学名：*Trifolium repens* ‘Riesling’
品种类别：引进品种 编号：国 S-IV-TR-016-2020
申报单位：云南农业大学
选 育 人：姜华、何承刚、吴晓祥、周凯、李鸿祥

品种特性

豆科车轴草属多年生草本。匍匐枝长而发达，草层高 40-60 cm。头型总状花序，含白色小花 30-80 朵，种子黄色心形，直径 1.0-1.2 mm，千粒重 0.5-0.6 g。喜温凉湿润气候，尚能耐荫，生育期 299 d。粗蛋白含量 21.6%，每年可刈割 4-6 次，干草产量可达 6000-8000 kg/hm²。

主要用途

牧草、生态修复草兼用，主要用于混播人工草地建设、生态修复以及景观绿地营造。

栽培技术要点

播前精细整地，初次种植应接种根瘤菌。南方秋播最佳，撒播或条播，行距 10-15 cm，播量 8-10 kg/hm²，宜浅播，混播播量 2.5-4.5 kg/hm²。注意排水防涝，苗期控制杂草。混播草地适合轮牧或刈割利用，应至少 2-3 周恢复时间，留茬 3-5 cm。

适宜种植范围

适宜南北方温和湿润气候区种植，南方适宜海拔 800 m 以上，降雨量 650-1500 mm 温和湿润地区种植。

17. ‘克朗德’白三叶

草种名称：白三叶

学名：*Trifolium repens* ‘Klondike’

品种类别：引进品种

编号：国 S-IV-TR-017-2020

申报单位：四川省草业技术研究推广中心、西南民族大学、凉山彝族自治州畜牧站、四川农业大学

选育人：姚明久、王同军、陈仕勇、聂刚、程明军、苟文龙

品种特性

豆科车轴草属多年生草本。匍匐枝长而发达，草层高 30-60 cm。头型总状花序，含白色小花 30-80 朵，种子千粒重 0.5-0.6 g，生育期 298 d 左右。粗蛋白含量 21.4%，年可刈割 4-5 次，干草产量 7400-8700 kg/hm²。

主要用途

牧草、生态修复草兼用，主要用于混播人工草地建设、生态修复以及景观绿地营造。

栽培技术要点

播前精细整地，初次种植应接种根瘤菌。南方秋播最佳，条播，播量 8-10 kg/hm²，行距 30 cm，播种深度 1cm，混播播量 2.5-4.5 kg/hm²。保证水肥需要，每刈割 2-3 次或放牧后施适量复合肥。混播草地适合轮牧或割草利用，利用后至少 2-3 周恢复时间，留茬 3-5 cm。

适宜种植范围

适宜在长江中上游地区海拔 600 m 以上，年降雨量 1000 mm 以上的温凉湿润地区或相似气候区种植。

18. ‘百诺达’多年生黑麦草

草种名称：多年生黑麦草

学名：*Lolium perenne* ‘Barnauta’

品种类别：引进品种

编号：国 S-IV-LP-018-2020

申报单位：四川农业大学、百绿（天津）国际草业有限公司

选育人：黄琳凯、张新全、周思龙、聂刚、杨志远

品种特性

多年生冷季型草本。须根系，株高 80-100 cm。叶片长 10-18 cm，穗长 15-25 cm，种子

长 4-7 mm，千粒重 1.9 g。利用时间长达 3-5 年，每年可刈割 4-5 次，年平均干草产量 10500 kg/hm²，第一次刈割粗蛋白含量 20.7%。

主要用途

用作牧草，主要用于混播人工草地建植，刈割或放牧利用。

栽培技术要点

适宜秋播(9-10 月)，地温稳定在 10-15℃为宜。一般条播，行距 30 cm，播种量为 15.0-22.5 kg/hm²，播种深度 1-2 cm。播后及时查苗补缺、防除杂草、施肥、排灌并防治病虫害。头茬一般在株高 45-50 cm 时进行刈割，留茬 5 cm。

适宜种植范围

适宜我国西南地区亚热带海拔 800-2500 m，降雨量 800-1500 mm 的温凉湿润山区种植。

National List of Grass Varieties

1. Huaiyang 4

Species: Alfalfa

Scientific name: *Medicago sativa* 'Huaiyang 4'

Variety category: Bred variety

Registration No.: Guo S-BV-MS-001-2020

Applicant: Yangzhou University

Breeders: Wei Zhenwu, Wu Zinian, Wang Yiming, Lv Linyou, Zhang Bing

Characteristics:

It is multi-leaf alfalfa with 5-7 small leaves for each compound leaves. The population and individual multi-leaf rate of this cultivar is more than 50% and 79%, respectively. The plant type is erect with a thick stem, 30-70 branches and the natural height is 100-130 cm. This variety can be harvest 4-7 times per year in the Jiang-huai area. The average hay yield is 11479 kg/hm² with 20.2% crude protein content.

Main use:

It can be used as forage and mowed.

Cultural techniques:

Before sowing, we must shallow tillage and inoculation with rhizobia. Drill sowing by 18.75 kg/hm² in autumn with a row spacing of 15-30 cm and a planting depth of 1-2 cm in the Jiang-huai area. It can be combined with soil preparation to apply basal fertilizer or topdressing in the later period. Generally, phosphorus and potassium fertilizers are mainly used, with less or no nitrogen fertilizer. Field management should pay attention to the control of weeds during the seedling period and pests such as budworms during the growing period. This variety harvested at the budding or first flowering stage and left a stubble with 5-6 cm.

Suitable areas for planting:

It is suitable for planting in the middle and lower of the Yangtze River.

2. Zhongtian 3

Species: *Medicago varia*

Scientific name: *Medicago varia* 'Zhongtian 3'

Variety category: Bred variety

Registration No.: Guo S-BV-MV-002-2020

Applicant: Lanzhou Institute of Husbandry and Pharmaceutical Science, Chinese Academy of Agricultural Sciences

Breeders: Yang Hongshan, Duan Huirong, Zhou Xuehui, Wang Chunmei, Zhu Xinqiang, Chang Genzhu, Lu Yuan, Zhang Qian, Cui Guangxin

Characteristics:

'Zhongtian 3' is a perennial herb from Leguminous. 'Zhongtian 3' is well developed of root system, which shows an upright or semi-upright plant type and the plant height of which is about 115 cm. The flower color of 'Zhongtian 3' is mainly cream, the rate of cream color accounts for 90%, rarely purple, lavender and light yellow. In the northwest arid and semi-arid areas, the

overwintering rate of 'Zhongtian 3' is more than 90%. The hay yield of this cultivar changes from 11947.6 kg/hm² to 15232.2 kg/hm², the crude protein content of which is 18.86%, and the seed yield of which changes from 310.6 kg/hm² to 713.8 kg/hm².

Main use:

It can be used as forage grass and ecological restoration grass, which not only uses for the replanting and of degraded grassland, abandoned land and barren land, and also uses for artificial grassland planting.

Cultural techniques:

'Zhongtian 3' can be planted with other forage cultivars from Gramineae together in degraded grassland and abandoned land. Before planting, artificial grassland should be prepared carefully to maintain soil moisture. Spring or autumn sowing are suitable for 'Zhongtian 3'. When the field is used for harvesting grasses, the appropriate sowing method is drill sowing or sowing directly, the drill row spacing is in the range of 15-25 cm, accompanied with the seeding rate of 18-75 kg/hm². When the field is used for harvesting seeds, the appropriate sowing method is drill sowing or hole sowing. The drill row spacing changes from 70-100 cm, while the seeding rate is from 4.5-15 kg/hm². The hole sowing spacing changes from 70-100 cm, the planting distance is 15-30 cm with 6-10 seeds, and the sowing depth is 1-2 cm. For harvesting grasses, 'Zhongtian 3' can be harvested in the initial flowering stage. While, for harvesting seeds, 'Zhongtian 3' can be harvested with 75% pods ripening stages.

Suitable areas for planting:

It is suitable for planting in the Loess Plateau, central and western Inner Mongolia, Shaanxi, Shanxi, Ningxia, Xinjiang and similar climate areas in the north regions.

3. Zhongke 5

Species: *Leymus chinensis*

Scientific name: *Leymus chinensis* 'Zhongke 5'

Variety category: Bred variety

Registration No.: Guo S-BV-LC-003-2020

Applicant: Institute of Botany, Chinese Academy of Sciences

Breeders: Liu Gongshe, Qi Dongmei, Chen Shuangyan, Liu Hui, Li Xiaoxia, Cheng Liqin, Dong Xiaobing, Gao Lijun, Wang Yan, Zhao Qiang, Hou Shenglin

Characteristics:

Gramineae perennial herb. It has a well-developed underground transversal rhizome, compact plant type, and an average plant height of 109 cm. The hay yield is 6245 kg/hm² to 8123 kg/hm², and the seed yield is 236 kg/hm². It is suitable for growing in soil with annual precipitation of 300-650 mm and salt content below 0.4%, and the maximum coverage in the year of sowing is 31%-55%.

Main use:

It is a both forage grass and ecological restoration grass, and mainly used for re-seeding and improvement of natural grassland in north of China, ecological restoration of degraded grassland, improvement of saline-alkali land, construction of artificial grassland, etc.

Cultural techniques:

The artificial grassland needs deep ploughing before planting, and 750 kg/hm² organic fertilizer is applied along with the land preparation. For spring sowing, the sowing amount is 60-90 kg/hm² while it can be appropriately increased in saline-alkali soil. It can be drilling with 7.5-30 kg/hm² and row spacing 15-20 cm with 1-3 cm sowing depth. Ecological restoration can be mixed with other grass seeds and mostly no-tillage supplementary sowing, or sowing. Before the jointing period, this variety can be topdressed with 300 kg/hm² NPK compound fertilizer and 225 kg/hm² urea topdressing after mowing. The greening period, jointing period, before overwintering and fertilization can be combined with irrigation.

Suitable areas for planting:

It is suitable for planting in Northeast, Northwest and North China and suitable areas on the Qinghai-Tibet Plateau.

4. Zhongke 7

Species: *Leymus chinensis*

Scientific name: *Leymus chinensis* 'Zhongke 7'

Variety category: Bred variety

Registration No.: Guo S-BV-LC-004-2020

Applicant: Institute of Botany, Chinese Academy of Sciences

Breeders: Qi Dongmei, Liu Gongshe, Liu Hui, Chen Shuangyan, Cheng Liqin, Li Xiaoxia, Dong Xiaobing, Hou Shenglin, Gao Lijun, Wang Yan, Zhao Qiang, Yao Rong

Characteristics:

Gramineae perennial herb. It has a well-developed underground transversal rhizome, which is mainly distributed 5-10 cm above the ground. The underground biomass is up to 9134 kg/hm², the hay yield is 5660 kg/hm² to 7188 kg/hm² and the seed yield is 279 kg/hm². It is suitable for growing in soil with annual precipitation of 300-650 mm and salt content below 0.4%, and the maximum coverage in the year of sowing is 33%-59%.

Main use:

It is a both forage grass and ecological restoration grass, and mainly used for re-seeding and improvement of natural grassland in north of China, ecological restoration of degraded grassland, improvement of saline-alkali land, construction of artificial grassland, etc.

Cultural techniques:

The artificial grassland needs deep plowing before planting, and 750 kg/hm² organic fertilizer is applied along with the land preparation. For spring sowing, the sowing amount is 60-90 kg/hm² while it can be appropriately increased in saline-alkali soil. It can be drilling with 7.5-30 kg/hm² and row spacing 15-20 cm with 1-3 cm sowing depth. Ecological restoration can be mixed with other grass seeds and mostly no-tillage supplementary sowing, or sowing. Before the jointing period, this variety can be topdressed with 300 kg/hm² NPK compound fertilizer and 225 kg/hm² urea topdressing after mowing. The greening period, jointing period, before overwintering and fertilization can be combined with irrigation.

Suitable areas for planting:

It is suitable for planting in Northeast, Northwest and North China and suitable areas on the Qinghai-Tibet Plateau.

5. Ganlv 1

Species: *Lotus corniculatus*

Scientific name: *Lotus corniculatus* ‘Ganlv 1’

Variety category: Bred variety

Registration No.: Guo S-BV-LCO-005-2020

Applicant: Gansu Chuanglv Grassland Technology Co., Ltd.

Breeders: Cao Zhizhong, Chai Hui, Yan Xiangzhong, Cui Yafei, Jiang Hua

Characteristics:

As a perennial herb of Leguminosae. The variety has a well developed fibrous root system and many branches. It has a few golden yellow flowers in the bright yellow flowers during the flowering stage. It does not require strict soil nutrients and can grow in the range of pH 5.0-8.2. The growth period is about 84-90 days, which matures about 10 days earlier than the original parent. It has twice seed yield per year in Hexi, Gansu and similar areas can be harvested. The average seed yield and hay yield is 597.7 kg/hm² and 9083 kg/hm², respectively. Furthermore, the crude protein content of this cultivar is 17.1%.

Main use:

Mainly used for ecological restoration, water and soil conservation, and soil improvement.

Cultural techniques:

The land is plowed deeply and leveled to make the soil finely broken. It can be sown from late March to early August and the sowing rate is 5-10 kg/hm². It uses drilled sowing, the row spacing is 15-30 cm with 1 cm seeding depth. We should keep the ground moist during the seedling stage and pay attention to weed control. Don't lack water during the flowering period, and pour enough winter water before overwintering. Its pod-setting period is about 30 days. Seeds can be harvested in time when most of the pods turn yellow and a few start to crack. In the blooming season, fresh grass can be harvested and mowed 2-3 times a year.

Suitable areas for planting:

It is suitable for planting in most areas of North and Northwest China.

6. Zhonglinyu 1

Species: Buffalograss

Scientific name: *Buchloe dactyloides* ‘Zhonglinyu 1’

Variety category: Bred variety

Registration No.: Guo S-BV-BD-006-2020

Applicant: Research Institute of Forestry, Chinese Academy of Forestry

Breeders: Qian Yongqiang, Sun Zhenyuan, Han Lei, Ju Guansheng, Liu Junxiang

Characteristics:

It is a perennial low growing warm-season short herb with the well-developed and branched stolon,

the stolon diameter is 0.12 cm, the average internode length is about 7.3 cm, the number of ramets formed on each node is 4-9 and. The leaves are dark green and hairy, with the length of 22.4-29.3 cm and the width of 2.6-3 mm. The coverage of grassland can reach 85% within 45-60 days after establishment, and the survival rate can reach 100% in North China.

Main use:

It is mainly used for ecological restoration of degraded grassland, and establishment of parks lawn, etc.

Cultural techniques:

Ecological restoration of degraded grassland: For seedling planting, hole and compaction planting before rainy season, row spacing of 1m×1m, with adequate irrigation, routine management after establishment. For no-tillage reseeding, it can be mixed with other grass seeds with buffalograss seed 7.5-15kg/hm². Lawn planting: Remove the weeds firstly, hole and compaction planting with plant-row spacing of 30 cm×30 cm. Keep the soil moist within the first week after planting, and then management normally.

Suitable areas for planting:

It is suitable for planting in low-maintenance and difficult sites in North China.

7. Lubin 1

Species: *Zoysia matrella*

Scientific name: *Zoysia matrella* ‘Lubin 1’

Variety category: Bred variety

Registration No.: Guo S-BV-ZM-007-2020

Applicant: Ludong University

Breeders: Fu Jinmin, Xu Xiao, Fan Shugao, Wang Guangyang, Yin Yanling

Characteristics:

‘Lubin 1’ is a rhizomatous perennial herb consisting of the stolon, short internodes and adventitious roots at nodes. For reproduction, the ‘Lubin 1’ variety is an outcrossing species that propagates vegetatively. Typically, the variety is dark-green with a leaf girth of 2.77 mm, 708/100 cm² dense with an annual greenness period of 242-259 days. After their cultivation in the coastal saline-alkali soil, the salt content of a 0-10 cm soil layer declined by 50%-60%, while the organic matter increased by 18%-47%.

Main use:

Mainly used for ecological restoration of seashore saline-alkali soil and lawns.

Cultural techniques:

Zoysia matrella commonly known as Manila grass variety ‘Lubin 1’ is a warm-season grass that is suitably cultivated from May to October, preferably in June to September. In the coastal saline-alkali land, the variety is vegetatively propagated and established via laying sods. The sod sections can be moved by creating a 30 cm×30 cm rectangle of manageable size with a thickness of approximately 1-2 cm. Irrigation of ‘Lubin 1’ should proceed immediately after establishment. Deep watering is strongly recommended during spring-greenness and before soil

freezing. A compound fertilizer (10-20-20) of 450 kg/hm² and urea of 105-120 kg/hm² are required before and after its establishment, respectively. For fertilization, late autumn is preferred for 'Lubin 1' grass.

Suitable areas for planting:

'Lubin 1' is recommended to be used for coastal areas south of latitude 39°.

8. Altay Gaubau

Species: *Poacynum pictum*

Scientific name: *Poacynum pictum* 'Altay Gaubau'

Variety category: Wild domesticated variety

Registration No.: Guo S-WDV-PP-008-2020

Applicant: Altay Gaubau Tea Co., Ltd., Lanzhou University

Breeders: Liu Qitang, Zhang Jiyu, Wang Li, He Wei, Wang Yanrong, Huang Jingfeng

Characteristics:

It is a perennial herb belonging to *Poacynum* genus, Apocynaceae family, with horizontal and vertical roots. The stem is red or reddish brown, and the plant height is from 100 to 200 cm. The inflorescence is top-growing and corymb-like, the inner surface of the flower is rose red, and the back is light pink. The beginning-flower stage is in the end of May, and the blooming period is in the middle and late June, which the flowering period is two months. It can grow well in saline-alkali soil land with annual rainfall of about 130 mm and pH 8.7. The rate of hemp production is 16.3%, which can be used to process and produce high-quality hemp textiles.

Main use:

Mainly used for ecological restoration, saline-alkali soil improvement, eco-tourism viewing.

Cultural techniques:

The seeds need to be soaked in cold water for more than 12 hours before sowing to promote germination. Seedlings are cultivated in a greenhouse in spring. The germinated seeds are mixed with 2-3-fold fine sand and then sown in a nutrient bowl, which use about 10 grains, and covered with 2-3 mm of fine soil. Remove the greenhouse film when the seedlings are 10cm height and transplant them after 2 weeks. Transplanting in May or June of spring or the middle of October in autumn, according to the plant row spacing of 1.5 m×3 m hole seedling with soil, which the hole diameter of 40 cm and depth of 30 cm. And then, irrigating, weeding, fertilizing (organic fertilizer for 3-5 kg/hole) and spraying Bordeaux mixture to control rust disease.

Suitable areas for planting:

It is suitable for planting in arid and semi-arid areas with an annual rainfall of 130-400 mm in northern China, desert and Gobi, and saline-alkali soil land.

9. Altay Gaubau

Species: *Apocynum venetum*

Scientific name: *Apocynum venetum* 'Altay Gaubau'

Variety category: Wild domesticated variety

Registration No.: Guo S-WDV-AV-009-2020

Applicant: Altay Gaubau Tea Co., Ltd., Lanzhou University

Breeders: Liu Qitang, Zhang Jiyu, Wang Li, Huang Jingfeng, Wang Yanrong

Characteristics:

The variety with horizontal and vertical roots, opposite leaves, 100-120cm plant height, is a perennial herb belonging to the Apocynaceae family. It has inflorescences of terminal monochaete and the flowers are purple-red. The beginning-flower stage is at the end of May and blooming stage at mid-to-late of June, which with two months' flowering period. It can grow well in saline-alkali soil with annual rainfall of about 130 mm and pH 8.7. The leaves of *Apocynum venetum* 'Altay Gaubau' are good material for tea production, which the flavonoid content is more than 2%.

Main use:

Mainly used for ecological restoration, improvement of saline-alkali soil land, eco-tourism. viewing

Cultural techniques:

The seeds need to be soaked in cold water for more than 12 hours before sowing to promote germination. Seedlings are cultivated in a greenhouse in spring. The germinated seeds are mixed with 2-3-fold fine sand and then sown in a nutrient bowl, which use about 10 grains, and covered with 2-3 mm of fine soil. Remove the greenhouse film when the seedlings are 10cm height and transplant them after 2 weeks. Transplanting in May or June of spring or the middle of October in autumn, according to the plant row spacing of 1.5m×3 m hole seedling with soil, which the hole diameter of 30 cm and depth of 40 cm. And then, irrigating, weeding, fertilizing (organic fertilizer for 3 to 5 kg/hole) and spraying Bordeaux mixture to control rust disease.

Suitable areas for planting:

It is suitable for planting in arid and semi-arid areas with rainfall of 130-400 mm in northern China, saline land, desert and Gobi.

10. Xiwuzhumuqin

Species: *Leymus chinensis*

Scientific name: *Leymus chinensis* 'Xiwuzhumuqin'

Variety category: Wild domesticated variety

Registration No.: Guo S- WDV-LC-010-2020

Applicant: Institute of Grassland Research, Chinese Academy of Agricultural Sciences

Breeders: Wu Zinian, Hou Xiangyang, Li Zhiyong, Chang Chun, Huang Fan

Characteristics:

As a perennial herb belonging to Poaceae, The variety possesses a well-developed underground transverse rhizome with internode length of 3 to 5 cm, which are concentrated in the 10 to 15 cm soil layer. The stems erect with the main stem thick of 0.2 cm, plant and canopy height from 90 cm to 115 cm and from 60 cm to 75 cm, respectively. It's germination rate of soil culture is over

85% with the average seed yield of 250.43 kg/hm², the hay yield of 8174 kg/hm² and the crude protein content in flowering period was 14.97%.

Main application:

Mainly used for reseeding improvement, ecological restoration and artificial grassland construction of degraded grassland.

Cultivation Techniques:

After deep tillage, harrowing and flattening foundation in autumn with soil depth over 20 cm, The variety can be sowed in spring, summer or autumn (optimal in rainy season of June or July but no later than late August) after weeding thoroughly and applicable irrigation and base fertilizer application. It should be drill seeding with row spacing of 40 cm to 50 cm, sowing rate of 10 kg/hm² to 20 kg/hm², sowing depth of 1.5 cm to 2 cm. Suppressing timely after sowing can facilitate the germination of seedlings. Conventional level of field management is suitable for cultivation of *Leymus chinensis* 'Xiwuzhumuqin'. Grazing is not suitable in sowing year.

Suitable area for planting:

It is suitable for planting in Inner Mongolia and its neighboring provinces.

11. Yajiang

Species: *Elymus sibiricus*

Scientific name: *Elymus sibiricus* 'Yajiang'

Variety category: Wild domesticated variety

Registration No.: Guo S-WDV-ES-011-2020

Applicants: Sichuan Agricultural University; Sichuan Academy of Grassland Sciences; Southwest Minzu University

Breeders: Ma Xiao, Bai Shiqie, Gou Wenlong, Yan Lijun, Chen Shiyong, Liu Lin, Zhao Junming, Lei Xiong, Zhang Jianbo, Liu Wei

Characteristics:

As a perennial herb of *Elymus* species of Gramineae, 'Yajiang' possesses the well - developed root system and strong tiller capability. The plant height and leaf width are ranging from 100 cm to 135 cm and from 7 mm to 15 mm, respectively. The thousand seed weight and growth period are ranging from 3.8 g to 4.2 g and 150-160 days, respectively. The over - wintering survival rate is about 97.4% in the western Sichuan Plateau. The average hay yield and seed yield are 8485.6 kg/hm² and 1346.4 kg/hm², respectively, and the crude protein content is 9.3% at heading stage.

Main use:

As a forage grass and ecological restoration grass, 'Yajiang' can be used for ecological restoration and artificial grassland construction of degraded grassland on the Qinghai-Tibet Plateau below 3,700 m above sea level.

Cultivation Techniques:

The land with moderate fertility and deep soil layer should be prepared with applying the base fertilizer of 150 kg/hm² to 225 kg/hm² compound fertilizer or 15000 kg/hm² to 20000 kg/hm²

ranching cattle and sheep manure. The variety of 'Yajiang' should be sowed from mid-April to mid-May with drill or broadcast sowing. The drill sowing rate is ranging from 22.5 kg/hm² to 30 kg/hm² with the row spacing of 30 cm, and the broadcast sowing rate is changing from 30-37.5 kg/hm² with the sowing depth of 2-3 cm. In tillering and elongation stage, chemical fertilizer of 45-75 kg/hm² can be applied. At heading stage or flowering stage, it can be cut and utilized with stubble of 5 cm.

Suitable area for planting:

It is suitable for planting in areas below the altitude of 3700 m and with an average rainfall is more than 500 mm every year on the Qinghai-Tibet Plateau.

12. Maiwa

Species: *Elymus sibiricus*

Scientific name: *Elymus sibiricus* 'Maiwa'

Variety category: Wild domesticated variety

Registration No.: Guo S-WDV-ES-012-2020

Applicant: Sichuan Academy of Grassland Sciences

Breeders: Bai Shiqie, Zhang Changbing, Li Daxu, You Minghong, Yan Jiajun, Yan Lijun, Ji Xiaofei, Chen Lili, Chang Dan

Characteristics:

As a perennial herb of *Elymus* species of Gramineae, 'Maiwa' possesses the fibrous root system and sparse-erect stem. The plant height is ranging from 100 cm to 130 cm with the leaf length of 9.8 cm and the width of 9.6 mm. The spike is purplish red and the thousand seed weight is 3.6 g to 3.9 g. In the western Sichuan Plateau, the growth period is 133 days and the growth day is 157 days. The average seed yield and average hay yield of 'Maiwa' are 1802.9 kg/hm² and 5146.57 kg/hm², respectively, and the crude protein content is 9.6% at heading stage.

Main use:

As a forage grass and ecological restoration grass, it can be used for ecological restoration and artificial grassland construction of degraded grassland in the eastern of Qinghai-Tibet Plateau.

Cultivation Techniques:

The variety should be sown from May to mid-June in the eastern Qinghai-Tibet Plateau. The seed production should be in drill sowing (row spacing is 40 cm) with the sowing rate of 15.0 kg/hm² to 22.5 kg/hm² and the forage production can be in drill sowing (row spacing is 30-40 cm) or broadcast sowing with the sowing rate of 27.0 kg/hm² to 37.5 kg/hm² and the sowing depth of 1-2 cm. Additional fertilizer of 75 kg/hm² urea and 45 kg/hm² of compound fertilizer should be applied at tillering stage. The variety was generally cut during flowering to filling stage with stubble of 5-6 cm and the seeds were harvested when 80% of the seeds were in ripening period. The stubble should be cut timely after the seed harvest.

Suitable area for planting:

It is suitable for planting in the cold and wet areas of the east and north of The Qinghai-Tibet Plateau and the most suitable area with the rainfall over 600 mm.

13. Kangnan

Species: *Elymus nutans*

Scientific name: *Elymus nutans* ‘Kangnan’

Variety category: Wild domesticated variety

Registration No.: Guo S-WDV-EN-013-2020

Applicants: Southwest Minzu University; Sichuan Agricultural University

Breeders: Chen Shiyong, Zhang Xinquan, Ma Xiao, Feng Guangyan, Chen Youjun

Characteristics:

As a perennial herb of *Elymus* species of Gramineae, ‘Kangnan’ possesses the well developed root system and the plant height is ranging from 125 cm to 148 cm. The leaf length and width are from 9 cm to 18 cm and 7 mm to 12 mm, respectively. Slightly purple spikelets are mostly on one side of spike-stalk with 20 cm to 28 cm in length, and the thousand seed weight is changing from 3.3 g to 3.8 g. The reproductive period reached 150 d to 160 d in western Sichuan Plateau. The hay yield and seed yield were 5000-8000 kg/hm² and 1000-1600 kg/hm², respectively.

Main use:

As a forage grass and ecological restoration grass, It can be used for ecological restoration and artificial grassland construction of degraded grassland in the east of Qinghai-Tibet Plateau.

Cultivation Techniques:

The variety can be sown in spring on the Qinghai-Tibet Plateau region. In the warmer areas, however, the sowing time can be earlier or can be sown in summer. The most suitable sowing time is from mid-April to mid-May in the northwest of Sichuan Plateau. The drill seeding or broadcast sowing both can be carried out in the production of ‘Kangnan’. When adopting the drill seeding, the sowing rate is 30 kg/hm² to 37.5 kg/hm² with the row spacing of 20 cm to 30 cm and the sowing depth of 3 cm to 5 cm. When adopting the broadcast sowing, however, the sowing rate is 37.5 kg/hm² to 45 kg/hm². Pay attention to the field management in seedling stage, timely harrowing and weeding. Cutting utilization should be applied at heading stage or flowering stage with the stubble height of 5 - 8 cm.

Suitable area for planting:

It is suitable for planting in the southeast edge of Qinghai-Tibet Plateau and the eastern Part of Inner Mongolia with annual rainfall of over 400 mm.

14. Yanchi

Species: *Agropyron mongolicum*

Scientific name: *Agropyron mongolicum* ‘Yanchi’

Variety category: Wild domesticated variety

Registration No.: Guo S-WDV-AM-014-2020

Applicant: Ningxia University

Breeders: Fu Bingzhe, Lan Jian, Gao Xueqin, Xie Yingzhong, Xu Xing, Ma Hongbin, Peng Wendong, Yang Falin

Characteristics:

As a perennial herb of *Agropyron* genus, Gramineae, ‘Yanchi’ possesses the well-developed root system, whose fibrous root with rhizosheath. The stem was erect and the plant height was ranging from 78 cm to 95 cm. The tiller number of ‘Yanchi’ is 95 and the stem diameter is 1.68 mm. With the greyish-green leaves, the leaf length is 10 cm to 12 cm and the leaf width is 2 mm to 3 mm. The thousand seed weight is 2.43 g with the germination rate is 70%. The growth period was about 120 days and the growth period was more than 230 days in Yanchi area. It can be cut twice every year with the average hay yield and seed yield are 6900 kg/hm² and the 694.1kg/hm², respectively. The coverage of heading stage can reach up to 97.7%.

Main use:

It can be used for ecological restoration grass and forage grass, mainly used for reseeding and improvement of degraded grassland, ecological restoration, slope protection, water and soil conservation, artificial grassland planting and so on.

Cultivation Techniques:

Fine land preparation and weed control combined with the application of the base fertilizer phosphate diamine of 375 kg/hm² to 450 kg/hm² should be applied before the sowing of the ‘Yanchi’. Artificial grassland is sown in April-May or July-August, while natural grassland is planted in early July-mid-August when the rainy season comes. Drill sowing can be applied for artificial grassland production with row spacing of 20 cm to 30 cm and seeding rate of 22.5 kg /hm². Drill sowing can also be applied for seed fields with row spacing of 30 cm to 40 cm and sowing rate of 12 kg/hm² to 22.5 kg/hm². When reseeded in natural grassland, drill seeding or broadcast sowing are both suitable with the sowing rate of 22.5 kg/hm² to 30 kg/hm². Weeding should be carried out in time at the seedling stage. Fertilization is not required in the sowing year, and phosphate diamine of 375 kg/hm² to 525 kg/hm² was applied in spring after regreening or cutting according to soil fertility.

Suitable area for planting:

It is suitable for planting in arid and semi-arid temperate regions with an annual precipitation of 200 mm to 400 mm in Northwest China and North China.

15. Qiannan

Species: *Liriope spicata*

Scientific name: *Liriope spicata* ‘Qiannan’

Variety category: Wild domesticated variety

Registration No.: Guo S-WDV-LS-015-2020

Applicants: Guizhou Institute of prataculture; Sichuan Academy of Grassland Sciences

Breeders: Fan Guohua , Xie Caiyun, Zuo Xiangbing, Zhang Wen, Zhang Jianbo

Characteristics:

The ‘Qiannan’ possesses the underground stem and the plant height is ranging from 50 cm to 70 cm in flowering stage. The radical leaves are 30 cm to 68 cm in length and 4 mm to 8 mm in width. The thousand seed weight is 56.5 g and the seed yield is 900 kg/hm². The variety prefers warm and humid climate, and growth well on fertile soil. The leaves of the ‘Qiannan’ appears with green all the time. Possessing many lavender flowers, the scape of the ‘Qiannan’ appears in early

June and full-bloom stage was in early July. The ornamental time of the inflorescence was more than 56 days.

Main Use:

As an ornamental grass, It can be mainly used in scenic forests, layered green belt of highway and in urban public area greening and garden greening.

Cultivation Techniques:

Tilling is usually adopted for cultivation of the ‘Qiannan’, and are always planted in spring. Each plant is divided into 3 to 5 individuals with 10 to 15 leaves per individual. The row spacing is 25 cm×25 cm and planting depth is 7 cm to 10 cm. In the transplanting time or in autumn, nitrogen fertilizer of 150 kg/hm² to 225 kg/hm² should be applied, and weeding should be carried out once to thrice before the formation of the community. In the rainy season of southern areas, pay attention to the prevention of black spot disease. Generally, at the initial stage of this disease, 1:100 Bordeaux mixture could be used for prevention and treatment with spraying once every 10 days and 3-4 times continuously.

Suitable area for planting:

It is suitable for planting in middle and low altitude areas of subtropical zone and similar climate areas.

16. Riesling

Species: White clover

Scientific name: *Trifolium repens* ‘Riesling’

Variety category: Introduced variety

Registration No.: Guo S-IV-TR-016-2020

Applicant: Yunnan Agricultural University

Breeders: Jiang Hua, He Chenggang, Wu Xiaoxiang, Zhou Kai, Li Hongxiang

Characteristics:

White clover is a perennial plant belonging to *Trifolium* genus, Legume family, which with long and flourishing stolon and its canopy height is ranging from 30 cm to 60 cm. The capitate raceme has about 30-80 white florets, and the weight of one thousand seeds is ranging from 0.5g to 0.6 g. The growth period is about 298 days. The content of crude protein is 21.4 %, and it could be cut 4-5 times a year, and the dry yield is about 7400-8700 kg/hm².

Main use:

Mainly used for both of forage, artificial grassland construction and ecological restoration.

Cultural techniques:

The ground should be prepared carefully before sowing and the seed should be inoculated with rhizobia for initial planting. The best planting time in south China is autumn with seeding rate of 8-10 kg/hm² and drilling, then the row spacing and depth of seeding is 15 cm and 1 cm, respectively. The seeding rate of mixed sowing is 2.5-4.5 kg/hm². It should ensure the water and fertilizer in daily management, and applying appropriate amount of compound fertilizer after cut

2-3 times or grazing. The Mixture grassland of white clover is suitable for grazing or mowing, while stubble should be 3-5 cm after mowing. The recovery time is about at least 2-3 weeks.

Suitable areas for planting:

It is suitable for planting in the area both has more than altitude of 600 m and annual rainfall is over 1000 mm with warm, cool and humid areas such as upper-middle reaches of Yangtze River or similar climatic zone.

17. Klondike

Species: White clover

Scientific name: *Trifolium repens* 'Klondike'

Variety category: Introduced variety

Registration No.: Guo S-IV-TR-017-2020

Applicant: Sichuan Pratacultural Technology Research and Extension Center, Southwest Minzu University, Liangshan Yi Autonomous Prefecture Animal husbandry Station, Sichuan Agricultural University

Breeders: Yao Mingjiu, Wang Tongjun, Chen Shiyong, Nie Gang, Cheng Mingjun, Gou Wenlong

Characteristics:

Perennial herb in *Trifolium*, Leguminosae. Stolons are long and well developed with grass heights of 30-60 cm. Capitata raceme, containing 30-80 florets, 1000-seed weight 0.5-0.6 g, growth period about 298 days. The crude protein content is 21.4%, and the hay yield is 7400-8700 kg/hm², Klondike can be harvested 4-5 times a year.

Main use:

It can be used as both forage grass and ecological restoration grass. It is mainly used for mixed-planting, artificial grassland construction, ecological restoration and landscape green space construction.

Cultural techniques:

Fine soil preparation before sowing, the first planting should be inoculated with rhizobia. Suitable for autumn sowing in southern China, with a sowing quantity of 8-10 kg/hm², a row spacing of 30 cm, a sowing depth of 1 cm, and a mixed-sowing quantity of 2.5-4.5 kg/hm². To meet the need of water and fertility, apply appropriate compound fertilizer after 2-3 cuttings or grazings. The mixed grassland is suitable for rotation grazing or mowing. The recovery time is at least 2-3 weeks after utilization, and suitable stubble height is 3-5 cm.

Suitable area for planting:

It is suitable for planting in the warm, cool and humid areas or similar climatic areas, such as upper and middle reaches of the Yangtze River where the altitude is above 600 m and the annual rainfall is above 1000 mm.

18. Barnauta

Species: Perennial ryegrass

Scientific name: *Lolium perenne* ‘Barnauta’

Variety category: Introduced variety

Registration No.: Guo S-IV-LP-018-2020

Applicant: Sichuan Agricultural University, Bailv (Tianjin) International Grass Industry Co., Ltd.

Breeders: Huang Linkai , Zhang Xinquan , Zhou Silong , Nie Gang, Yang Zhiyuan .

Characteristics:

Perennial cold-season herb, fibrous root system, 80-100 cm in height. The leaf length is 10-18 cm, the panicle length is 15-25 cm, the seed length is 4-7 mm, and the 1000-seed weight is 1.9 g. The utilization time is as long as 3-5 years, and the hay can be cut 4-5 times per year. The average annual hay yield is 10500 kg/hm², and the crude protein content of the first cut is 20.7%.

Main use:

It can be used as forage, mainly used for mixed-sowing, artificial grassland construction, mowing or grazing.

Cultural techniques:

Suitable for autumn sowing (September - October), the ground temperature should be stable at 10-15°C. Generally used for drill sowing, row spacing is 30 cm, sowing quantity is 15-22.5 kg/hm², sowing depth is 1-2 cm. After sowing, check the vacant seedlings, did weed control, fertilization, drainage and irrigation, and control diseases and insect pests. The first stubble was generally cut at plant height of 45-50 cm, leaving stubble of 5 cm.

Suitable area for planting:

It is suitable for planting in warm, cool and humid mountainous areas with an altitude of 800-2500 m and a rainfall of 800-1500 mm in the subtropical region of Southwest China.