

# 猕猴桃新品种选育及产业化技术研究

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**摘要:** 该研究通过对横跨我国中西部阶梯过渡带的中华猕猴桃野生资源的全面调查和自然杂交带的定位研究,发掘了一大批优异的猕猴桃野生种质资源,克隆定位了部分果肉颜色相关的基因。在此基础上,选育了国家级审定的晚熟耐贮藏黄肉新品种“金艳”和省级观赏鲜食猕猴桃新品种“满天红”。利用收集的資源进一步开展杂交育种和实生选种,获得了具有不同成熟期、果肉颜色及风味的猕猴桃优系14个,包括风味和品质俱佳、果实耐贮藏的红肉猕猴桃新品系2个,果肉黄色或黄绿色新品系7个,高维生素C品种1个(维生素C 426 mg/100 g)、绿肉新品系4个。该研究的实施提升了我国猕猴桃资源发掘及新品种研发水平,选育的“金艳”新品种被誉为国际猕猴桃产业第二代黄肉新品种的三大核心品种之一。同时,通过资源深度发掘及选育研究获得的14个黄肉、红肉猕猴桃优良株系,奠定了我国未来引领国际猕猴桃产业新品种格局的重要育种材料基础,对占领国际猕猴桃产业制高点具有重要意义。“金艳”新品种已发展1.5万亩规模示范,并规划带动周边地区形成17.5万亩产业带,发挥了重大的社会及经济效益。

**关键词:** 猕猴桃 金艳 自然杂交带 遗传育种

## New Cultivar Developments and the Industry Improments of Kiwifruit

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**Abstract:** In this project, the natural hybridization of Actinidia species in wild populations have been surveyed and a lot of good germplasm have been found in wild. Based on the study of wild resources, two new cultivars of Jinyan and Mantianhong have been developed and released recently. Furthermore, 14 good germplasm with different traits such as the harvesting time, flesh color and tastes have been found that can be used for cultivar development in future. With the project conducted, the kiwifruit industry has been greatly improved due the new cultivars such as 'Jinyan' have been released. Currently, about 15 thousands acres of 'Jinyan' have been planted.

**Key Words:** Actinidia, Jinyan, Natural Hybrid Zone, Genetic Breeding

阅读全文链接(需实名注册): <http://www.nstrs.cn/xiangxiBG.aspx?id=1138&flag=1>

# 生物质高效水解制取生物汽油和丁醇新技术研究 报告

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**摘要:** 该报告通过开展木质纤维素高温液态水-超酸与酶高效水解技术、丙酮丁醇发酵技术及烷烃水相重整制备技术的研究,探索了不同工艺条件对纤维素转化率、糖产率、发酵抑制物生成量等影响,并建立了相应的数学模型。采用紫外诱变和化学诱变法研究和选育出具有较高耐受性、高转化率的己糖和戊糖共发酵丙酮丁醇梭菌,确定丙酮丁醇梭菌发酵的工艺条件。开发研制出高性能复合分子筛负载型水相重整镍基催化剂,探索出葡萄糖、木糖的水相催化转化工艺,并对水相重整的关键参数进行优化,设计建成了年产450 t/年生物汽油和燃料丁醇的生产示范中试系统,探索了水解装置、丁醇丙酮发酵装置与生物汽油生产装置之间的偶联集成,并对系统进行了调试运行。在水解和发酵中试系统的运行阶段,半纤维素水解率达到90%以上,纤维素水解率达到80%以上,水解液中总糖浓度达3%~10%,戊糖、己糖转化率均大于86%,总糖转化率为87%。对水解液经复合吸附剂脱毒和丙酮丁醇梭菌发酵后,产品中丁醇比例大于65%,最终总产品浓度达到2.2 wt.%,丁醇浓度达到1.4 wt.%.而在水相重整制取生物汽油系统运行阶段,总碳转化率维持在85%左右,产物中C5、C6的选择性在80-90%之间,其中异构烷烃所占比例约为20%,催化剂连续使用72 h活性未见下降。

**关键词:** 木质纤维素 酶高效水解 水相催化

## Research Report on the Synthesis of Bio-gasoline and Butanol by Highly Efficient Hydrolysis of Biomass

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**Abstract:** This report mainly covers the researches on the efficient hydrolysis technologies of biomass by hot water and ultra low acid combining with enzymes, acetone -butanol fermentation, and liquid alkanes production via aqueous phase reforming. Meanwhile, the effects of different reaction parameters on the conversion of cellulose, the yield of sugars, and the generation of fermentation inhibitors were studied in detail as well as the establishment of the relative mathematical models. A good clostridium acetobutylicum for hexose and pentose fermentation was breed by using UV mutagenesis and chemical mutagenesis, and the optimum processing conditions was also determined. In addition, supported Ni-based catalysts with high catalytic performance for aqueous phase reforming of biomass were developed, and the process for the conversion of glucose and xylose into liquid alkanes was explored, accompanying with the optimization of the key technical process. A pilot plant with annual capacity of 450 tons of bio-gasoline and butanol was designed and built well. The integrated coupling technology among the hydrolysis units, acetone - butanol fermentation devices, and bio-gasoline production equipments was investigated particularly. In the hydrolysis and fermentation test runs of the system, the hydrolysis rate of hemicelluloses and cellulose was found to be higher than 90%, and 80%, respectively, and the total concentration of sugars was obtained in the range from 3% to 10%. The conversion of pentose or xylose both exceeded 86% and the conversion of total sugars was higher than 87%. The content of butanol could be obtained above 65% by a series of detoxification and acetobutylicum fermentation of the hydrolysate, and the final concentration of alcohol was 1.4 wt%. In the runs of aqueous phase reforming of sugars, the total carbon conversion was achieved 85% and the selectivity of C5-C5 alkanes was remained 80-90% of which 20% was isoparaffins. The catalyst showed a good stability for bio-gasoline production and no obvious deactivation was observed even after 72 h reaction in the process.

**Key Words:** Lignocellulose;Enzymatic Hydrolysis;Aqueous Phase Reforming

阅读全文链接(需实名注册): <http://www.nstrs.cn/xiangxiBG.aspx?id=12089&flag=1>

## 水稻高产优质种质创新

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**摘要:**紧紧围绕绿色超级稻的目标,创制了45份米质达部颁一级和二级米标准的新材料,其中30份材料的米质达部颁一级米标准;并培育出优质三系不育系川106A,其米质达部颁一级米标准。培育产量潜力有明显提高的新种质32份,其中产量潜力显著增加的新材料11份,为进一步的绿色超级稻育种打下了基础。培育并通过国家或省级审定的新品种13个,其中通过国家审定的品种3个,另有10个组合正在参加国家和省级区试;川优6203的培育成功,其米质可与泰国香米媲美,填补了长江上游,尤其是四川无法自生产优质稻米的空白。该项目发掘与定位5个水稻产量、品质、抗性相关的优良复等位基因,开发与稻米粒型、垩白、高抗性淀粉、柱头外露、叶片表面绒毛等性状紧密连锁的分子标记20个,为水稻优质高产绿色超级稻育种的培育提供了有用信息。选育绿色超级稻新品种的同时,通过新品种示范,积极地推广新品种,新品种推广面积为157万亩。

**关键词:** 水稻 高产 优质 创制

## Innovation of Rice Germplasm with High-yield and Good Grain Quality

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**Abstract:** To target our goals on the Green Super Rice breeding project, 45 rice breeding materials had been innovated. And their grain quality reached the first or second level of the national rice quality grain standard. Among them, 30 reached the first level of the national rice quality grain standard. Moreover, And the "CMS" line Chuan 106A had been successfully developed. Its grain quality reached the first level of the national rice quality grain standard. Thirty-two rice new germplasms had been developed. These materials showed significant yield potential and 11 Of them showed remarkable yield potential. These materials have built up a good foundation for our future goals on the Green Super Rice breeding project. Thirteen new varieties had been released by the national or provincial Crops Variety Examination and Approval Committee. 3 Of them had been released by the National Crops Variety Examination and Approval Committee. And other ten combinations were tested in the national or provincial rice regional trials. Chuanyou 6203, which shows high grain quality coming closer to that of the Thai fragrant rice, had been successfully developed and released. Chuanyou6203 fill