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覆膜与沟垄种植模式对旱作马铃薯产量形成及水分运移的影响

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Effects of different film mulch and ridge-furrow cropping patterns on yield formation and water translocation of rainfed potato.

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摘要

研究了覆膜及不同沟垄种植模式对黄土高原西部半干旱区旱作马铃薯产量形成和水分运移的影响.结果表明：平畦覆膜（T_2）、全膜双垄沟播（T_3）、全膜双垄垄播（T_4）、半膜膜侧种植（T_5）和半膜沟垄垄播（T_6）种植方式的产量分别比传统平畦不覆膜（T_1）方式高50.1%、75.9%、86.8%、69.6%和60.6%；水分利用效率（WUE）分别提高47.0 %、82.7%、84.0%、75.2%和54.3%，其中，T_4、T_3产量和WUE增加幅度最大.与传统方式相比，各覆膜及沟垄处理普遍优化了马铃薯各产量构成性状，其中T_4和T_3最有利于大薯率和中薯率的提高、绿薯率和烂薯率的降低，其单株结薯数和单株薯产量也较高.因此，全膜双垄垄播和全膜双垄沟播为半干旱区马铃薯适宜的抗旱节水高产种植模式.

关键词： 覆膜 沟垄种植 旱作马铃薯 产量 蒸散量 水分利用效率

Abstract:

This paper studied the effects of different film mulch and ridge-furr ow cropping patterns on the yield formation and water translocation of rainfed potato in the semi-arid area of west Loess Plateau. Comparing with those under traditional harrowed bedding without film mulch (T_1), the potato yield under harrowed bedding with film mulching (T_2), completely mulched alternating narrow and wide ridges with furrow planting (T_3), completely mulched alternating narrow and wide ridges with ridge planting (T_4), mulched raised bedding with furrow planting (T_5), and mulched raised bedding with bedding planting (T_6) was increased by 50.1%, 75.9%, 86.8%, 69.6%, and 60.6%, and the water use efficiency (WUE) was increased by 47.0%, 82.7%, 84.0%, 75.2%, and 54.3% respectively, with the increments being the highest under T_4 and T_3. All the film much and ridge -furrow cropping patterns improved the yield component of potato, and T_4 and T_3 were most beneficial to the increase of mid and big tubers, tuber number per plant, and tuber yield per plant, and to the decrease of the proportions of green and blet tubers. It was concluded that completely mulched alternating narrow and wide ridges with ridge planting (T_4) and completely mulched alternating narrow and wide ridges with furrow planting (T_3) were the two better cropping patterns in water-saving and high yielding for potato cultivation in semiarid areas.

Key words: film mulch ridge-furrow cropping rainfed potato yield evapotrans portation water use efficiency

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