



## Re-announcement: PhD Scholarship on Ecophysiology and Nutrition of Cocoa

*This advertisement has been re-opened for Ivorian candidates only*

**One fully-funded PhD fellowship is available for a highly talented candidate from Ivory Coast to investigate the physiological responses of different cocoa genotypes to nutritional treatments and the interactions with agricultural management, particularly shade, to achieve high yield and bean quality.**

### PROJECT

CocoaSoils aims to build the knowledge base for sustainable intensification of cocoa production through a large public-private partnership that spans all cocoa growing regions of the tropics. Enhancing cocoa productivity and nutrient use efficiency requires a deeper understanding of the nutrient requirements of the cocoa tree and the roles and physiological responses to different nutrients. Integrated Soil Fertility Management (ISFM) recommendations will be developed based on medium- and long-term data from carefully planned and consistently managed nutrient response trials following agreed protocols and resource commitments. Specific ISFM and other productivity-enhancing recommendations will be delivered towards the sustainable intensification of cocoa production. CocoaSoils will be implemented through public-private partnerships with leading partners IITA and WUR in collaboration with CIAT, ICRAF, UNEP-WCMC<sup>1</sup>, NARS (including CNRA<sup>2</sup>, CRIG, CRIN, IRAD, and Universities), cocoa authorities, fertilizer industry partners, cocoa industry partners and IDH. A global network of long-term cocoa fertilizer trials across different environments and systems will be established by companies participating in the CocoaSoils consortium. The main objective of these trials is to collectively design and adopt fertilizer recommendations for cocoa growers, guidelines for recycling of cocoa husks, as well as guidelines to manage the risk of spreading diseases; and to develop a database on the efficacy and availability of organic resources.

The PhD research focuses on four aspects of cocoa ecophysiology. The first aspect considers the interactions between leaf nutrient content, plant water status, light intensity (shade), and vegetative and reproductive growth efficiency in cocoa plants via in situ measurements of cocoa leaf photosynthesis and transpiration rates over range of light, temperature and humidity along the day and over a full production cycle. The second aspect focuses on knowledge gaps on cocoa nutrition, particularly: (i) assessing nutrient needs of cocoa throughout the production cycle, (ii) assessing competition for nutrients among plant organs during respective periods of growth (e.g. leaf flushing, flower production, fruit setting, pod growth) and (iii) storage and remobilization of nutrient from leaves at senescence. The third aspect considers the

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<sup>1</sup> CIAT: Centro Internacional de Agricultura Tropical; ICRAF: World Agroforestry Center; UNEP-WCMC: World Conservation Monitoring Centre of the United Nations Environment Programme

<sup>2</sup> CNRA: Centre National de Recherche Agronomique, Cote d'Ivoire

effects of nutrients, particularly phosphorus, in flowering and fruit setting, and understanding the role of potassium nutrition in drought stress. The fourth aspect focuses on improving plant and soil diagnostic methods, particularly foliar critical values and combinations of nutrients in the cocoa plant for developing sound recommendations on cocoa fertilization.

### **POSITION**

The 4-year PhD scholarship (for students with Ivorian nationality only) is comprehensive and will cover a stipend (€1,190/month when in the Netherlands, €700/month when in the home country, for up to 48 months in total), research costs, tuition, international and regional travel, and insurance while in the Netherlands<sup>3</sup>. The student will enroll in a PhD program of the Graduate School for Production Ecology & Resource Conservation (PE&RC) at Wageningen University (WU) in the Netherlands. The student will be hosted by the Centre for Crop Systems Analysis (CSA) of WU during training in The Netherlands and by CNRA in Côte d'Ivoire during field work. The candidate will be supervised by a team of supervisors from the partner institutes.

### **QUALIFICATIONS**

- Fluency in English speaking and writing, demonstrated either through experience abroad in a non-Francophone country; IELTS/TOEFL scores; or publications in English;
- An MSc degree with above average grades in Plant Physiology, Plant Nutrition, Agronomy, or related Plant and Soil Sciences fields, obtained less than 5 years ago;
- A solid basis in plant physiology;
- Good quantitative modeling and statistical skills;
- Ability to work independently and in a team; pro-active attitude; good communication skills; ability to deal with high a work load; and capacity to work under challenging (field) conditions.

### **APPLICATION PROCEDURE**

Candidates should submit the following documents combined in **one single PDF document**:

1. Application letter, stipulating the motivation for pursuing a PhD degree and elaborating on the candidate's experience in relation to the requirements;
2. Curriculum vitae, concise and focusing on academic training, relevant work experience, publications and scientific engagement;
3. The names, affiliations and e-mail of two senior scientists (candidate's thesis supervisor, main professor or current employer) as referees for recommendation letters;
4. University certificates and academic transcripts, detailing BSc and MSc degrees.

To apply, please send an e-mail with the **single PDF as specified above** to [lotte.woittiez@wur.nl](mailto:lotte.woittiez@wur.nl). ***Documents that are not in English and/or not sent as one single PDF will not be considered.***

**Re-opened on 3 April 2018; closing date 15 May 2018**

More information: Niels Anten ([niels.anten@wur.nl](mailto:niels.anten@wur.nl)) and Philippe Vaast ([philippe.vaast@cirad.fr](mailto:philippe.vaast@cirad.fr)).

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<sup>3</sup> *Outside the Netherlands the PhD student is responsible for his/her own insurance and will have to sign a liability statement. On submitting proof of costs for insurance outside the Netherlands, the costs can be compensated to a maximum that equals the costs for insurance in the Netherlands.*