**Evaluation workshop on teaching, research and extension in Soil Science at the Federal University of Viçosa**

**Period: 9 to 20 April 2018**

**Promoted by: Department of Soils, Federal University of Viçosa, Viçosa, Minas Gerais**

**Coordination: Prof. Teogenes Senna de Oliveira**

**Abstract:** The Workshop aims to meet the need of the Department of Soils (DPS) of the Federal University of Viçosa (UFV), to better prepare for the present and future, whether in teaching, research or extension programmes. A number of changes are under way in the DPS and UFV, of varying size and scale, which necessitate a rethinking of priorities and better preparation for the future. The renewal and changes in the profile of professors, technical and administrative staff, and students, the dilemma in soil research and teaching felt by the DPS (environmental or agronomic), continuing or not with research and extension projects, both current and of long standing in the DPS, as well as future external demands, are some of the issues to be considered for discussion. Questions must be answered for a better interaction with current reality. It is therefore necessary to identify what the DPS actually is today and what it was in the past, what the DPS can become, and what the DPS should accomplish, all at a regional, national and international level, whether in teaching, research or extension. The proposal of this Workshop, approved by the Collegiate of DPS-UFV (Reg. No. 552 of 05/04/2017), is to answer these or even other questions. Professors, technical and administrative staff, and undergraduate and graduate students are expected, and retired professors and staff, alumni, and representatives of public and private institutions, and DPS-UFV partners will be invited. Various activities are planned, including meetings, presentations, discussions, etc, to be held between 9 and 20 April 2018, organised as a Workshop, and with the participation of an External Committee, comprising members who represent the contexts of local/regional, domestic and international evaluation, and coordinated by the member with an international background.

**1. Introduction**

The origin of the present Department of Soils is linked to the natural evolution of the UFV, when this was still the former Agricultural and Veterinary School (ESAV). At that time, the program of soil education was set up, which, in addition to geology and mineralogy, included subjects related to physics, chemistry, surveying and meteorology. In 1928, the Department of Soils and Fertilisers was created, which underwent several changes in its formal organisation, but remained active over time until becoming the current Department of Soils, created in 1978, by the consolidation of the Centre for Agrarian Sciences of the UFV. The Department of Soils of the UFV therefore completes 90 years of activities in 2018.

An important milestone for the Department was the creation in 1977 of the Postgraduate Program in Soils and Plant Nutrition, initially only at the Master's level, finally including the Doctoral level in 1982. Throughout its history, the Department of Soils has been characterised by the continuous training and qualification of its professors and researchers, seeking to improve the quality of undergraduate and graduate student training, and research projects. The excellence of the PPG/SNP can be measured by the success of the researchers it has trained: 845 former students have been responsible for defending 532 Master's theses and 313 Doctoral theses, and is currently rated 6 under the evaluation system of CAPES. The specialised areas of training in Soil Science are: Plant Fertility and Nutrition; Genesis, Morphology and Classification; Mineralogy; Chemistry; Physics; Organic Matter; Management and Conservation; Forest Soils; Recovery of Degraded Areas; Geoprocessing; Soil-Environment Relationship; and Environmental Impacts.

The Department has pursued strategic research for the country in several areas and on various fronts. One example is the research carried out since the 1970s, to enable use of the soils of the Brazilian cerrado region, until then extensive uncultivated areas. The use of these soils has been made viable through generated knowledge, effectively allowing expansion of the Brazilian agricultural frontier, now one of the largest food producers in the world; all this, thanks to knowledge of the chemistry of cerrado soils. However, by 1939, research and experimentation had already begun into efficient methods of fertilisation for important crops in the Forest Zone of the State of Minas Gerais.

Professors at the Department of Soils have been working on practical and efficient solutions to facilitate increases in agricultural production both in the country and abroad. Two sets of software have already been developed that optimise the use of correctives and fertilisers, and increase the sustainable productivity of agricultural crops. The aim of this initiative is to make such systems available to engineers, technicians, producers, and public and private organisations in the country, as well as international organisations, such as the Food and Agriculture Organisation of the United Nations (FAO), in order to instigate production in countries with tropical agriculture.

Since the 1990s until the present, the Department of Soils has been conducting research in Antarctica, participating in the activities of the Terrantar Project. Its researchers have installed equipment to monitor temperature and humidity at different depths at reference sites of the frozen continent, as well as studying the energy and carbon fluxes in Antarctic soils, in addition to describing and classifying these soils. The results of research carried out in Antarctica by DPS researchers contribute to the understanding of the changes in global climate.

Currently, the Department of Soils of the UFV has facilities and laboratories to support activities in teaching, research and extension, with emphasis on undergraduate and postgraduate teaching and research. This infrastructure serves other postgraduate programs and also external demands on the UFV, represented by students from primary and secondary schools, undergraduate and postgraduate education, town halls, government agencies, rural producers, private companies, etc, carrying out studies in pedology, hydrology and environmental analysis, the analysis of fertilisers, correctives, plant materials, organic and inorganic residue, and substrates, and sediments among others, in addition to supplying didactic material.

In this external relationship with public and private entities, contact was made with the agrarian and forestry agricultural realities of Brazil, allowing the development of research and extension projects that contributed not only to improving and refining processes, but also to training people at the undergraduate and postgraduate levels (that is, in teaching), having a permanent effect on the transfer of knowledge. These partnerships were fundamental, not only for achieving the necessary infrastructure, but also for providing a situation of continuity.

This is also highlighted in extension programmes through several initiatives and projects that have benefitted communities in various regions, such as the Teia Programme, which involves several projects that share a methodological conception of extension based on knowledge building, interdisciplinary action, and relationships with communities or social movements. Among other aspects; the Soil and Environment Educational Program, which deals with these issues in the context of formal and informal education, through the (re) definition of content and aspects related to soils, increasing understanding and appreciation of the soil as an essential part of the environment; the Group for Agroecological and Organic Agriculture (GAO), which provides students with an opportunity to share ideas and practise concepts and techniques learned in the classroom concerning these types of agriculture, in addition to developing the experience of teamwork and contact with farmers, children and students; the Earth Colours Project, which returns to traditional techniques, and perfects the process of producing paint for homes using soils as pigment, resulting in a viable, environmentally correct, and sustainable technique; and the Study Centre for Planning and Land Use (NEPUT), which develops research and projects that generate and enable the transfer of advanced and up-to-the-minute technology in the areas of land-use planning and environmental education.

**2. Justification**

The proposed Workshop aims to meet the need of the Department of Soils to better prepare itself in the present and for the future, whether in teaching, research or extension. In the last few decades, a number of changes have taken place of varying size and scale, which necessitate a rethinking of our priorities, and a better preparation for the future.

Internally, the Department of Soils of the UFV has undergone a major renovation, and another is expected during the next five years, since, of the current body of professors, around ten are in retirement, leaving a total of 25. In addition, the profile of technical and administrative staff, and indeed, of the University as a whole, has changed considerably; it is in the process of renewal, the vast majority being extremely well qualified, at the graduate, masters or doctoral level, very different from in the past.

The profile of our students has also changed considerably, since, in addition to the need to get along with existing information technology, the opening of several universities and the demands of the labour market have led to the need for reflection on the type of student we are producing. Today there is a tendency for undergraduate students to be of far more regional origin (returning to the area due to the need for regional action). The behaviour and expectations of these people are very different from in the past. But it is important to note that even so, there are still students from other regions seeking entry to the UFV, probably in search of a good education, and due to the incipient character of many of the institutions created recently.

Post-graduation was previously sought by experienced people already involved in professional activities; however, today the vast majority come straight from graduating, requiring far more attention. The vast majority of students came from all over Brazil and also from abroad. Even the profile of our postdoctoral students needs to be discussed in the face of the funding being offered so that they can effectively contribute to the work of the Department, and not simply look for a definitive placement in the job market.

In addition, it is necessary to consider the dilemma in soil research and teaching felt by the Department, i.e. understanding that the area of soils has a far more environmental than agronomic approach. It is necessary for us to reconsider for a clear definition of its role. Originally, the Department played an agronomic role, but several environmental initiatives are already under way, to some degree in line with various other Soil Science groups worldwide.

It is important to discuss the continuity or non-continuity of ongoing and long-term research and extension projects (Eucalyptus Project, Terrantar, Alexis Dorofeef Museum, Minas Gerais Soil Bank, Agroecology/Family Agriculture, Soil Classification), as well as living with future demands (Biofortification of food, more-efficient fertilizers, greenhouse gases and their relation with Soil use, more-balanced agricultural systems, etc).

Faced with this situation, questions are being asked and must be answered: How to manage the body of Department staff and even University staff? What to do with old and ongoing projects: end or continue with them? The DPS and UFV are still seen as a reference both in the country and abroad (the agrarian sciences in general) in opposition to the upward trend in regionality (the credibility of the UFV and the agrarian sciences is very strong), if so, how to live with this reality? Being a reference means being sought after, which both the DPS and UFV are; this is very interesting, as the demand now is far more qualified.

**It is therefore necessary to identify what the DPS-UFV actually is today, and what it was in the past; what the DPS-UFV can become, and what the DPS-UFV should do, all at a regional, national and international level, be it in teaching, research or extension.**

How to answer these questions? Or are there other questions? This is what the Workshop proposes.

**3. Workshop Participation and Programme**

The proposal for a Workshop for external evaluation was approved at a meeting of the Collegiate of the Department of Soils of the UFV, held on 05/04/2017 (Reg. No. 552/2017).

The participation of all current employees of the Department of Soils, whether professors, technical and administrative staff, or graduate and postgraduate students, is antcipated, and retired professors, retired staff, and alumni will be invited. Various activities are planned, including meetings, presentations, discussions, etc.

The proposed programme is as follows:

**9 April 2018**

Activities: detailed definition of the agenda for external evaluation by members of the External Committee; analysis and discussion of documents; meetings with Senior Management of the UFV, especially: Directorate of the Centre for Agrarian Sciences; Pro-Rectorates of Postgraduation and Research, Teaching and Extension; and the Rector’s Office.

Participants: Members of the External Committee, Head of the Department of Soils, Coordinator of the Postgraduate Programme in Soils and Plant Nutrition; Coordinator of External Evaluation; Staff and Student Representative; Director of the CCA; Pro-Rector of Research and Post-Graduation; and the Rector’s Office of the UFV.

Venue: Department of Soils; Centre for Agrarian Sciences; Pro-Rectorates of Research and Post-Graduation, Teaching and Extension; and the Rector’s Office.

Hours: Morning and afternoon, with more-detailed information to be defined later.

**10 and 11 April 2018**

Activities: presentations by representatives of the various groups, or even individual members, regarding activities they carry out in teaching, research and extension, with a view to answering the questions: **who they really are today, and what they were in the past; what they can become, and what must be done - all at a regional, national and international level, whether in teaching, research or extension.**

Each group will have 20 to 30 minutes for presentation, with 10 to 15 minutes of discussion.

**Note: Department groups include not only professors, but also technical and administrative staff, graduate, postgraduate, and postdoctoral students, as well as representatives of external public and private institutions.**

Participants: Active and retired professors and technical and administrative staff, undergraduate, graduate and postdoctoral students, as well as representatives of external public and private institutions.

Venue: Centre for Coexistence of the Mata do Paraiso Reserve - UFV.

Hours: Morning (08:30-12:30) and afternoon (13:30-17:30), with transportation (08:00 from the ESB parking lot), with lunch (12:30-13:30 on site) and refreshments (09:45-10:15 and 15:30-16:00) provided by the DPS-UFV. Schedule to be defined in more detail later.

**12, 13, 16, 17 and 18 April 2018**

Activities: meetings with Senior Management of the UFV, meetings with different groups and people of the DPS defined by work area, affinity, category etc, whether active or retired professors or technical and administrative staff, undergraduate, postgraduate or postdoctoral students, or representatives of external public and private institutions. Parallel drafting of the external evaluation report.

Participants: active and retired professors and technical and administrative staff , undergraduate, graduate and postdoctoral students, as well as representatives of external public and private institutions.

Venue: Department of Soils, Meeting Room I of the DPS-UFV (Juice, water and snacks, with no set time for refreshments).

Hours: Morning and afternoon periods, with more-detailed information to be defined later.

**19 April 2018**

Activities: presentation of final report to members of the DPS-UFV (09:00-09:40) and discussion and final drafting of the report after discussions concerning post-presentation.

Participants: active and retired professors and technical and administrative staff, undergraduate, graduate and postdoctoral students, as well as representatives of external public and private institutions. Parallel drafting of the external evaluation report.

Venue: Auditorium of the ESB-UFV and Meeting Room I of the DPS (Juice, water and snacks, with no set time for refreshments).

Hours: Seminar presentation in the morning (09:00-09:40) and discussion (09:40-11:30) and afternoon (14:00-18:00) dedicated to the final drafting of the post-presentation report.

**20 April 2018**

Activities: Final drafting of the report and extraordinary meeting of the Collegiate of the Department (10:00), as well as a specific meeting with the Director of the Centre for Agricultural Sciences of the UFV (08:00 or 14:00 - the time to be confirmed later) for delivery of the final report.

**4. Members of the External Committee**

The members of the Committee were chosen based on suggestions from the Collegiate of the Department of Soils, with priority given to those in actual academic and scientific activities and with administrative experience, as well as being available to participate. These members also represent the context of local/regional, domestic and international evaluation. Members of the UFV were defined based on the necessity of not belonging to the Department of Soils, but having sufficient knowledge of its role in the UFV, as well as knowledge of the rest of the UFV, again academic, scientific and administrative. The External Committee will be coordinated by the member representing the international context. The members for the external evaluation therefore are:

**Local/Regional Member: Prof. Angelo Palini (Federal University of Viçosa - Brazil):** Holds a degree in Agronomy from the School of Agronomy/Pinhal (UNIPINHAL), SP (1986), MSc. in Plant Health (Entomology) from the Federal University of Lavras (1991), PhD in Population Biology from the University of Amsterdam (1998), and Sabbatical at the University of California, Davis, USA (2016). He is Titular Professor in Entomology at UFV, assistant editor of Neotropical Entomology, scientific advisor to FINEP, CNPq, CAPES, FAPEMIG and STW - Netherlands, a research fellow at the Universityof Amsterdam, and a research productivity fellow at CNPq. He was coordinator of the Postgraduate Program in Entomology (CAPES level 07) of the Federal University of Viçosa from 2000 to 2009, and General Coordinator of Postgraduation and Internationalisation of UFV from 2012 to 2015. Current coordinator of the Professional Master's Degree in Plant Sanitary Defense/UFV (CAPES note 04). Has experience in the area of Agronomy, with emphasis on Agricultural Entomology and Plant Sanitary Defense. Together with his team of collaborators, he mainly researches the following topics: the ecology of food webs in agroecosystems, biological control, and agricultural acarology (CV: <http://lattes.cnpq.br/6438192909491452>).

**National Member: Prof. José Miguel Reichert (Federal University of Santa Maria - Brazil):** Titular Professor (1996 - present) in Soil Physics & Hydrology at the Federal University of Santa Maria (UFSM). Member of the Committee for Agricultural Sciences of CNPq. Editor of the Brazilian Journal of Soil Science. Former Scientific Director of the Support Foundation for Research of the State of Rio Grande do Sul (Fapergs). He was a consultant to FAO-UN. At UFSM, he served as Department Head, Postgraduate Program Coordinator and Counselor on the Councils for University & Teaching, Research, and Extension. Visiting researcher at Texas A & M University, the National Soil Erosion Research Laboratory of USDA, Kiel University and PurdueUniversity; PhD in Soils from Purdue University (1993); MSc in soils (1988) from UFRGS. Graduated in Agronomy at UFRGS (1984). Advisor on postgraduate studies in Soil Science and Forestry Engineering at UFSM. Ad hoc advisor to CNPq and Capes, to 12 Research Promotion Foundations, and 39 scientific journals. Coordinator of international projects (ALFA Program of the European Community and PROBRAL Program, Capes-Brazil/DAAD-Germany) and national projects (CT-INFRA/MCT/FINEP, PRONEX-FINEP/CNPq and PRONEX-Fapergs/CNPq). Author of more than 180 articles, in national and international scientific journals. Research topics are the structure, mechanics, compaction and hydrology of the soil, and the hydrology, erosion and conservation of the soil in small rural river basins (CV: http://lattes.cnpq.br/0910765178697312.)

**International Member and Committee Coordinator: Prof. Richard William Bell (Murdoch University - Australia):** I am a specialist in Soil Fertility and Land Management with lecturing and research experience in Australia, Bangladesh, Brazil, Cambodia, China, Indonesia, Fiji,  Sri Lanka, Thailand and Vietnam. My interests are in plant nutrition on problem soils, soil management, management of sandy soils, diagnosis and correction of mineral disorders of plants, plant adaption to mineral stress, nutrient cycling, rehabilitation of degraded land, conservation agriculture, dryland salinity, catchment hydrology and management, sustainable land use, and Third world agricultural development. I have authored 9 book chapters, 133 refereed journal papers, 50 refereed articles in book and proceedings, 239 conference and other non-refereed papers, 72 reports, and edited nine books. Much of my published work has concerned the mineral nutrition of crop and plants, and rehabilitation of degraded land. My first international project experience was as coordinator for a collaborative study with Thailand (1984-89) on the nutrition of food legumes on problem soils. Since then I have been the Project Leader of international cooperative research projects with China on boron and zinc nutrition of oilseed crops (1992-97), land suitability for upland crops in Cambodia (2004-2007); increasing rabi season legume crops  production in north-west Bangladesh (2006-2009); reducing water pollution from aquaculture fishponds in Vietnam (2007-2009), developing soil and crop management for sandy soils of coastal south central Vietnam (2009-2012), developing conservation agriculture for smallholder farms in Bangladesh (2012-2017) and soil, nutrient and water management on sands in south-central coastal Vietnam (2014-2018) (http://profiles.murdoch.edu.au/myprofile/richard-bell/).