

JUNCAO feed and its application

Dr. JIN Ling

JUNCAO Research Institute,

Fujian Agriculture and Forestry University, Fuzhou, China

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1. Application of JUNCAO feed to animals

Mainly applicable for these animals:

cattle, sheeps and goats (ruminants)

Rabbits and horses (monogastric animals with well-developed ceca)

Pigs and poultry (monogastric animals that can use limited amount of fiber)

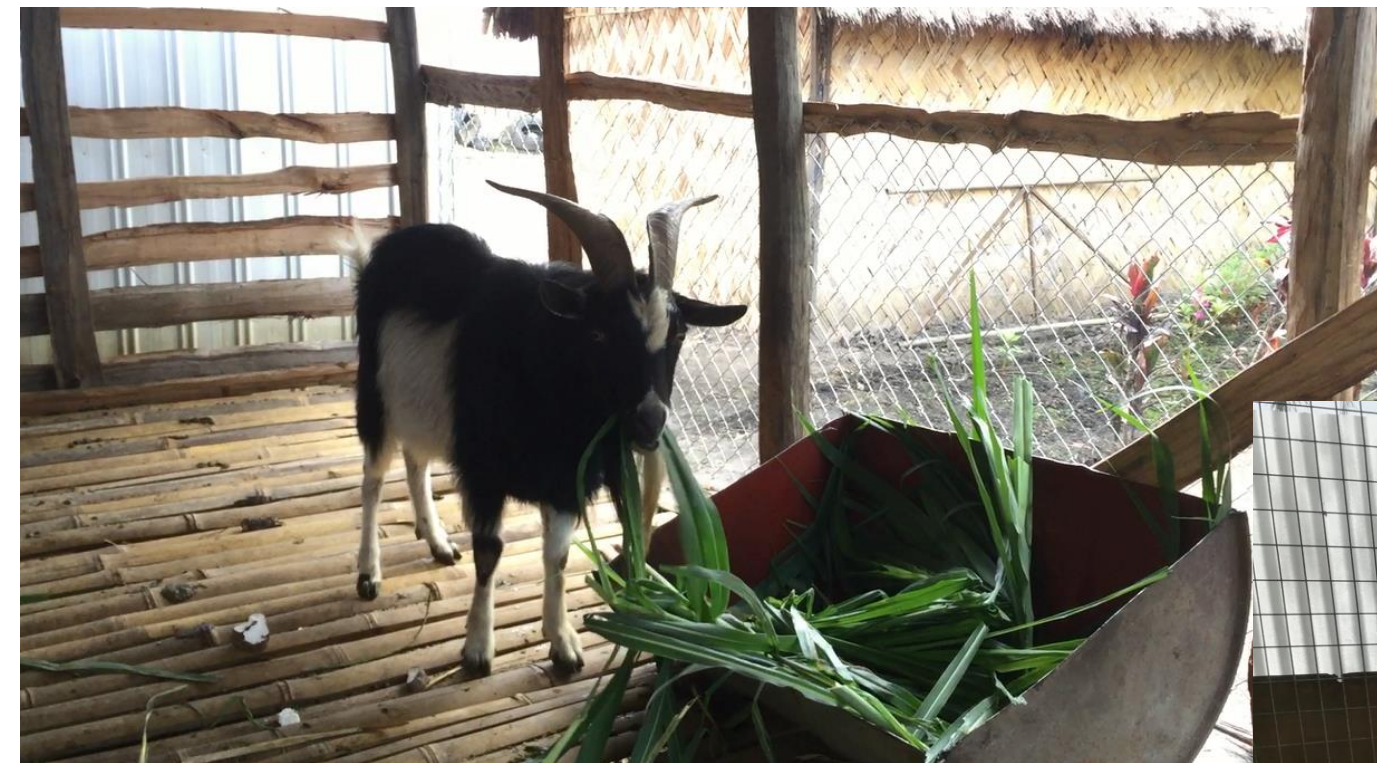


1 Animals suitable for JUNCAO forage

cattle, sheeps, goats and deers (ruminants)







Papua New Guinea





Papua New Guinea



1 Animals suitable for JUNCAO forage



Rabbits and horses
(monogastric animals with well-
developed ceca)

Pigs and poultry (monogastric animals that can use limited amount of fiber)



1 Animals suitable for JUNCAO forage



cuttage







Guizhou Sanxi Ecological Agriculture Technology Co., Ltd.

1 Animals suitable for JUNCAO forage



Green Ming Ecological Agriculture Co., Ltd.



Green Ming Ecological Agriculture Co., Ltd.



Green Ming Ecological Agriculture Co., Ltd.



Green Ming Ecological Agriculture Co., Ltd.

2. Nutritional features of JUNCAO feed

JUNCAO - The herbal plants that are selected and proven to be suitable for cultivating edible or medicinal fungi.



巨菌草 *Pennisetum SP.*



斑茅 *Saccharum arundinaceum*



紫花苜蓿 *Medicago sativa L.*



So far, there are 46 species of plants used as JUNCAO.

2. Nutritional features of JUNCAO feed

Giant JUNCAO (*Pennisetum giganteum* z.x.Lin)
the representative of JUNCAO forage

- wide adaptability, strong tolerance (suitable for cultivation in the tropical and subtropical zones)
- high yield, and high content of nutrients (protein)



2. Nutritional features of JUNCAO feed

- Appropriate height as good forage is 1.5-2 m (can reach average height of 4 m)
- Good palatability for animals (tenderer taste)
- Higher protein content and lower fiber content (crude protein is about 13% on air-dried basis, which is much higher than most grasses)



Table 1. Proximate nutrient value of artificially cultivated JUNCAO in *pennisetum of gramineae*

Artificially cultivated JUNCAO		sampling site	Phenophase, height	DM (%)	CP, %DM	EE, %DM	Ash, %DM	NDF, %DM	ADF, %DM
巨菌草	<i>Pennisetum giganteum z.x.lin</i>	Fuzhou	VP, 3.4m	94.56	8.15	3.35	9.19	70.31	45.77
皇竹草	<i>Pennisetum Sinese Roxb</i>	Fuzhou	VP, 2.9m	92.98	7.35	1.24	9.97	70.93	45.02
闽牧6号杂交狼尾草	<i>Pennisetum palopecn roides. Minmu No. 6</i>	Zhang-zhou	VP, 1.8m	91.85	15.78	2.30	11.95	62.35	35.40
粗茎象草	<i>Pennisetum purpureum Schumach cv.Huanan</i>	Fuzhou	VP, 2.8m	94.85	8.95	1.62	9.60	75.13	44.69
细茎象草	<i>Pennisetum purpureum Schumach cv.Huanan Xijing</i>	Fuzhou	VP, 1.4m	93.10	10.46	2.24	9.96	75.25	39.87
细茎象草	<i>Pennisetum purpureum Schumach cv.Huanan Xijing</i>	Jianyang	VP, 1.9m	79.88	17.98	1.58	7.50	67.86	39.55
粗茎象草	<i>Pennisetum purpureum Schumach cv.Huanan</i>	Jianyang	VP, 2.8m	85.21	8.88	1.30	8.12	75.72	43.32
桂闽引杂交象草	<i>Pennisetum purpureum Schum.cu.Gui Min Yin</i>	Fuzhou	VP, 2.0m	93.76	8.58	2.22	9.00	70.37	43.57

Table 3. Proximate nutrient value of artificially cultivated JUNCAO in *legume*

Artificially cultivated JUNCAO		sampling site	Phenophase, height	DM (%)	CP, %DM	EE, %DM	Ash, %DM	NDF, %DM	ADF, %DM
紫花苜蓿	<i>Medicago sativa L.</i>	Gansu	initial flowering stage, 1.1m	91.10	17.42	2.53	11.18	45.68	38.16
热研3号柱花草	<i>Stylosanthes guianensis cv.Reyan No.3</i>	Fuzhou	branching stage, 0.8m	94.64	11.09	1.63	5.34	64.20	46.49
热研5号柱花草	<i>Stylosanthes guianensis cv.Reyan No.5</i>	Fuzhou	branching stage, 0.9m	93.18	12.52	2.02	6.14	58.29	40.65
热研10号柱花草	<i>Stylosanthes guianensis cv.Reyan No.10</i>	Fuzhou	branching stage, 0.8m	93.28	14.80	2.27	6.21	62.22	38.91
热研10号柱花草	<i>Stylosanthes guianensis cv.Reyan No.10</i>	Jianyang	branching stage	93.26	16.65	2.06	5.80	62.35	31.20
西卡柱花草	<i>Stylosanthes scabra Vog.cv.Seca</i>	Jianyang	branching stage	93.05	25.11	2.52	7.57	56.56	20.17

Table 2. Proximate nutrient value of artificially cultivated JUNCAO in *other genuses of gramineae*

Artificially cultivated JUNCAO		sampling site	Phenophase, height	DM (%)	CP, %DM	EE, %DM	Ash, %DM	NDF, %DM	ADF, %DM
墨西哥青贮玉米	<i>Euchlaena mexicana Schrad.</i>	Jianyang	initial flowering stage, 1.9m	92.81	11.12	2.08	6.88	70.86	29.02
青贮玉米(花单)	<i>Zea mays L.</i>	Jianyang	mature period, 2.5m	93.23	15.01	2.39	4.24	54.24	30.48
卡松古鲁狗尾草	<i>Setaria anceps Stapf cv. Kazungula</i>	Jianyang	initial flowering stage, 1.4m	96.32	6.45	1.33	5.57	76.47	41.45
卡松古鲁狗尾草	<i>Setaria anceps Stapf cv. Kazungula</i>	Fuzhou	initial flowering stage, 1.4m	93.48	5.26	1.50	4.15	81.03	50.08
马唐	<i>Digitaria cruciata(Nees)A. Camus</i>	Jianyang	maturing period, 1.0m	93.46	13.69	1.51	8.57	75.25	27.86
多花黑麦草	<i>Lolium multiflorum Lam.</i>	Fuzhou	booting stage, 0.9m	89.22	27.06	3.74	12.94	40.09	23.50

Table 4. Proximate nutrient value of *wild and agricultural JUNCAO*

Wild and agricultural JUNCAO		DM (%)	CP, %DM	EE, %DM	Ash, %DM	NDF, %DM	ADF, %DM
Wild (13 species, not shown separately)	Average	94.77	5.96	2.11	6.50	74.87	44.34
	Maximum	96.58	16.54	3.66	10.08	81.76	52.02
	Minimum	94.77	5.96	2.11	6.50	74.87	44.34
Agricultural (3 species, not shown separately)	Average	93.15	9.53	2.90	11.60	63.73	47.73
	Maximum	94.47	19.35	3.28	13.93	76.52	62.45
	Minimum	91.81	4.54	2.31	8.77	44.64	23.17

Wild JUNCAO, very low in CP and high in fiber, mainly contain some genuses in *gramineae*.

It's not as good as artificially cultivated JUNCAO when directly feeding animals.

2. Nutritional features of JUNCAO feed

Silage of JUNCAO (ensiled forage)

The nutritional features considerably depend on the forage ensiled and the silage method.

Mainly applicable for following animals:
cattle, sheeps, goats
horses, and pigs



Roughage (crude fiber \geq 18%)

① Dried forage

Nutritional features mainly depend on the forage used and drying conditions.

Mainly suitable for following animals:
cattle, sheeps, goats,
horses, rabbits, poultry



hay

Roughage (crude fiber \geq 18%)

② Spent JUNCAO substrates of mushrooms

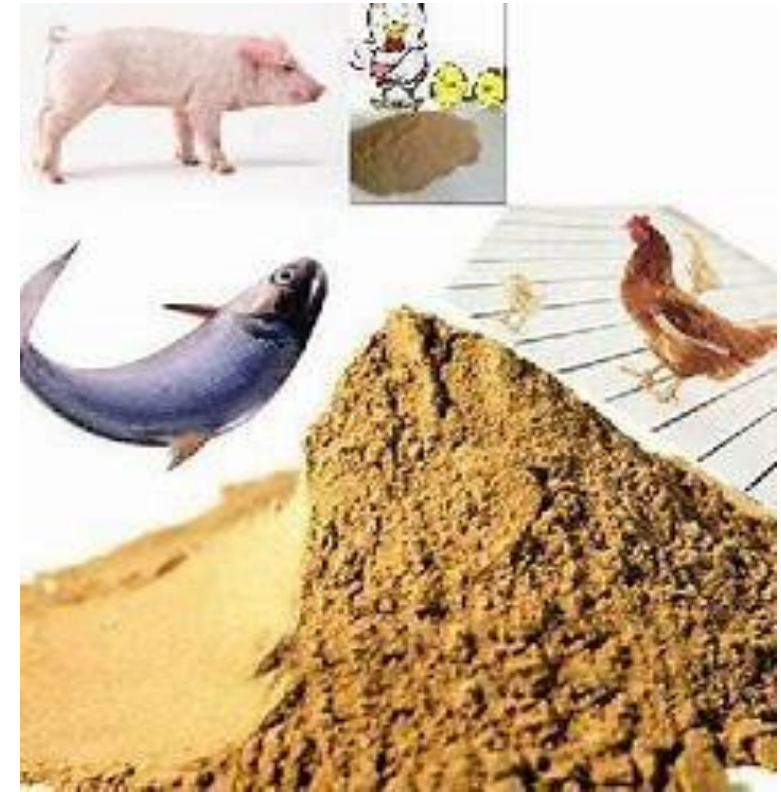
Nutritional features mainly depend on the ingredients of substrates and the kinds of mushroom cultured.

Mainly applicable for following animals:
cattle, sheeps, goats
rabbits, poultry



What's more... → Feed additives

- Bioactive substances extracted from spent JUNCAO substrates of edible or medicinal fungi (e.g. *Ganoderma lucidum*).



In form of feed additives, spent JUNCAO substrates can be used more widely and for more animals.

3. Processing of JUNCAO feed

Common processing methods of JUNCAO feed :

- **Green forage** (direct feeding, chopping, or crushing)
- **Silage** (chopping and ensiling)
- **Roughage** (direct feeding or crushing)

Green forage
(**direct feeding**,
chopping, or
crushing)



Green forage
(direct feeding,
chopping, or
crushing)



Green forage
(direct feeding,
chopping, or
crushing)



Silage (chopping and ensiling)



Roughage (direct feeding, chopping or crushing)



Roughage (direct feeding, **chopping** or crushing)



Roughage (direct feeding, chopping or crushing)



Dried grass powder



Thank you

