

VOCATIONAL EDUCATION AND TRAINING FOR AQUAPONICS

In 'Ten technologies which could change our lives'¹, aquaponics was singled out as a solution for developing innovative and sustainable food sources for Europe. In order to develop aquaponics (AP) (and also land-based recirculating aquaculture), to its full potential in Europe, we need an appropriately trained workforce. This also opens up new perspectives in introducing 'green jobs'. Therefore, aquaponics should be included in the vocational education of future farmers, and also in continuing education for career changers and interested individuals.

In order to educate future aquaponic farmers the training of AP has to include the professional operation of the elements of such systems. Therefore, the training environment ought to be state-of-art. However, the setting does not have to be large, 30 m² should suffice. [For more information on AP systems see also Podgrajsek et al. (2014)² and Graber and Junge (2014)³]. Such systems should be planned and built by professionals as they requires complex monitoring and operation.

Students can be involved in:

- Installation (under professional guidance);
- general maintenance and operation (daily checks and so on);
- operation of the hydroponic subsystem (planting, harvesting, integrated pest management, adjustment of pH and nutrient levels etc.);
- operation of the aquacultural subsystem (fish feeding, fish weight determinations, adjustment of pH levels etc.);
- monitoring of parameters (water quality, fish growth and health, plant growth and quality); and
- harvesting and post harvest operations

The basics for the vocational education in aquaponics were elaborated in LEONARDO Project Aqua-Vet and are available as follows:

- <https://www.zhaw.ch/de/lsfm/institute-zentren/iunr/ecological-engineering/oekotechnologie/nachhaltige-aquakultur/aquavet/>
- <http://www.adam-europe.eu/adam/project/view.htm?prj=10804>

The units were tested at three vocational schools in Italy, Switzerland and Slovenia.

Other sources for obtaining information on AP:

- Recently established MOOC by the RoofWaterFarm: <http://www.roofwaterfarm.com/kompakt/toolbox/e-learning/>
- The EU Aquaponics Hub (<https://euaquaponicshub.com>) and particularly videos of the training schools of this COST Action (<https://euaquaponicshub.com/research-innovation/training-schools>)

¹ Van Woensel, L.; Archer, G.; Panades-Estruch, L.; Vrscaj, D. Ten Technologies which could Change Our Lives; European Union: Brussels, Belgium, 2015.

² Podgrajsek, B.; Schmautz, Z.; Krivograd Klemencic, A.; Jarni, K.; Junge, R.; Griessler Bulc, T. (2014). Preliminary Monitoring of an Aquaponic System in Biotechnical Centre Naklo. *Moje podezelje*, 5, 9. 10-11. ISSN 1855-9204.

³ Graber, A.; Antenen, N.; Junge, R. (2014). The multifunctional aquaponic system at ZHAW used as research and training lab. In: Maček Jerala, M.; Maček, M. A. (Eds). Conference VIVUS: Transmission of Innovations, Knowledge and Practical Experience into Everyday Practice. Collection of Papers, Strahinj, 14.–15. november 2014. (245-255). Strahinj: Biotehniški center Naklo. ISBN 978-961-93564-4-9.