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植物生产层

陇东黄土高原饲草作物生产力研究

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摘要：

针对陇东黄土高原作物-家畜系统中家畜饲草质量和供给数量不足的现状，对饲草作物的生产力进行了研究。试验种植了8种饲草作物包括饲料玉米（Zea mays)、苏丹草（Sorghum sudanense)、湖南稷子(Echinochloa crusgalli var.frumentacea)、谷子(Setaria italica)、箭筈豌豆(Vicia sativa cv.6625)、燕麦（Avena sativa）和多年生饲草紫花苜蓿（Medicago sativa），以及玉米、高粱和谷子混合后种植的和草（当地传统的饲草作物，是家畜的主要饲草来源，以收获植物营养体为主）。饲草作物采用轮作序列：玉米－箭筈豌豆－燕麦轮作（MVO）、苏丹草－箭筈豌豆－燕麦轮作（SVO）、湖南稷子－箭筈豌豆－燕麦轮作（PVO）、谷子－箭筈豌豆－和草轮作（MVM）和多年生苜蓿连作。结果表明，玉米的产量最高，达到9.5 t • hm-2 • a-1，苏丹草（5.8 t • hm-2 • a-1）次之，燕麦（5.4 t • hm-2 • a-1）和湖南稷子（4.0 t • hm-2 • a-1）的产量依次降低，谷子的产量是3.7 t • hm-2 • a-1，苜蓿为3.4 t • hm-2 • a-1，和草的产量最低，是2.1 t • hm-2 • a-1；轮作系统中，产量顺序依次为MVO轮作系统（7.4 t • hm-2 • a-1）＞SVO轮作系统（5.6 t • hm-2 • a-1）＞PVO轮作系统（4.8 t • hm-2 • a-1）＞苜蓿（3.4 t • hm-2 • a-1）＞MVM轮作系统（2.9 t • hm-2 • a-1）。在生产实践中，春季饲草作物饲料玉米、苏丹草和湖南稷子适合在当地生长，夏季饲草作物燕麦在当地表现良好，值得大面积推广种植。

关键词： 陇东黄土高原 作物-家畜系统 饲草产量 轮作系统

Dry matter yield and productivity of forage crops under rotation systems in Longdong loess plateau

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Abstract:

Feed source shortage is the main problem that limits livestock production in Longdong loess plateau of China. The object of this experiment was to compare the dry matter yield of forage crops under different rotation sequences to meet livestock demand. The experiments were carried out in 2008 and 2009. Eight forage crops, forage maize (Zea mays), sudan grass (Sorghum sudanense), proso millet (Echinochloa crusgalli var. frumentacea), oats (Avena sativa), foxtail millet (Setaria italica), common vetch (Vicia sativa), lucerne (Medicago sativa), and one mixed crop (maize, foxtail millet and sorghum sown together, a traditional livestock feed source) were trialed. The forage crops were grown in four rotation treatments: maize vetch oats rotation (MVO), sudan grass vetch oats rotation (SVO), proso vetch oats rotation (PVO) and millet vetch mixed crop rotation (MVM), and the other treatment was perennial lucerne field (Lucerne). The dry matter yield over 2 experimental years averaged 9.5 t • ha-1 • a-1 for maize, 5.8 t • ha-1 • a-1 for sudan grass, 5.4 t • ha-1 • a-1 for oats, and 4.0 t • ha-1 • a-1 for proso. The mixed crop had the lowest average yield (2.1 t • ha-1 • a-1). The MVO rotation had the highest DM yield (average 7.4 t • ha-1 • a-1). Compared to the PVO rotation, the SVO rotation had a higher DM yield (5.6 t • ha-1 • a-1). The results showed that maize, proso and oats were productive forage options, especially oats are good summer forage in the region. Introducing annual forage crops into current farming system could reduce feed deficits for livestock producers.

Keywords: Forage crops； dry matter yield； crop livestock farming system； Longdong loess plateau

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