

## เอกสารอ้างอิง

- จุฑามาศ ปูริยะ. 2551. ประสิทธิภาพการตั้งในโตรเจนของเชื้อแบคทีเรียป่ากลักถัวพูนที่ปลูกบนที่สูง. วิทยานิพนธ์ปริญญาวิทยาศาสตรมหาบัณฑิต (เกษตรศาสตร์) สาขาวิชาพืชไร่ บัณฑิตวิทยาลัย มหาวิทยาลัยเชียงใหม่. 81 หน้า.
- นายกริช พันธ์ทอง. 2551. การจำแนกแบคทีเรียที่ตั้งในโตรเจนในพืชคลุมดินโดยใช้เทคนิค ERIC และ REP-PCR. รายงานปัญหาพิเศษวิทยาศาสตรบัณฑิต สาขาวิชาชีวเคมีและชีวเคมี เทคโนโลยี ภาควิชาเคมี คณะวิทยาศาสตร์ มหาวิทยาลัยเชียงใหม่. 56 หน้า.
- ชนกานต์ พรมศิริ. 2545. การหาเอกลักษณ์ของ *Bradyrhizobium* สายพันธุ์พื้นเมืองในเขตภาคเหนือของไทย. วิทยานิพนธ์ปริญญาวิทยาศาสตรมหาบัณฑิต สาขาวิชาเทคโนโลยีชีวภาพ บัณฑิต วิทยาลัย มหาวิทยาลัยเชียงใหม่. 107 หน้า.
- ชูชาติ สันธารัพย์ อำนาจ พรมศิริ จุฑามาศ ปูริยะและสุปรานี จิมูล. 2550. รายงานวิจัยฉบับสมบูรณ์โครงการการศึกษาวิจัยและพัฒนาเทคโนโลยีที่เหมาะสมในการจัดการดินเพื่อลดการใช้ปุ๋ยเคมีบันพื้นที่สูง. สถาบันวิจัยและพัฒนาพื้นที่สูง (องค์การมหาชน). 130 หน้า.
- พงศ์ปียะ ปิยสิรานันท์. 2547. ที่ระดับกรบรอบ 40 ปี กรมพัฒนาที่ดิน กระทรวงเกษตรและสหกรณ์. กรมพัฒนาที่ดิน กระทรวงเกษตรและสหกรณ์. 110 หน้า.
- อำนาจ พรมศิริ. 2549. การคัดเลือกเชื้อแบคทีเรียป่ากลักถัวที่เหมาะสมกับพืชตระกูลถัวที่ใช้ปรับปรุงบำรุงดิน และพืชตระกูลถัวที่ปลูกเป็นพืชผักชนิดสูง และการศึกษาการปลดปล่อยในโตรเจนจากพืชตระกูลถัวภายหลังการไถกลบ. รายงานผลงานวิจัยฉบับสมบูรณ์. มูลนิธิโครงการหลวงประจำปีงบประมาณ พ.ศ. 2548.
- อำนาจ พรมศิริ อรุรวรรณ พัตรสีรุ่ง ชูชาติ สันธารัพย์ ยุทธนา เขาสเมรุ ชีวน ชาชาติ วิมล ปันสุภา และภูเบศร์ มูลเมือง. 2537. รายงานความก้าวหน้าของงานวิจัยเรื่อง การปรับปรุงผลผลิตถัวแดงบนพื้นที่สูง โดยการใช้เชื้อไร โซบียม, เอกสารประกอบการประชุมประจำเดือนของโครงการหลวง วันที่ 2 มิถุนายน พ.ศ. 2537. ณ กองพัฒนาการเกษตรที่สูง.
- Amarger, N. and J. P. Lobreaux. 1982. Quantitative study of nodulation competitiveness in *Rhizobium* strain. Appl. Environ. Microbiol. 44(3): 583-588.
- Appunu, C. and B. Dhar. 2006. Symbiotic effectiveness of acid-tolerant *Bradyrhizobium* strains with soybean in low pH soil. African J. Biotechnology. 5(10): 842-845.

- Appunu, C., L. M. L. Reddy, C. V. C. M. Reddy, D. Sen and B. Dhar. 2009. Symbiotic diversity among acid-tolerant bradyrhizobial isolates with cowpea. *The Journal of Agricultural Science.* 4(3): 126-131.
- Ayanaba, A. 1977. Towards better use of inoculants in the humid tropics. In: Ayanaba, A. Dart, P. J. (Eds.). *Biological nitrogen fixation in farming systems of the tropics.* Wiley. Chichester. UK. pp.181-187.
- Bano, A., R. Batool and F. Dazzo. 2010. Adaptation of chickpea to desiccation stress is enhanced by symbiotic rhizobia. *Symbiosis.* 50: 129-133.
- Bergersen, F. T. 1997. Factors controlling nitrogen fixation by rhizobia. Pp. 153-168. In Ayanaba, A. and P. J. Dart. (eds.). *Biological nitrogen fixation in farming system of the tropics.* Wiley & Son Inc. New York.
- Blanco, A. R., M. Sicardi and L. Frioni. 2010. Competition for nodule occupancy between introduced and native strains of *Rhizobium leguminosarum* biovar *trifoli*. *Biol Fertil Soils.* 46: 419-425.
- Bogino, P., E. Banchio, C. Bonfiglio and W. Girodano. 2008. Competitiveness of a *Bradyrhizobium* sp. strain in soils containing indigenous rhizobia. *Curr Microbiol.* 56: 66-72.
- Brutti, L., N. Piantanida, H. Ljunggren, I. Berggren and A. Martensson. 1999. Competition between strains of *Bradyrhizobium japonicum* for nodulation of soybeans in Argentine arable soils. *Appl Soil Ecol.* 12: 1-6.
- Cassman, K. G. and D. N. Munns. 1980. Nitrogen mineralization as affected by soil moisture temperature and depth. *Soil Sci. Soc Am. J.* 44(6): 1233-1237.
- Cataldo, D. A., M. Maroon, L. E. Schrader and V. L. Youngs. 1975. Rapid colorimetric determination of nitrate in plant tissue by nitration of salicylic acid. *Communications in Soil Sci. Plant Analysis.* 6: 71-80.
- Chen, F., K. Yo, Y. Liu, X. Hu and G. Ge. 2009. Effects of temperature and forest succession on nitrogen mineralization in hillside red soils in mid-subtropical region, China. *Ying Yong Sheng Tai Xue Bao.* 20(7): 1529-1535.
- Cregan, P. B., H. H. Keyser and M. J. Sadowsky. 1989. Host plant effects on nodulation and competitiveness of the *Bradyrhizobium japonicum* serocluster 123. *Appl. Environ. Microbiol.* 55(10): 2532-2536.

- Date, R. A. 1977. Inoculation of tropical pasture legumes. Exploiting the legume-*Rhizobium* symbiosis in tropical agriculture. *Misc. Publ.* 145: 293-311.
- Date, R. A. 2000. Inoculated legumes in cropping systems of the tropics. *Field Crops Research.* 65: 123-136.
- DeBruijn, F. J. 1992. Use of repetitive (Repetitive extragenic palindromic and enterobacterial repetitive intergeneric consensus) sequence and the polymerase chain reaction to fingerprint the genomes of *Rhizobium meliloti* isolates and other soil bacteria. *Appl. Environ. Microbiol.* 58: 2180-2187.
- Denso, S. K. A. and J. D. Owiredut. 1988. Competitiveness of introduced and indigenous cowpea *Bradyrhizobium* strains for nodule formation on cowpeas (*Vigna unguiculata* (L.) Walp.) in three soils. *Soil Biol. Biochem.* 20(3): 305-310.
- Denton, M. D., D. R. Coventry, P. J. Murphy, J. G. Howieson and W. D. Bellotti. 2002. Competition between inoculant and naturalized *Rhizobium leguminosarum* bv. *Trifolii* for nodulation of annual clovers in alkaline soils. *Aust J Agr Res.* 53(9): 1019-1026.
- Denton, M. D., W. G. Reeve, J. G. Howieson and D. R. Coventry. 2003. Competitive abilities of common field isolates and commercial strain of *Rhizobium leguminosarum* bv. *Trifolii* for clover nodule occupancy. *Soil Biol. Biochem.* 35: 1039-1048.
- Diouf, A., M. M. Spencer and M. Gueye. 2000. Use of the gusA gene marker in a competition study of the *Rhizobium* strains nodulating the common bean (*Phaseolus vulgaris*) in Senegal soils. *World J Microbiol Biotechnol.* 16(4): 337-340
- Duke, and A. James. 1981. *Handbook of legumes of world economic importance*. New York, Plenum Press. 345 p.
- Eardly, B. D., L. A. Matheron, N. H. Smith, D. A. Johnson, M. D. Rumbaugh and R. K. Selender. 1990. Genetic structure of natural populations of the nitrogen-fixing bacteria *Rhizobium meliloti*. *Appl. Environ. Microbiol.* 56: 187-194.
- Fening, J. O. and S. K. A. Denso. 2002. Variation in symbiotic effectiveness of cowpea bradyrhizobia indigenous to Ghanaian soils. *Appl. Soil Ecol.* 21: 23-29.
- Fening, J. O., W. Dogbe and S. K. A. Danso. 2001. Assessment of the potential to improve N fixation by cowpea (*Vigna unguiculata* (L.) Walp.) in Granaian soils. *Am J Alternative Agr.* 16: 57-65.

- Franzlubbers, K., A.S.R. Juo. and A. Manu. 1994. Decomposition of cowpea and millet amendments to sandy alfisol in Nigra. *Plant and Soil.* 167: 225-265.
- Graham, P. H. 1995. Problems of soybean inoculation in the tropics. In: Shibles, R. (Ed). *World soybean research conference III: Proceedings.* Westview press. Boulder pp. 951-959.
- Hashem, F. M., B. M. Green, R. Dadson, I. Javaid and T. Devine. 2006. Devine. Symbiotic competence of *Bradyrhizobium* spp. On diverse cowpea genotypes. the ASA-CSSA-SSSA international annual meeting. *Nitrogen and Micro Nutrient Fertility Management.* University of Maryland pp. 285-286.
- Herride, D. F. 1984. Effect of nitrate and plant development on the abundance of nitrogenous solutes in root-breeding and vacuum-extracted exudates of soybean. *Crop Sci.* 24: 173-179.
- Herride, D. F. and M. B. Peoples. 2002a. Timing of xylem sampling for ureide analysis of nitrogen fixation. *Plant and Soil.* 238: 57-67.
- Herride, D. F. and M. B. Peoples. 2002b. Calibrating the xylem-solute method for nitrogen fixation measurement of uride-producing legume: cowpea, mungbean, and black gram. *Comm Soil Sci Plant Anal.* 33(3): 425-437.
- Hungria, M., M. A. T. Vargas, R. S. Araujo, C. Kurihara, S. Maeda, E. S. Sa. Enilson, R. J. Campo, A. J. Cattelan, I. C. Mendes and M. C. N. Oliveira. 2002. Brazilian trials to evaluate the effects of soil bean reinoculation. *Curr Plant Sci Biotechnol Agr.* 38(6): 549.
- Hungria, M., R. J. Campo and I. C. Mendes. 2003. Benefits of inoculation of the common bean (*Phaseolus vulgaris*) crop with efficient and competitive *Rhizobium tropici* strains. *Biol. Fertil. Soils.* 39: 88-93
- Hunter, W. J. 1989. Indole-3-acetic acid production by bacteroids from soybean root nodules. *Physiol Plantarum.* 76(1): 31-36.
- Ikram, A. and W. J. Broughton. 1980. Rhizobia in tropical legumes-IX. Pot and field trials with inoculants for *Psophocarpus tetragonolobus* (L.) DC. *Soil Biol. Biochem.* 12(3): 203-209.

- Jenkins, M. B. and P. J. Bottomley. 1985. Evidence for a strain of *Rhizobium meliloti* dominating the nodules of alfalfa. *Soil Sci. Soc Am. J.* 49: 326-328.
- John, P. S., R. K. Pandey, R. J. Brucgh and R. Prasad. 1992. Nitrogen contribution of cowpea green manure and residue to upland rice. *Plant and Soil.* 142: 53-61.
- Jordan, D. C. 1984. Family III *Rhizobiaceae*. In Krieg, N. R. and J. G. Holt (eds). *Bergey's Manual of Systematic Bacteriology* Vol. 1. William & Wikins, Baltimore pp. 234-248.
- Judd, A. K., M. Schneider, M. J. Sadowsky and F. J. DeBruijn. 1993. Use of repetitive sequence and the polymerase chain reaction technique to classify genetically related *Bradyrhizobium japonicum* serocluster 123 strains. *Appl. Environ. Microbiol.* 59: 1702-1708.
- Kuykendall, L. D., B. Saxena, T. E. Devine and S. E. Udell. 1992. Genetic diversity in *Bradyrhizobium japonicum* Jordan 1982 and a proposal for *Bradyrhizobium elkanii* sp. Nov. *Can. J. Microbiol.* 38: 501-505.
- Law, I. J., W. F. Botha., U. C. Majaule and F. L. Phalane. 2007. Symbiotic and genomic diversity of 'cowpea' bradyrhizobia from soils in Botswana and South Africa. *Biol. Fertil. Soils.* 43: 653-663.
- Lochner, H. H., B. W. Strijdom and I. J. Law. 1989. Unaltered nodulation competitiveness of a strain of *Bradyrhizobium* sp. (*Lotus*) after a decade in soil. *Appl. Environ. Microbiol.* 55(11): 3000-3008.
- Maingi, J. M., N. M. Gitonga, C. A. Shisanya, B. Hornetz and G. M. Muluvi. 2006. Population levels of indigenous bradyrhizobia nodulating promiscuous soybean in two Kenyan soils of the semi-arid and semi-humid agroecological zones. *JARTS.* 107(2): 149-159.
- Malek, W., M. Inaba, H. Ono, Y. Kaneko and Y. Murooka. 1998. Competition for *Astragalus sinicus* root nodule infection between its native microsymbiont *Rhizobium huakuii* bv. Renge B3 and *Rhizobium* sp. ACMP18 strain, specific for *Astragalus cicer*. *Appl. Microbiol. Biotechnol.* 50: 261-265.
- Mcdermott, T. R. and P. Graham. 1990. Competitive ability and Efficiency in nodule formation of strains of *Bradyrhizobium Japonicum*. *Appl. Environ. Microbiol.* 56: 3035-3039.

- Minamisawa, K., T. Seki, S. Onodera, M. Kubota and T. Asami. 1992. Genetic relatedness of *Bradyrhizobium japonicum* field isolates as revealed by repeated sequence and various other characteristics. *Appl. Environ. Microbiol.* 58: 2832-2839.
- Moawad, H. A., W. R. Ellis and E. L. Schmidt. 1984. Rhizosphere response as a factor in competition among three serogroups of indigenous *Rhizobium japonicum* for nodulation of field-grown soybeans. *Appl. Environ. Microbiol.* 47(4): 607-612.
- Niamsup, H. and A. Bhromsiri. 1998. Differentiation of native *Rhizobium leguminosarum* biovar. *Phaseoli* isolate using PCR-based fingerprint technique. *J. Sci. Fac. CMU.* 29: 92-99.
- Novozamsky, R., T. van Eck., Ch. Van Schouwenburg and I. Wallinga. 1974. Total nitrogen determination in plant material by means of the indophenol blue method. *Neth. J. Agric. Sci.* 22: 3-5.
- Palaniappan, S. P., P. S. Sreedhar, P. Loganathan and J. Thomas. 1997. Competitiveness of native *Bradyrhizobium Japonicum* strains in two different soil types. *Biol Fertil Soils.* 25: 279-284.
- Peper, I. L., K. L. Josephson, C. S. Nautiyal and D. P. Bourque. 1989. Strain identification of highly-competitive bean rhizobia isolated from root nodules: Use of fluorescent antibodies, plasmid profiles and gene probes. *Soil Biol. Biochem.* 21(6): 749-753.
- Peoples, M. B., A. W. Faizah, B. Rerkasem, and D. F. Herridge. 1989. Xylem-Solute Methods for Measuring Symbiotic N<sub>2</sub> Fixation by Nodulation Legumes: ACIAR 8800 Workshop Handbook. Faculty of Agriculture, Chiang Mai University. 98 p.
- Romdhane, S. B., F. Tajini, M. Trabelsi, M. E. Aouani and R. Mhamdi. 2007. Competition for nodule formation between introduced strains of *Mesorhizobium ciceri* and the native populations of rhizobia nodulating chickpea (*Cicer arietinum*) in Tunisia. *World J. Microbiol. Biotechnol.* 23: 1195-1201.
- Santasup, C., K. Senoo, A. Bhromsiri, A. Shutsrirung, A. Tanaka and H. Obata. 2000. Simple methods of genomic DNA extraction from rhizobia in dried nodules of *Phaseolus vulgaris* for strain differentiation by PCR-based DNA fingerprinting. *Soil Sci. Plant Nutr.* 46: 541-548.

- Sato, M. L., C. Garcia-Blasquez and P. VanBerkum. 1999. Verification of strain identify in Brazilian soil bean inoculants by using the polymerase chain reaction. World. J. Microbiol Biotechnol. 15: 387-391.
- Selenska-Pobell, S., E. Evguenieva- Hackenberg, G. Radeva and A. Squartini. 1996. Characterization of *Rhizobium hedgesari* by RFLP analysis of PCR amplified rDNA and by genome PCR fingerprinting. J. Appl. Bacteriol. 60: 517-528.
- Selenska-Pobell, S., L. Gigova and N. Petrava. 1995. Strain-specific fingerprints of *Rhizobium galegae* generated by PCR with arbitury and repetitive primers. J. Appl. Bacteriol. 79: 425-431.
- Sharple, G. J. and R. G. Lloyd. 1990. A novel repeated DNA sequence located in the intergenic regions of bacterial chromosome. Nucl. Acid Res. 18: 6503-6508.
- Simon, T. and J. Salava. 2006. New *Rhizobium leguminosarum* bv. *trifolii* isolates: Evaluation of competitiveness for clover nodule occupancy. Plant Soil Environ. 52(10): 441-448.
- Singleton, P. W. and J. W. Tavares. 1986. Inoculation response of legumes in relation to the number and effectiveness of indigenous rhizobium populations. Appl. Environ. Microbiol. 51: 1013-1018.
- Somasegaran, P. and H. J. Hoben. 1994. General Microbiology of Rhizobia. In Somasegaran, P. and H. J. Hoben. Handbook of Rhizobia. Springer-Verlag, New York. pp. 1-6.
- Sparrow, S. D. and G. E. Ham. 1982. Nodulation, N<sub>2</sub> fixation, and seed yield of navy beans as influenced by inoculant rate and inoculant carrier. Agron. J. 75: 30-24.
- Stern, M. J., G. F. L. Ames, N. H. Smith, E. C. Robinson and C. F. Higgins. 1984. Repetitive extragenic palindromic sequence: A major component of the bacterial genome. Cell. 37: 1015-1025.
- Svenning, M. M., J. Gudmundsson, I. L. Fagerli and P. Leinonen. 2001. Competition for nodule occupancy between introduced strains of *Rhizobium leguminosarum* biovar *trifolii* and its influence on plant production. Annala of Botany (special). 88: 781-787.

- Theuri, S. W. M., G. N. Chemining'wa and J. W. Muthomi. 2006. Theabundance of indigenous rhizobia nodulating cowpea and common bean in central Kenyan soils: Responding to demands and opportunities through innovative agricultural technologies knowledge and approaches (pp. 12-17). Scientific conference technical and publication sub-committee. Kenya Agricultural Research Institute.
- Thies, J. E., B. B. Bohllool and P. W. Singelton. 1992. Environmental effects on competition for nodule occupancy between in traduced and indigenous rhizobia and among introduced strains. Can. J. Microbiol. 38: 493-500.
- Thies, J. E., P. W. Singleton and B. B. Bohllool. 1991. Influence of the size of indigenous rhizobial populations on establishment and symbiotic performance of introduced rhizibial on field-grown legumes. Appl. Environ. Microbiol. 57: 19-28.
- Versalovic, J., T. Koeuth and J. R. Lupski. 1991. Distribution of repetitive DNA sequences in eubacteria and application of fingerprinting of bacterial genome. Nucl. Acid Res. 19: 6823-6831.
- Walinga, I. ,W.van Vark, V.J.G. Houba and J.J. van der Lee. 1989. Part 7 : Plant Analysis Procedures. A series of syllabi. Department of Soil Science and Plant Nutrition, Agricultural University, Wegeningen, The Netherlands. 263 p.
- Wolff, A. B., W. Streit, J. A. Kipe-Nolt, H. Vargas and D. Werner. 1991. Competitiveness of *Rhizobium leguminosarum* bv. *phaseoli* strains in relation to environmental stress and plant defense mechanisms. Biol. Fertil. Soils. 12(3): 170-176.
- Xu, L. M., C. Ge, Z. Cui, J. Li and H. Fan. 1995. *Bradyrhizobium liaoningense* sp. nov. isolate from the root nodules of soybean. Int. J. Syst. Bacteriol. 45: 706-711.
- Young, C. C. and K. T. Cheng. 1998. Genetic diversity of fast- and slow-growing soybean rhizobia determined by random amplified polymorphic DNA analysis. Biol. Fertil. Soils. 26: 254-256.
- Young, E. G. & C. F. Conway. 1994. On the estimation of allantoin by the Rimini-Schryver reaction. J. Biol Chem. 142: 839-853.
- Yemm and Cocking. 1955. E. W. Yemm and E. C. Cocking. The determination of amino acids with ninhydrin. Analyst. 80(1955), pp. 209-213.