附件

**2021年度云南省拟通过审定草品种名录**

**（中英文）**

1.‘云农１号’非洲狗尾草

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| 草种名称： | 非洲狗尾草 | 学名： | *Setaria sphacelata* ‘Yunnong No.1’ |
| 品种类别： | 育成品种 | 编号： | 云S-BV-SP-001-2021 |
| 申报单位： | 云南农业大学、永德县畜牧兽医局 |
| 选 育 人： | 马向丽、罗富成、张红映、郭德文、罗班乾、李莉、陈梅、代微然、黎梅杰、李启娇 |

品种特性

禾本科多年生丛生性牧草，株型较高，开花期株高1.6m-2.5m。根系发达，分蘖能力强。叶片柔软无毛，叶色深绿。圆锥花序金黄色，柱头多数为紫色，少数白色；种子宽卵圆形，千粒重1.0g左右。性喜温暖湿润，耐旱，抗病害能力强。生长速度快，产草量高，良好栽培条件下年均干草产量可达21.6t/hm2。抽穗期粗蛋白含量10.94%，适口性较好。

主要用途

牧草和生态修复草兼用，主要用于建植割草和放牧地。

栽培技术要点

播前需精细整地，春、夏、秋均可播种，但秋播一般不能晚于9月中下旬。宜条播，行距30-40cm，播种深度1-2cm，单播用种量为12-18kg/hm2。与三叶草等豆科牧草混播时，非洲狗尾草用种量7.5-9kg/ hm2。刈割利用时宜在抽穗初期进行，留茬高度以8-10cm为宜。

适宜推广区域

适宜云南年降雨650-2200mm，海拔800-2200m的广大地区。

2.‘云科高1号’莲瓣兰-金蝉兰杂交种

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| 草种名称： | 莲瓣兰×金蝉兰杂交种 | 学名： | *Cymbidium tortisepalum ×Cymbidium gaoligongense* ‘Yunkegao No. 1’ |
| 品种类别： | 育成品种 | 编号： | 云S-BV-CT-002-2021 |
| 申报单位： | 云南省农业科学研究院高山经济植物研究所 |
| 选 育 人： | 和寿星、汤王外、郭承刚、郭应杰、杨文宏、黄杏娥、徐春莲、曹杨、薛润光、李兆光 |

品种特性

兰科兰属多年生草本植物，肉质根，有少量分叉，叶8-10枚，无叶关节，带形，革质，长60-75cm，宽1.4-1.8cm，花4-7朵，花梗与子房长3.8-4.2cm，花直径6-7.5cm，萼片与花瓣绿黄色，唇瓣淡黄色，有少量不规则深黄色斑点与短条纹，有香气，花期9-11月。耐寒性较强，冬季-5℃条件下无冻害，能耐短时间-8℃低温。

主要用途

观赏草。

栽培技术要点

选择健壮无病苗，春秋两季分株上盆，视花盆大小每盆种植连体2-5株为宜，8-9月份勤施磷钾肥有利于花芽分化及开花。生长温度为12-32℃，相对湿度为40-75%，遮阴50-80%，盆栽土壤有机质丰富，疏松透气，pH5.5-6.5。

适宜推广区域

适宜云南温带至亚热带地区的遮阴条件下盆栽栽培。

3.‘腾越’类地毯草

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| --- | --- | --- | --- |
| 草种名称： | 腾越类地毯草 | 学名： | *Axonopus fissifolius* ‘Tengyue’ |
| 品种类别： | 地方品种 | 编号： | 云S-LV-AF-003-2021 |
| 申报单位： | 腾冲市草原监督管理所 |
| 选 育 人： | 严海燕、谢金敏、许洪盛、张文鸿、濮家丽、黄志金、尹其周、杨继萍、李启中、董红晓 |

品种特性

禾本科地毯草属多年生匍匐草本，开花期高30-50cm。秆扁平，节无毛。叶鞘扁平，叶舌具细缘毛，叶片先端钝。总状花序2-4枚，小穗卵状披针形，边缘具丝状毛，含两小花，第二小花稃片革质。种子细小，千粒重约0.7-0.9g。喜温暖湿润气候，耐寒耐旱性中等。地表覆盖速度快，水土保持能力强。草层低矮，匍匐茎发达，耐牧性好，草质柔嫩，叶量丰富，放牧牛、羊喜食。

主要用途

生态修复草和牧草兼用，也可用于园林、庭园绿化或运动场草坪建植。

栽培技术要点

雨季来临后播种，最迟播种时间不得晚于8月末。撒播、条播均可，播种后轻耙表土并适度镇压。播种量7.5-15kg/hm2。无性繁殖能力强，雨季可用匍匐茎扦插繁殖。放牧利用时，可分别于雨季来临时、8月末和9月末各追施一次尿素，施肥量75kg/hm2。抗病虫害能力强，无需专门防治。

适宜推广区域

适宜云南海拔1800m以下、年降雨1200mm以上的亚热带地区。

4.‘中甸’百脉根

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| --- | --- | --- | --- |
| 草种名称： | 百脉根 | 学名： | *Lotus corniculatus* ‘Zhongdian’ |
| 品种类别： | 野生驯化品种 | 编号： | 云S-WDV-LC-004-2021 |
| 申报单位： | 云南农业大学 |
| 选 育 人： | 马向丽、任健、崔东毅、姜华、金坤福、赵雁、墨秋晓、唐敏、和雪梅、郑立文 |

品种特性

豆科百脉根属多年生草本。主根粗壮，侧根发达。茎丛生，无明显主茎，株高25-40cm，平卧或直立。头状花序，花冠蝶形，黄色，旗瓣具紫红色脉纹。种子近肾形，千粒重0.9-1.1g。耐寒、耐湿性强。茎叶柔软，叶量丰富，草质好，牛、羊喜食。结实性好，良好栽培管理条件下种子产量150-200kg/hm2。

主要用途

牧草和生态修复草兼用，也是蜜源和景观地被植物。

栽培技术要点

种子细小，整地宜精细。适宜播种季节5月下旬至7月末。优质人工草地建设宜采用行距30cm条播，用种量15-22.5kg/hm2。草地改良或种子田建设时播种量可减半。耐牧性较差，适合开花结实期刈割利用。种子成熟不一致，宜在65-70％荚果呈现黄褐色时收种。收种后的植株可用于调制干草或直接饲喂。

适宜推广区域

适宜云南迪庆州海拔2500-3500m的地区及气候条件相似地区。

5.‘莲池’拟金茅

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| --- | --- | --- | --- |
| 草种名称： | 拟金茅 | 学名： | *Eulaliopsis binata ‘*lianchi*’* |
| 品种类别： | 野生驯化品种 | 编号： | 云S-WDV-EB-005-2021 |
| 申报单位： | 云南省林业和草原科学院 |
| 选 育 人： | 常恩福、马赛宇、周云、庞静、毕波、蔡雨新、方波、李品荣、武力、杨倩 |

品种特性

禾本科拟金茅属多年生草本植物，丛生性，开花期株高60-80cm。根系发达，入土深度20-40cm。叶片线形，卷摺呈细针状，长50-100cm。总状花序密被淡黄褐色的绒毛，2-4枚呈指状排列。小穗孪生，基盘具乳黄色丝状柔毛。喜温暖湿润气候，耐旱、耐阴、耐紧实土壤能力较强。叶量大，营养期牛采食。生长后期，草质坚韧，适口性较差。分蘖能力强，株丛致密。生长茂盛季节，能快速覆盖裸露地表，水土保持能力强。

主要用途

生态修复草。营养期可放牧利用，生长后期可作纤维植物。

栽培技术要点

采用播种或无性繁殖的方式进行栽培。栽培前，施入有机肥15-22.5t/ hm2，深翻土壤20-25cm。播种采用撒播或条播（行距35-40 cm），3-4月播种，播量8-10 kg/hm2，播种深度1-2cm，播后覆土2-3cm，无性繁殖以分株繁殖的方式于5-6月定植，每丛20-40株，株行距30cm×40cm。播种或定植后1月内应适时浇水，出苗或定植成活30天后可按100kg/ hm2施肥量撒施尿素，40天后再按 200kg/ hm2施用一次。

适宜推广区域

适宜云南海拔400-2500m，年降雨400mm以上的干热或潮湿江边、河谷地区。

6.‘江驿’元谋尾稃草

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| 草种名称： | 元谋尾稃草 | 学名： | *Urochloa longifolia* var.*yuanmouensis*‘jiangyi’ |
| 品种类别： | 野生驯化品种 | 编号： | 云S-WDV-UL-006-2021 |
| 申报单位： | 云南省林业和草原科学院 |
| 选 育 人： | 杨倩、尹艾萍、庞静、李品荣、周云、常恩福、武力、毕波、方波、方志辉 |

品种特性

禾本科尾稃草属一年生草本。茎秆纤细，下部横卧地面，节处生根，向上斜升，株高15-40cm。叶卵状披针形，长5-12cm，无毛；圆锥花序由3-5枚总状花序组成，总状花序长3-7cm；小穗种子卵状椭园形，长2-3mm，无毛。7-8月为生长旺季，花期7-8月，果期9-10月。耐旱、耐瘠薄，抗病虫害能力强，生长快，分蘖能力强，在夏、秋生长茂盛时期，能分蘖繁茂的营养枝和大量的叶片，快速覆盖裸露地表。

主要用途

牧草和生态修复草兼用。

栽培技术要点

地势较平坦的地块宜采用全翻耕整地，整地前按15-22.5t/hm2施入有机肥，然后深翻土壤，使表土深20-25cm疏松。坡度较大时应沿等高线平行开沟播种或免耕播种。雨季来临后播种，撒播，播种量10-15kg/hm2。播种后根据土壤墒情适时浇水，苗期应注意杂草防控，出苗后30天追施尿素100kg/hm2可提高地表覆盖速度。

适宜推广区域

适宜云南海拔1800m以下，年降雨400mm以上的干热河谷地区或相似地区。

7.‘丽玉’岩白菜

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| 草种名称： | 岩白菜 | 学名： | *Bergenia purpurascens* ‘Liyu’ |
| 品种类别： | 野生驯化品种 | 编号： | 云S-WDV-BP-007-2021 |
| 申报单位： | 丽江市草原工作站 |
| 选 育 人： | 刘丽春、许琨、刘维暐、黄华、明升平、李娟、郭德芳、周天强、张建鸿 |

品种特性

虎耳草科岩白菜属多年生草本，高30-35cm。根状茎粗壮，叶片革质，绿色至深绿色，长10-20cm，宽5-10cm；叶柄长5cm。圆锥状聚伞花序长15-35cm，直立；花朵数量10-20朵，花瓣粉红色、紫红色，偶有浅紫色，居群花期为每年4-8月，单株花期最长可接近90天；种子细小，千粒重约0.17g，成熟期8-10月，种子极易散落。

主要用途

观赏草，适用于园林绿化造园，全草含岩白菜素，根状茎可入药。

栽培技术要点

岩白菜地下部分为肉质根茎，选择透水性及透气性较好的种植基质，防止根部因基质湿度过大而腐烂。针对室内栽培的植株，可通过人工授粉提高种子萌发率。果实成熟前进行套袋，保障种子采收。在秋末霜期前后，可采取适当保护措施延长叶片观赏期。

适宜推广区域

适宜滇西北日最高温不超过32℃，海拔2500-3500m的冷凉地区及气候条件相似地区种植。

8.‘歌顿’大黍

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| --- | --- | --- | --- |
| 草种名称： | 大黍 | 学名： | *Panicum maximum* ‘Gatton’ |
| 品种类别： | 引进品种 | 编号： | 云S-IV-PM-008-2021 |
| 申报单位： | 云南省草地动物科学研究院 |
| 选 育 人： | 钟声、李世平、许娅虹、雷磊、袁中华、刘倩 |

品种特性

禾本科黍属多年生草本，开花期株高110-130cm。须根发达，分蘖性强，单株分蘖数可达60个以上。种子细小，千粒重0.3-0.4g。生育期短，播种当年早期生长好，第一茬饲草产量高。在肥沃土壤中生长表现优，贫瘠土壤上对Ｎ肥和Ｐ肥敏感。草质柔软，适口性好，营养生长期粗蛋白可达15%。种子可一年两熟，产量60-100kg/hm2。耐热、耐旱、耐阴性强。耐寒性中等，云南海拔2000m左右的温带气候区能越冬。

主要用途

生态修复草和牧草兼用。

栽培技术要点

地势较平坦的地块宜采用全翻耕整地，坡度较大时应沿等高线平行开沟播种或免耕播种。单播用种量15-18kg/hm2，干热河谷区混播时建议采用歌顿大黍40% + 伏生臂形草20% + 大翼豆40%的播种组合，总用种量22.5-30kg/hm2。播种当年以保苗为重点，播种次年返青后追肥一次。单播青刈利用时，每次刈后均应施一定尿素作追肥。病虫害较少，无须专门防治。

适宜推广区域

适宜云南海拔1800m以下，年降雨1200mm以下的中亚热带及热带地区，特别适宜年降雨600mm以上的干热河谷区种植。

9.‘森娜’非洲虎尾草

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| --- | --- | --- | --- |
| 草种名称： | 非洲虎尾草 | 学名： | *Chloris gayana* ‘Santana’ |
| 品种类别： | 引进品种 | 编号： | 云S-IV-CG-009-2021 |
| 申报单位： | 云南省林业和草原科学院、云南省草原监督管理站、北京正道农业股份有限公司、永仁县林业和草原局 |
| 选 育 人： | 庞静、高宏、尹艾萍、邵进翚、白自平、袁中华 |

品种特性

禾本科虎尾草属多年生草本，开花期株高105-135cm。种子小，纺锤形，千粒重0.2-0.3g。须根发达，种植当年入土深可达60-65cm。喜温暖湿润气候，耐寒性中等，耐阴性差。匍匐茎发达，生长速度快，再生性强，良好管理条件下出苗后5周的地表覆盖度可达75%，全年鲜草产量可达122.2t/hm2。饲草品质中等，抽穗前牛羊喜食。

主要用途

牧草和生态修复草兼用，放牧利用或开花前刈割。

栽培技术要点

种子细小，播种前应精细整地。播种前施农家肥20-25t/hm2，带肥翻耕，确保20cm左右土层疏松。行距30cm条播，播种深度2-3cm，播种量18-22.5kg/hm2，播后覆土并适度镇压。播种当年以保苗为重点，播种次年返青后追肥一次。单播青刈利用时，首次刈割宜在孕穗期进行。每次刈后均应施一定量的尿素作追肥。病虫害较少，无须专门防治。

适宜推广区域

适宜云南海拔1800m以下，年均温大于14℃，年降雨量600-1600mm的热带、亚热带地区。

**Pre-approved List of Certified Grass Varieties of Yunnan Province in 2021**

**1.Yunnong No.1**

**Species：***Setaria sphacelata*

**Scientific name:** *Setaria sphacelata* ‘Yunnong No.1’

**Variety category:** Bred variety

**Registration No.:** 云S-BV-SP-001-2021

**Applicant:** Yunnan Agricultural University, Animal Husbandry and Veterinary Bureau of Yongde County

**Breeders:** Ma Xiangli, Lou Fucheng, Zhang Hongying, Guo Dewen, Luo Banqian , LiLi, Chen Mei, Dai Weiran, Li Meijie, Li Qijiao.

**Characteristics:**

‘Yunnong No.1’ is a kind of Gramineous perennial tufted forage with high plant type and plant height of 1.6-2.5m at the flowering stage. It has a well-developed root system and strong tillering ability. The leaves are soft and glabrous, and the leaf color is dark green. Panicles are golden yellow, and stigmas are mostly purple, with a few white; The seeds are wide and oval, and the weight of 1000 grains is about 1.0g. It thrives in warm and humid climates, and it is drought-tolerant and disease-resistant. It grows fast, and the grass yield is high. Under good cultivation conditions, the average annual hay yield can reach 21.6t/hm2. The content of crude protein at the heading stage is 10.94%, and the palatability is good.

**Main use:**

‘Yunnong No.1’ is mainly used for grazing and [ecological restoration](http://dict.youdao.com/w/ecological%20restoration/%22%20%5Cl%20%22keyfrom%3DE2Ctranslation). It can also be used to construct grassland for cutting or grazing.

**Cultural techniques:**

Fine soil preparation is required before sowing. Sowing can be carried out in spring, summer, and autumn, but generally autumn sowing cannot be later than the mid-September. Yunnong No.1 is suitable for drill sowing, with the row spacing of 30-40cm, sowing depth of 1-2cm, and single sowing rate of 12-18kg/hm2. When mixed with leguminous forages such as Trifolium, the seed consumption of Setaria sphacelatais 7.5-9kg/hm2. The cutting should be carried out at the early heading stage, and the stubble height should be 8-10cm.

**Suitable area for planting:**

Yunnong No.1 is suitable for planting in the vast area with the annual rainfall of 650-2200mm and the altitude of 800-2200m in Yunnan.

**2.Yunkegao No. 1**

**Species：***Cymbidium tortisepalum* × *Cymbidium gaoligongense*

**Scientific name:** *Cymbidium tortisepalum* × *Cymbidium gaoligongense* ‘Yunkegao No. 1’

**Variety category:** Bred variety

**Registration No.：**云S-BV-CT-002-2021

**Applicant:** Institute of Alpine Economics and Botany, Yunnan Academy of Agricultural Sciences

**Breeders:** He Shouxing, Tang Wangwai, Guo Chenggang, Guo Yingjie, Yang Wenhong, Huang Xing’e, Xu Chunlian, Cao Yang, Xue Runguang, Li Zhaoguang.

**Characteristics:**

Yunkegao No. 1 is a perennial herb of Cymbidium with fleshy roots and a few bifurcations. It has 8-10 leaves, no leaf nodes. The leave is with shapes and leathery, with the leaf length of 60-75cm and width of 1.4-1.8cm. It has 4-7 flowers, with pedicel and ovary length of 3.8-4.2cm and the flower diameter of 6-7.5cm. With some irregular dark yellow spots and short stripes, its sepals and petals are green yellow, and its flower lip is light yellow. The flowering stage is from September to November, and it gives off floral scent. Being quite cold-tolerant, it does not suffer freezing injury under -5℃ in winter, and can withstand a low temperature of -8℃for a short time.

**Main use:**

Mainly used as ornamental grasses.

**Cultural techniques:**

Healthy and disease-free seedlings are selected to put in pots separately in spring and autumn, and 2-5 conjoined plants are planted in each pot according to the size of the pot. From August to September, frequent application of phosphorus and potassium fertilizer is conducive to flower bud differentiation and flowering. The recommended suitable growth temperature for potting is 12-32℃, relative humidity 40-75%, shading 50-80%. It grows well in the soft soil which is rich in organic materials and whose pH is 5.5-6.5.

**Suitable area for planting:**

Yunkegao No. 1 is suitable for pot cultivation under shady conditions in the temperate zone and the subtropical zone.

**3.Tengyue**

**Species：***Axonopus fissifolius*

**Scientific name:** *Axonopus fissifolius* ‘Tengyue’

**Variety category:** Local variety

**Registration No.:** 云S-LV-AF-003-2021

**Applicant:** Prairie Supervision and Administration Institute of Teng Chong

**Breeders:** Yan Haiyan, Xie Jinmin, Xu Hongsheng, Zhang Wenhong, Pu Jiali, Huang Zhijin, Yin Qizhou, Yang Jiping, Li Qizhong, Dong Hongxiao

**Characteristics:**

‘Tengyue’ is a kind of procumbent perennial herb of Axonopus in Gramineae. Its plant height is 30-50cm at its flowering stage. The straw is flat and hairless. The leaf sheaf is flat, the ligule is with marginal hairs, and the leaves are blunt at the front end. The total flower sequence is 2-4 pieces. Its small spike, with edge silky hair, is egg-shaped, including two small flowers. The second small flower piece is leathery. Seeds are small and weigh about 0.7-0.9g. It thrives in warm and humid climates, and it is moderately cold-tolerant and drought-tolerant. It covers the soil surface fast, and it has a strong soil and water conservation capability. It has a low grass layer, a well-developed stalk, and good grazing resistance. Being soft and with abundant leave biomass, it is liked by cattle and sheep.

**Main use:**

It can be uses as ecological restoration grass and pasture. It can also be used as garden, garden greening or sports field lawn planting.

**Cultural techniques:**

It is important to sow seeds after the onset of the rainy season, but not later than the end of August. It can be scattered, strip sowed. After it is planted, the surface soil should be harrowed and moderate repressed. Seeding volume is 7.5-15kg/hm2. Asexual reproduction ability is strong. In the rainy season it can be reproduced by interspersing with stems. When it is used as grazing, urea can be applied in the rainy season, late August and the end of September each time, with the amount of 75 kg/hm2. With a strong resistance of pets and disease, it requires no specialized disease prevention and control.

**Suitable area for planting:**

Tengyue is suitable for planting in subtropical areas below 1800 m above sea level with the annual rainfall of more than 1200 mm.

**4.Zhongdian**

**Species：***Lotus corniculatus*

**Scientific name:** *Lotus corniculatus* ‘Zhongdian’

**Variety category:** Wild domesticated variety

**Registration No.:** 云S-WDV-LC-004-2021

**Applicant:** Yunnan Agricultural University

**Breeders:** Ma Xiangli, Ren Jian, Cui Dongyi, Jiang Hua, Jin Kunfu, Zhao Yan, Mo Qiuxiao, Tang Min, He Xuemei, Zheng Liwen

**Characteristics:**

‘Zhong Dian’ is a kind of perennial herb ofLotus in Fabaceae. The main root is stout, and the lateral root is well-developed. Stems are tufted, but with no obvious main stems. The plant height is 25-40cm, prostrate or upright. Its yellow corolla is butterfly-shaped, and its vexillum is with purple-red veins. Seeds are kidney-shaped, with thousands of grains weighing 0.9-1.1g. It is cold-tolerant and humid-tolerant. Its stems and leaves are soft, it has an abundant leaf biomass, and grasses are good. Cattle and sheep feed on it. As seeds are hard, under good cultivation and management, the seed yield can reach 150-200kg/hm2.

**Main use:**

‘Zhongdian’ is used as ecological restoration and forage grass, and it can also be used as honey sources and landscaped plants.

**Cultural techniques:**

The seeds are small, so the land should be plowed carefully. The suitable planting season is from late May to late July. To build high-quality artificial grassland, strip broadcast should be used, with the line distance of 30cm and a seed rate of 15-22.5kg/hm2. The seeding rate can be reduced to half when the grassland is improved, or the seed field is constructed. It is not suitable for grazing. The mowing is carried out during the flowering and the fruiting stage. Seeds are not ripe at the same time or the same degree. It is advisable to harvest 65-70% of the fruit when it is yellowish brown. The harvested plant can be used to modulate hay or feed livestock directly.

**Suitable area for planting:**

Zhongdian is suitable for planting in areas with the altitude of 2500-3500m and similar climatic conditions.

**5.Lianchi**

**Species：***Eulaliopsis binata*

**Scientific name:** *Eulaliopsis binata* ‘lianchi’

**Variety category:** Wild domesticated variety

**Registration No.:** 云S-WDV-EB-005-2021

**Applicant:** Yunnan Academy of Forestry and Grassland

**Breeders:** Chang Enfu, Ma Saiyu, Zhou Yun, Pang Jing, Bi Bo, Cai Yuxin, Fang Bo, Li Pinrong, Wu Li, Yang Qian.

**Characteristics:**

‘Lianchi’ is a kind of perennial herb of Eulaliopsis in Gramineae, which is plex-like and the plant height of 60-80cm at the flowering stage. The root system is well-developed, and the root penetration depth can reach about 20-40cm. Its leaves, length of 50-100 cm, are blade line, with rolls shaped like needles. The total flower sequence is densely lined with hazel fluff, and 2-4 pieces are arranged as fingers. Its two identical spike grows together and its base plate is with milky yellow silky soft hair. It thrives in warm and humid climates, and it is drought-tolerant and shade-tolerant. It can also grow in compacted soil. It has abundant biomass. Cattle can feed on it when in the nutrition period. At its later stage, the grass is tough, so its palpability is poor. It has a strong tillering ability and the grass is thick. It can cover the exposed surface soil quickly in the growing season. Its water conservation ability is strong.

**Main use:**

It can be used as ecological restoration grass. It can be grazed at the vegetative stage and used as fiber plant in later growth stage.

**Cultural techniques:**

It is cultivated by sowing or asexual reproduction. Before cultivation, organic fertilizers shall be applied at the rate of 15-22.5t/hm2, and the soil (20-25cm) shall be turned deeply. It is advisable to adopt sowing or drill sowing (row spacing of 35-40cm) from March to April, with a sowing rate of 8-10kg/hm2 and sowing depth of 1-2cm, and cover soil 2-3cm after sowing. Asexual propagation is carried out from May to June by means of ramet propagation, with 20-40 plants in each cluster and a row spacing of 30cm × 40cm. Timely watering is required in one month after sowing or planting. Urea can be applied at the rate of 100kg/hm2 after 30 days of emergence or survival, and at the rate of 200kg/hm2 after 40 days.

**Suitable area for planting:**

Lianchi is suitable for planting near a dry, hot or humid riverside and valley area with the altitude of 400-2500m and the rainfall of more than 400mm in Yunnan.

**6.Jiangyi**

**Species：***Urochloa longifolia* var.*yuanmiuensis*

**Scientific name:** *Urochloa longifolia* var.*yuanmiuensis*‘jiangyi’

**Variety category:** Wild domesticated variety

**Registration No.:** 云S-WDV-UL-006-2021

**Applicant:** Yunnan Academy of Forestry and Grassland

**Breeders:** Yang Qian, Yin Aiping, Pang Jing, Li Pingrong, Zhou Yun, Chang Enfu, Wu Li, Bi Bo, Fang Bo, Fang Zhihui

**Characteristics:**

‘Jiangyi’ is an annual herb of Urochloa in Gramineae. The stem is slender. The lower part lies on the ground and rises obliquely upward. The plant height is 15-40cm. Its leaf is oval, glabrous, and needle-shaped, with the length of 5-12cm. The panicle consists of 3-5 racemes whose length is 3-7cm. Seeds of the spikelet are oval and glabrous, with the length of 2-3mm. The growing season is from July to August, the flowering stage is from July to August, and the fruiting stage is from September to October. It is cold-tolerant and can grow in infertile soil. With a strong resistance of disease and pests, it grows fast and has a strong tillering ability. In the growing season of summer and autumn, as it will grow many vegetative branches and leaves, it can cover the soil surface quickly.

**Main use:**

It can used as forage and ecological restoration grass.

**Cultural techniques:**

For flat land, full tillage should be adopted. Before land preparation, organic fertilizers shall be applied at the rate of 15-22.5t/hm2, and then the soil shall be deeply turned to make the topsoil loose at the depth of 20-25cm. When the slope is steep, planting shall be carried out in parallel along the contour line or it should not be done. When the rainy season sets in, the sowing rate of the drill is 10-15kg/hm2. After sowing, it should be watered timely according to the soil moisture. Pay attention to weed control at the seedling stage. 30 days after emergence urea of 100kg/hm2 is required, which can increase the soil surface coverage speed.

**Suitable area for planting:**

Jiangyi is suitable for planting in a dry and hot valley area or similar areas in Yunnan with the altitude of less than 1800m and the annual rainfall of more than 400mm.

**7. Liyu**

**Species：***Bergenia purpurascens* ‘Liyu’

**Scientific name:** *Bergenia purpurascens* ‘Liyu’

**Variety category:** Wild domesticated variety

**Registration No.:** 云S-WDV-BP-007-2021

**Applicant:** The Grassland Workstation of Lijiang

**Breeders:** Liu Lichun, Xu Kun, Liu Weiwei, Huang Hua, Ming Shengping, Li Juan, Guo Defang, Zhou Tianqiang, Zhang Jianhong

**Characteristics:**

‘Liyu’ is a perennial herb of Bergenia in Saxifragaceae with the plant height of 30-35cm. The stem is stout, and the leaves are leathery, with the color of green to dark green and length of 10-20cm and width of 5-10cm; The length of the petiole is 5cm. The length of the erect paniculate cymes is 15-35cm. The number of flowers is 10-20, and the petals are pink, purplish red and occasionally light purple. The population flowering stage is from April to August every year, and the longest flowering stage of a single plant can be close to 90 days. The seed is small, with the weight of 1000 grains about 0.17g, and the maturity stage is from August to October. The seed is easy to scatter.

**Main use:**

Mainly used as ornamental grass, suitable for landscaping gardening. The whole grass contains bergenin, and the rhizome can be used as medicine.

**Cultural techniques:**

The underground part of Liyu is fleshy rhizome. It is important to select the planting substrate with good water and air permeability to prevent the root from rotting due to excessive humidity of the substrate. For indoor plants, the seed germination rate can be improved by artificial pollination. Bagging shall be carried out before ripening to ensure the harvest of the seed. Appropriate protective measures can be taken to prolong the ornamental stage of leaves before and after the frost period in late autumn.

**Suitable area for planting:**

Liyu is suitable for planting in cold and cool areas with daily maximum temperature of no more than 32℃ and the altitude of 2500-3500m in Northwest Yunnan and areas with similar climates.

**8. Gatton**

**Species：**Panicum maximum

**Scientific name:** Panicum maximum ‘Gatton’

**Variety category:** Induced variety

**Registration No.:** 云S-IV-PM-008-2021

**Applicant:** Academe of Grassland and Animal Science, Yunnan

**Breeders:** Zhong Sheng, Li Shiping, Xu Yahong, Lei Lei, Yuan Zhonghua, Liu Qian

**Characteristics:**

‘Gatton’ is a perennial herb of Millet in Gramineaewith the plant height of 110-130cm at the flowering stage. Its fibrous roots are well-developed, with strong tillering ability, and the number of tillers per plant can reach more than 60. The seed is small, and the weight of 1000 grains is 0.3-0.4g. With a short growth period, it grows well in the early sowing year, and produces a high forage yield in the first crop. It grows well in fertile soil and is sensitive to N and P fertilizer in infertile soil. The grass is soft and palatable, and the crude protein content can reach 15% in the vegetative growth stage. The seeds can be harvested twice a year and the yield is 60-100kg/ hm2. It is heat-tolerant, shade-tolerant, and drought-tolerant. It is moderately cold-tolerant, but it can survive the winter in the temperate climates with the altitude of about 2000m in Yunnan.

**Main use:**

Mainly used as ecological restoration grass and forage grass.

**Cultural techniques:**

Full tillage should be used as land preparation in the flat terrain. When the slope is steep, planting shall be carried out in parallel along the contour line or it should not be done. The monoculture can be carried out with the rate of 15-18kg/hm2. When mixed sowing is carried out in a dry and hot river valley, it is recommended to adopt the sowing combination of 40% Panicum maximum ‘Gatton’ + 20% Brachiaria decumbens + 40% Macroptilium lathyroides, with a total sowing rate of 22.5-30kg/hm2. Seedling protection is the priority in the sowing year, and topdressing should be applied once after regreening in the next year. When monoculture cutting is used, a certain amount of urea should be applied as topdressing after each cutting. It is almost free from diseases and pests, so there is no need for special control.

**Suitable area for planting:**

Gatton is especially suitable for planting in dry and hot valley areas with the altitude of less than 1800m and the annual rainfall of less than 1200mm.

**9.Santana**

**Species：***Chloris gayana*

**Scientific name:** *Chloris gayana* ‘Santana’

**Variety category:** Induced variety

**Registration No.:** 云S-IV-CG-009-2021

**Applicant:** YunnanAcademy of Forestry and Grassland, Yunnan Grassland Monitor and Management Station, Beijing Zhengdao Agriculture Co., Ltd., Forestry and Grassland Bureau of Yongren County

**Breeders:** Pang Jing, Gao Hong, Yin Aiping, Shao Jinhui, Bai Ziping, Yuan Zhonghua

**Characteristics:**

‘Santana’ is a perennial herb of Chloris in Gramineae, with the plant height of 105-135cm at the flowering stage. The seeds are small and spindle-shaped, and the weight of 1000 grains is 0.2-0.3g. Fibrous roots are well-developed, and the root penetration depth can reach 60-65cm. It thrives in warm and humid climates, and it is moderately cold-tolerant and shade-intolerant. With developed stolons, it grows fast and has a strong regeneration ability. The soil surface coverage rate can reach 75% in five weeks after emergence under good management conditions, and the annual fresh grass yield can reach 122.2 tons/hm2. The forage grass quality is medium, and Cattle and sheep feed on it before the heading stage.

**Main use:**

It can be used as forage grass and ecological restoration grass, and also for grazing or cutting before flowering.

**Cultural techniques:**

The seeds are small, so the land should be carefully prepared before sowing. Before sowing, it is advisable to apply farm manure of 20-25t/hm2 and plough with manure to ensure that the soil layer of about 20cm is loose. The row spacing is 30cm, the sowing depth is 2-3cm, and the sowing rate is18-22.5kg/hm2. After sowing, it should be covered with soil and moderately suppressed. Seedling protection is the priority in the sowing year, and topdressing should be applied once after regreening in the next year. The first cutting should be carried out at the booting stage. A certain amount of urea should be applied as topdressing after each cutting. It is almost free of diseases and pests, so there is no need for special control.

**Suitable area for planting:**

Santana is suitable for planting in the tropical and subtropical areas with the altitude of less than 1800m, the annual average temperature of more than 14 ℃ and the annual rainfall of 600-1600mm.