

禾本科多年生草本。株高 104-120 cm，地下横走根茎发达，主要分布于地表 5-20 cm。平均生育期 90 天，平均生长天数 219 天。早期生长速度快，修复效率平均为 366 天，较对照‘中科 1 号’羊草提早 10 天；播种当年最大盖度较对照平均提高 11%。第 2 至 4 年平均鲜草产量 22396 kg/hm²，平均干草产量 8995 kg/hm²，平均种子产量 295 kg/hm²，平均地下生物量 9252 kg/hm²。在内蒙古呼伦贝尔市越冬率可达 97%。

主要用途

生态修复与饲草兼用。

栽培技术要点

结合整地施 750 kg/hm² 有机肥作底肥，翻耕 25 cm，旋耕 15 cm，镇压两遍。条播，行距 10-20 cm，播种深度 1-2 cm，播种量 30-45 kg/hm²。缺水地块播种后需及时灌水，种子萌发前保持土壤相对含水量 60%-80%。返青期施氮磷钾复合肥 200-300 kg/hm²、尿素 100-120 kg/hm²，施肥后立刻灌返青水，冬季霜降前灌冻水。播种当年杂草较多时可以刈割清除，留茬高度 5 cm，播种当年严禁放牧。

适宜推广区域

适宜在我国北方年降雨量 280 mm 以上地区种植，海拔 3800 m 以下地区可产种子，海拔 4700 m 以下地区用于生态修复。

3. ‘中草 36 号’羊草

草种名称：羊草

学名：*Leymus chinensis* ‘Zhongcao 36’

品种类别：育成品种

编号：国 S-BV-LC-003-2022

申报单位：中国农业科学院草原研究所、张掖市草原工作站

选育人：武自念、李志勇、甘辉林、刘公社、李元恒、夏红岩、田春育、刘倩、常春

品种特性

禾本科多年生草本。株高 100-126 cm，叶层高 76-96 cm。须根系，具根茎，多分布于地下 10 cm。种子发芽率 80% 以上，种子播后 7 天左右出苗，15-20 天形成永久根，40 天分蘖，生育期 121-126 天。pH 5.8-9.0 可正常生长，最适 pH 6.2-8.4。在内蒙古呼和浩特地区越冬率 98%，第 2 至 4 年平均鲜草产量 24567 kg/hm²，干草产量 7935 kg/hm²，种子产量 279 kg/hm²，比对照‘吉生 1 号’羊草分别增加 9.30%、9.11%、38.97%。开花期粗蛋白含量 11.98%。

主要用途

生态修复与饲草兼用。

栽培技术要点

春季到秋季皆可播种，最晚可在霜降前 30 天。条播、撒播均可，条播行距 25-50 cm，播量 10-20 kg/hm²，播深 1.0-1.5 cm。返青期、孕穗期或越冬前灌水，配以追肥。有条件的地区刈割后可灌水和施肥，施尿素 150-225 kg/hm²。刈割留茬高度 4-6 cm，部分地区可刈割 2 次，刈割后应保证有 30-40 天的再生期。种子采收宜在穗头变黄、籽粒变硬而未脱落，80% 以上种子成熟时进行。

主要用途

主要用于草地、边坡、山脚林缘、公园绿地等低养护立地生态修复和绿地建植。

栽培技术要点

建植时，机械清除杂草，不需深翻耕，按 30 cm 行距开沟，采用穴盘苗或裸根苗，按 30 cm 株距沟植，随时覆土踩压，保证根系与土壤密实接触。种植后统一镇压、整平，喷施苗前除草剂，一周内及时充分浇水，保证土壤湿度，植株形成新根后即可正常管理。应用于退化草原生态修复时，可选择在沙壤土、壤土、黏性土等不同土壤类型立地，按不大于 1 m × 1 m 的株行距雨季前穴植，随种随压实。非雨季建植，需要带水作业，保证种植穴内充分给水；建植成活后无需特殊管理。

适宜推广区域

适宜于华北地区种植。

6. ‘川西’ 藨草

草种名称：藨草

学名：*Phalaris arundinacea* ‘Chuanxi’

品种类别：野生驯化品种

编号：国 S-WDV-PA-006-2022

申报单位：四川省草原科学研究院、四川农业大学、贵州省草业研究所、四川省草原工作站

选 育 人：张建波、闫利军、马 啸、龙忠富、白史且、李达旭、季晓菲、雷 雄、游明鸿
鄢家俊、张 健、常 丹、李英主、陈莉敏

品种特性

禾本科多年生草本。株高 110-160 cm，茎秆常单生或少数丛生，具 6-8 节。根系发达，具根茎，入土深达 1 m 以上。修复效率为 318 天，水淹胁迫 20 天成活率为 100%。平均干草产量 17168 kg/hm²，粗蛋白含量在初花期为 11.8%，比对照 ‘川草引 3 号’ 藨草分别提高 11.90%、2%。在川西高原-30.0℃可安全越冬，对土壤要求不严格。

主要用途

主要用于退化湿地、退化草地生态修复，也可用于高产人工草地建植。

栽培技术要点

栽种前 20 天左右清除大田杂草，耕耙（深度 20-30 cm），精细平整。施 4500 kg/hm² 的有机肥作底肥。无性移栽需提前一周对种苗进行清理，去除杂草和死苗，将种苗进行刈割处理，留茬 15-30 cm，挖苗分蘖，确保每蘖含 2-3 个分蘖；5 月上旬至 6 月中旬移栽，建植密度 25500-30000 株/hm²，拔节期和分蘖至抽穗分别施 750 kg/hm² 的氮肥。种子建植需在播种前对种子精选，晒种 2-3 天，5 月上旬至 6 月中旬播种，播种量 22.5-30 kg/hm²，播种行距 30-50 cm，拔节期和分蘖至抽穗分别施 750 kg/hm² 的氮肥。

适宜推广区域

适宜川西高原及西南地区海拔 2500-4000 m，降雨量 600 mm 以上区域种植。

National List of Grass Varieties in 2022

1. Qingmu 2

Species: Siberian wildrye

Scientific name: *Elymus sibiricus* 'Qingmu 2'

Variety category: Bred variety

Registration No.: Guo S-BV-ES-001-2022

Applicant: Qinghai Academy of Animal Husbandry and Veterinary Sciences

Breeders: Liu Wenhui, Liang Guoling, Jia Zhifeng, Zhang Yongchao, Li Wen

Characteristics:

'Qingmu 2' is a perennial herb of *Elymus* species of Gramineae, with the plant height of 40-100 cm, the leaves and inflorescences accounting for 44.8% of the whole plant. The seedlings grow slowly in the year of sowing and form turf since the second year. A trampling test showed that plants restored growth 5 days after treading; and the plant mortality rate was 5.2%; there was no significant difference in the growths between that of before and after treading. Under conditions of none irrigation, the average plant height is 51 cm from the second to fourth years, the hay yield 8781-10285 kg/hm², the average seed yield 280.5 kg/hm², the crude protein content 13.8%. The average hay yield of regenerated grass is 3897.7 kg/hm², and the average total hay yield of two years 8232.8 kg/hm², which are 34.17% and 10.56% higher than that of the control, Siberian wildrye Tongde, respectively.

Main use:

It is suitable for revegetating grazing land and grasslands for ecological protection and environment improvement.

Cultural techniques:

In summer or autumn, land is ploughed 20-30 cm depth together with fertilization when possible. Ten percent glyphosate is suggested to deweed the land. After fallowing for half a year, the land is ploughed, harrowed and leveled in next spring. In May to June, the land is drill-seeded with row spacing of 30-40 cm; and seeding rate 15-22.5 kg/hm²; seeding depth of 2-3 cm. Weeding and irrigation in current year of seeding is strongly recommended, especially during tillering and withering. Hay is harvested at inflorescences with remaining height 5-7 cm. Seeds are harvested when 50-60% of them are ripe due to easily shedding of ripe seeds.

Suitable areas for planting:

It is suitable for seed production in areas below 3,200 m above sea level in the Qinghai Tibet Plateau, and for natural grassland improvement, ecological environment management and establishment of grazing grassland in areas below 4,000 m above sea level.

2. Zhongke 10

Species: *Leymus chinensis*

Scientific name: *Leymus chinensis* ‘Zhongke 10’

Variety category: Bred variety

Registration No.: Guo S-BV-LC-002-2022

Applicant: Institute of Botany, the Chinese Academy of Sciences

Breeders: Liu Gongshe, Qi Dongmei, Dong Xiaobing, Liu Hui, Cheng Liqin, Li Xiaoxia, Chen Shuangyan, Wu Zinian

Characteristics:

‘Zhongke 10’ is a perennial grass of Gramineae, with the plant height of 104-120 cm, and the developed rhizome that mainly distribute on the 5-20 cm underground . The average developmental period is 90 days, and the total period is 219 days. The early growth rate is fast, and the average repair efficiency is 366 days, 10 days earlier than the control ‘Zhongke 10’. The maximum coverage in the year of sowing increased by 11% on average compared with the control. In the second to fourth years, the average fresh yield is 22396 kg/hm², the average hay yield is 8995 kg/hm², the average seed yield is 295 kg/hm², and the average underground biomass is 9,252 kg/hm². The overwintering rate in Hulunbeier, Inner Mongolia can reach 97%.

Main use:

It can be used for ecological restoration as well as forage grass.

Cultural techniques:

Combined with land preparation, 750 kg/hm² organic fertilizer could be applied as base fertilizer, then turn 25 cm, plow 15 cm with rotary tillage, and suppress twice. The row spacing of the drill is 10-20 cm, sowing depth is 1-2 cm, and sowing amount is 30-45 kg/hm². Irrigation shall be carried out in time after sowing in the land lacking water, and the relative soil water content shall be kept at 60% - 80% before seed germination. During the re-greening stage period, we should apply 200-300 kg/hm² of nitrogen, phosphorus and potassium compound fertilizer and 100-120 kg/hm² of urea, immediately irrigate the re-greening water after fertilization, and irrigate before overwintering. When there are many weeds in the year of sowing, they can be cut and removed with the stubble height of 5 cm. Grazing is strictly prohibited in the year of sowing.

Suitable areas for planting:

It is suitable for planting in areas with an annual rainfall of more than 280 mm in the north of China. Seeds can be produced in areas with an altitude of less than 3,800 m and used for ecological restoration in areas with an altitude of less than 4,700 m.

3. Zhongcao 36

Species: *Leymus chinensis*

Scientific name: *Leymus chinensis* ‘Zhongcao 36’

Variety category: Bred variety

Registration No.: Guo S-BV-LC-003-2022

Applicant: Institute of Grassland Research of CAAS, Zhangye Grassland Workstation

Breeders: Wu Zinian, Li Zhiyong, Gan Huilin, Liu Gongshe, Li Yuanheng, Xia Hongyan, Tian Chunyu, Liu Qian, Chang Chun

Characteristics:

'Zhongcao 36' is a perennial grass of Gramineae with the plant height of 100-126 cm, and the leaf layer height of 76-96 cm. 'Zhongcao 36' possesses the fiber root system with rhizome, which is mostly distributed 10 cm underground. The seed germination rate is more than 80%. About 7 days after sowing, the seeds emerge and form permanent roots after 15-20 days. 'Zhongcao 36' starts tillering 40 days after sowing, and the growth period is 121-126 days. It can grow normally at pH of 5.8 to 9.0, and the optimum pH is 6.2 to 8.4. The overwintering rate in Hohhot, Inner Mongolia is 98%. The average fresh yield is 24567 kg/hm², hay yield is 7935 kg/hm², and seed yield is 279 kg/hm² in the second to fourth years, which are 9.30%, 9.11%, and 38.97% higher than the control 'Jisheng 1'. Crude protein content at flowering stage is 11.98%.

Main use:

It can be used for ecological restoration and used as forage grass.

Cultural techniques:

'Zhongcao 36' can be sown from spring to autumn, at the latest 30 days before frost. Both drilling and scattering can be used. The line spacing of the drilling is 25-50 cm, the sowing amount is 10-20 kg/hm², and the sowing depth is 1.0-1.5 cm. Irrigation and fertilization shall be conducted at the green-returning stage, booting stage or before overwintering. Irrigation and fertilization can also be carried out after cutting in areas where conditions permit, and 150-225 kg/hm² of urea can be applied. The cutting stubble height is 4-6 cm. In some areas, it can be cut twice. After cutting, a regeneration period of 30-40 days should be guaranteed. The seeds should be harvested when the top of the spikes turn yellow, the seeds become hard without shedding, and more than 80% of the seeds are mature.

Suitable areas for planting:

Middle and eastern Inner Mongolia and other northern regions with annual rainfall of more than 350 mm.

4. Zhongye 1

Species: *Buchole dactyloides*

Scientific name: *Buchole dactyloides* 'Zhongye 1'

Variety category: Bred variety

Registration No.: Guo S-BV-BD-004-2022

Applicant: China Agricultural University

Breeders: Sun Yan, Wang Kehua, Li Yue, Hu Qiannan, Wang Xianguo

Characteristics:

'Zhongye 1' buffalograss is a perennial grass species of Poaceae with a plant height of 5-22 cm. It has many long stolons, and the average daily growth rate of these stolons is 0.95 cm in sandy soil without fertilization. The buffalograss population is dominated by female plants. Its expansion speed is over 15% higher than that of the control buffalograss 'Zhongping 1'. It takes 57 days to reach 75% coverage in Zhuozhou, Hebei, which is 28 days shorter than the control does. The

theoretical seed yield of 'Zhongye 1' could reach 1780-2310 kg/hm² under the conditions of proper ratio of male and female plants and effective management. 'Zhongye 1' can grow in clay, sandy or loamy soil, and can tolerate light or even medium salinity.

Main use:

Low maintenance areas greening such as common greening and slope greening, ecological restoration, renovation and restoration of grazing grassland.

Cultural techniques:

Either seed or vegetative propagation is acceptable for 'Zhongye 1'. Seeding can be either in line or broadcast. It should be sowing in drills no more than 1.5 cm deep and 15-30 cm apart at late spring or early summer. The seeding rate is 10-15 g/m². The vegetative propagation usually uses the method of planting ramets or burying and pressing stolons. The spacing is 15-30 cm, and the maximum spacing can be as wide as 60 cm. Most importantly, watering should be done immediately after planting. The buffalograss used for ecological restoration may not be mowed in the first year, or it may be mowed once after the seeds are mature, at a height of 5-7 cm. The weeds can be controlled by spraying pre-emergent herbicides such as quinclorac, cyanazine, imazethapyr and mesotrione before planting. After being mature, post emergent herbicides can be used, and the herbicides such as sulfentrazone and proflaminate can be sprayed before spring green-up.

Suitable areas for planting:

'Zhongye 1' is suitable for planting in semi-arid and semi humid areas with an average annual rainfall of 250-630 mm in the north of China.

5. Zhonglinyu 5

Species: *Buchole dactyloides*

Scientific name: *Buchole dactyloides* 'Zhonglinyu 5'

Variety category: Bred variety

Registration No.: Guo S-BV-BD-005-2022

Applicant: Research Institute of Ecological Protection and Restoration, Chinese Academy of Forestry

Breeders: Qian Yongqiang, Sun Zhenyuan, Zhou Bokun, Chen Yufeng

Characteristics:

'Zhonglinyu 5' is a perennial herb of Poaceae with 27.6±2.6 cm plant height. The average length of its blade is 19.7 ± 3.3 cm, and the average width of its blade is 2.4-3.3 mm. The stolon is developed and has many branches. The internode length is 4-7 cm, and the plant length can reach 0.9 m in 5 weeks. In Beijing, the distance between plants and rows is 30 cm × 30 cm acupoint planting. It takes 70 days reaching 85% coverage, 15 days shorter than the control 'Texoka'. Its seed setting position is on the upper part of the plant, 4-6 cm higher than that of the control 'Zhonglinyu No. 2', which is easy to harvest by machinery. The seed yield of 'Zhonglinyu 5' in Beijing reached 600 kg/hm², and the overwintering rate in Sunid Right Banner, Xilingol League, Inner Mongolia was 100%.

Main use:

It is mainly used for ecological restoration and greenbelt establishing of low conservation sites such as grassland, slope of riverway and road, and park.

Cultural techniques:

During greenbelt establishing, weeds must be removed and the seedbed does not need deep ploughing before planting. Plug seedlings or bare root seedlings is plugged at a plant spacing of 30 cm×30 cm, then soil must be compacted to ensure a dense contact between roots and soil. Pre-seedling herbicides should be sprayed after planting. Keep soil moisture at the first week, and then normally management after growing new roots. For ecological restoration of degraded grassland, the seedlings can be plugged in non-sandy soil, colloidal mud or clay soil with a row spacing of 1 m × 1 m before rain, and then compacting the soil. If planting in non-rainy seasons, it's necessary to ensure sufficient water in planting hole before new roots growing up.

Suitable areas for planting:

Suitable for planting in North China.

6. Chuanxi

Species: *Phalaris arundinacea*

Scientific name: *Phalaris arundinacea* ‘Chuanxi’

Variety category: Wild domesticated variety

Registration No.: Guo S-WDV-PA-006-2022

Applicant: Sichuan Academy of Grassland Sciences, Sichuan Agricultural University, Guizhou Prataculture Institute, Sichuan Grassland Workstation

Breeders: Zhang Jianbo, Yan Lijun, Ma Xiao, Long Zhongfu, Bai Shiqie, Li Daxu, Ji Xiaofei, Lei Xiong, You Minghong, Yan Jiajun, Zhang Jian, Chang Dan, Li Yingzhu, Chen Limin

Characteristics:

‘Chuanxi’ is a perennial herb of Poaceae with 110-160 cm plant height. Its stems are often solitary or few clustered, with 6-8 nodes. The root system of ‘Chuanxi’ is developed, with rhizome, and the depth of soil penetration is more than 1 m. The repair efficiency was 318 days, and the survival rate was 100% after 20 days of flooding stress. Its average hay yield is 17168 kg/hm², and the crude protein content is 11.8% at the initial flowering stage, which is 11.90% and 2% higher than the control ‘Chuancaoyin 3’. It can safely overwinter at - 30.0°C in the western Sichuan Plateau, and is not strict with soil requirements.

Main use:

‘Chuanxi’ is mainly used for ecological restoration of degraded wetlands and grasslands, and also for planting high-yield artificial grasslands.

Cultural techniques:

Weeds in the field shall be removed about 20 days before planting, and the soil shall be harrowed (20-30 cm deep), and the soil shall be finely leveled. Base fertilizer should be applied with 4500 kg/hm² organic fertilizer. For asexual transplanting, the seedlings shall be cleaned up one week in

advance: weeds and dead seedlings shall be removed, and the seedlings shall be mowed with 15-30 cm stubble. The seedlings shall be dug into different stumps to ensure that each stump contains 2-3 tillers. Transplant could be done from the first ten days of May to the middle of June, with a planting density of 25500-30000 plants/hm², and apply 750 kg/hm² of nitrogen fertilizer respectively at elongating stage and from tillering to heading. For seed planting, select the seeds before sowing, sun the seeds for 2-3 days, and sow from the first ten days of May to the middle of June. The sowing amount is 22.5-30 kg/hm², and the row spacing is 30-50 cm. Apply 750 kg/hm² of nitrogen fertilizer respectively at elongating stage and from tillering to heading.

Suitable areas for planting:

It is suitable for planting in areas with an altitude of 2500-4000 m and rainfall of more than 600 mm in western Sichuan plateau and southwest China.