

Screening breeding and major production techniques on dual-purpose oats in Qinghai province

Dr. Qingping Zhou
Associate Prof. Yajun JI

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contents

- general information of Qinghai province
- importance of oats in local agriculture
- germplasm of oats
- breeding of dual purpose oats
- major production techniques of oats
- goal of oats forage production

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General information of Qinghai



Location: East of Qinghai-Tibet Plateau, total area 720,000 square kilometers, 96% of them being pasturing area. animal husbandry industry is the major economic income for the province.

Climate: High altitude, with average of 4000m. Dry, cold and strong wind in spring and frequent snow disaster



West: desert

East: most
agriculture, warmer

South and north: alpine meadow and dry
rangelands, wet, low temperature

Population: 5.5million population, with 2/3 of the total living
in east of the province.

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importance of oats in local agriculture

Reliefs the seasonal conflicts between animal production and grass growth

Major measure in the project of supporting the poors in alpine region

Promotes the transaction from the traditional nominate animal husbandry to barn feeding and integrated animal production.

The establishment of oats feed-base lightens the grazing pressure on natural rangelands, which is an assistance in vegetation recovery on alpine rangelands

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900 oats material

- Productivity evaluation
- Agronomic traits evaluation
- Germplasm conservation and reproduction
- Description of whole oat plants of some potential material
- Germplasm database setup



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Selected breeding

Single plant selecting



Comparison test



District test



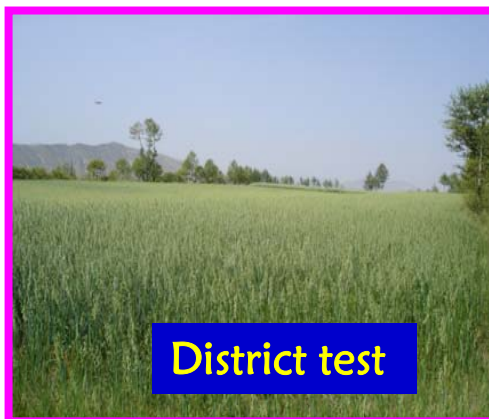
Production test



Single plant selecting



Comparison test



District test



Production test

Typical registered new varieties

品种登记号: 282	该品种由全国牧草品种审
品种名称: 青引2号燕麦	定委员会审定通过、登记为
选育单位: 青海省畜牧兽医科学院 草原研究所	引进品种, 并报农业部畜
选育者: 周青平 韩志林 颜红波 徐成体 刘文辉	牧兽医局备案, 准予在适应地
推广区域: 青海海拔3000m以下的东 部地区可粮草兼收, 3000m 以上牧区作牧草	区正式推广应用, 特此证明。
	全国牧草品种审定委员会 二零零四年十二月八日

品种登记号: 281	该品种由全国牧草品种审
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选育者: 韩志林 周青平 王柳英 颜红波 德科加	牧兽医局备案, 准予在适应地
推广区域: 青海海拔3000m以下地区 粮草兼用, 海拔3000m以上 高寒地区作牧草	区正式推广应用, 特此证明。
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Typical registered new varieties



Qingyin 1 oat (*Avena sativa* L. cv. Qingying1), is selected from qingyongjiu.

height 125~157cm,

seed yeild 3450~4830kg/hm²,

hay yield 15105~21570kg/hm².



Qingyin 2 oat (*Avena sativa* L. cv. Qingyin 2)

height 144~161cm

seed yield 3795 ~5400kg/hm²

hay yield 17805 ~ 24795kg/hm²



Typical registered new varieties



Qinghai 444 oat (*Avena sativa* L. cv. Qinghai 444)



height 130~135cm

fresh grass yield at Xining 33000~51000kg/hm²

seed yield 3000~3990 kg/hm²

Resistance to lodging



Qinghai sweet oat (*Avena sativa* L. cv. Qinghai)

height 140~160cm

Fresh grass yield 38000~52000kg/hm²

Seed yield 4500kg/hm²



Typical registered new varieties

Qingyan 1 oat (*Avena sativa* L.cv.Qingyan No.1)



height 125cm~157cm
Seed yield 3390kg/hm²
grass yield 42600kg/hm²
hay yield 5652kg/hm²



Lena oat (*Avena sativa* L. cv. Lena)

height 110cm~155cm
seed yield 4140kg/hm²
grass yield 37700kg/hm²
hay yield 4485kg/hm²



Typical registered new varieties



Qingyin 3 oat (*Avena nuda* L. cv. Qingyin No.3)

height 120~150cm

hay yield 8600~12800kg/hm²

seed yield 2050~3200kg/hm²



Qingyou 3 oat (*Avena nuda* L. cv. Qingyou No.3)

height 90~125cm

seed yield 2805kg/hm²

grass yield 44040kg/hm²

hay yeild 4725kg/hm²



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Major oat production techniques

Eight local standards on oat production are set up based on scientific research and practice, which include sowing amount, fertilizer application, seed harvest and selection and forage processing etal.

- oat cultivation technique regulation
- naked oat cultivation regulation
- sowing technique mixing oat with annual legume
- grass silage package regulation
- oat forage processing technique
- oat seed package, storage and transportation regulation
- forage multiple cropping technique in eastern Qinghai
- oat fertilization regulation

Oat seed production

- A platform integrating lab, field station and production base carries out scientific research, production and education.
- seed reproduction and extension system: breeder seeds—seeds reproduction— seeds production
- seed production base establishment with one variety by one village
- oat production is overall arranged for variety distribution and planting



deep processing of oat seeds



商品种子



甜酷子



皮燕麦片加工



30%裸燕麦枣泥蛋糕

裸燕麦焙烤食品



40%裸燕麦桃酥



Forage production

Mixed sowing grass with annual legume

Optimum combination of grass and legume:

Oat + vetch or ryegrass + pea

Optimum sowing amount

Oat 135kg + vetch 45 kg/hm²

Ryegrass 18.75kg + pea 90kg/hm²

Optimum harvest date

Around Qinghai Lake: seed-milking time

Southern: after frost

Optimum sowing time

Around: mid or late June

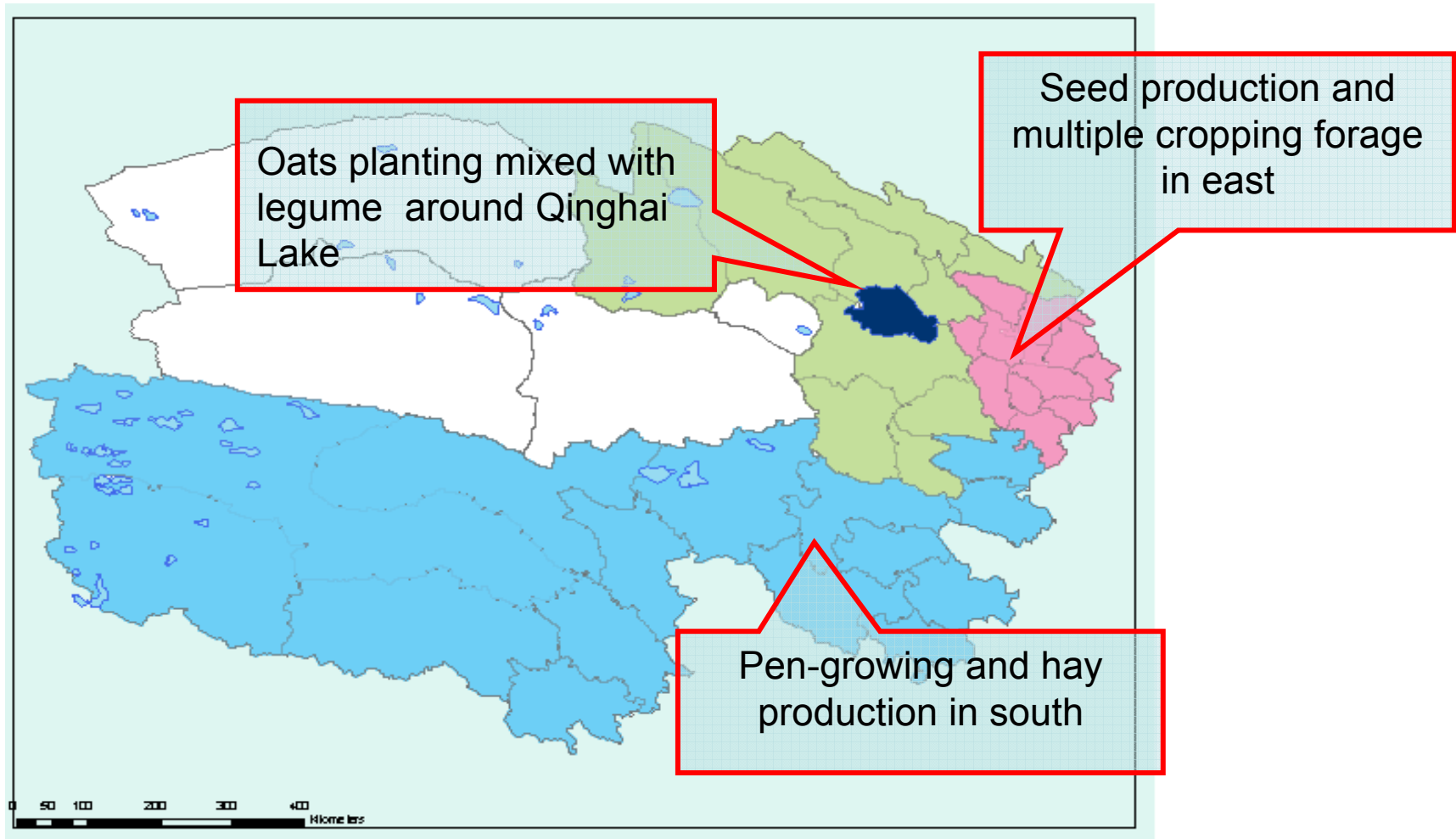
Southern: mid June



Forage processing



Overall distribution





Seed production and multiple cropping in east





Pen-growing in south





Mixed planting around Qinghai Lake for forage production



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95% of oats production both for forage and seed are using improved varieties.

Presently oat growing area is 150,000hm².

By 2015 the area would be 650,000hm², through the application and extension of fine varieties with hay yield would be four million.





Thank you!