DARE TO DIVERSIFY

Exchange of experiences on soil fertility

Angelika Sontheimer · Winsen/Aller

Some 50 specialists from the consultants' circles, the state advisory agencies and the Chambers of Agriculture in Lower Saxony, Hessen and North Rhine Westphalia were invited to view the seed breeding station in Asendorf and then to a discussion forum on soil fertility in Bücken.

„IN THE FINAL ANALYSIS THE ONLY THING, WHICH CONSTANTLY INCREASES SOIL FERTILITY, IS HEALTHY CROP ROTATIONS“

Christoph Felgentreu

„As much bio-diversity as possible and as many earthworms as possible, that is my picture of the agriculture of the future," remarked Christoph Felgentreu, the DSV product manager in his introduction to the audience at the consultants' symposium in Bücken near Hoya. The guiding theme was soil health and optimum soil management, "fitting for the Year of the Soil 2015", as Mr. Felgentreu remarked.

Allies in matters of soil fertility

Mr. Felgentreu differentiated the complicated greening requirements, which are not always fully understood when considered from a professional point of view. „We had no need for the greening rules and regulations in the cover crop area," he explained and illustrated his remark with two practical examples. If the cover crops may be fertilised only with organic fertilisers, they can only get started slowly, which is not good, in particular for cash crop businesses.

As a second example Mr. Felgentreu cited the prohibition on sowing clover as a catch crop with maize, which runs contrary to soil fertility. He also expressed criticism of the new strip till procedure and questioned whether this would produce a „flower pot effect", in which the plant is drawn in one direction. „For this purpose the important thing in cover crop mixtures is that they have a varied root system, with different horizons, in order to increase soil fertility, stated the specialist. It is not the ground marks, which are important, but how the soil is handled. Where the farmer is happy with the above-ground biomass, the earthworm on the other hand needs the brown, withered leaf on the surface to process it into humus," explained Mr. Felgentreu. „We need allies, who understand the soil and who get involved in the issue of soil health," he exhorted the consultants.

Diversity brings benefits

Rolf Kern, who works for the agricultural water pollution department in the Karlsruhe Office of Agriculture, described his experiences with cover crops. In the mid-1980's in the district for which he was responsible increasing numbers of problems of erosion and nitrate pollution started to emerge. In the mid-1990's 80 % of the land-surface in the administrative district was farmed with mulch sowing systems in conjunction with cover crops. The state consultant advocated leaving the cover crops, including the legumes, in the ground over the winter without mulching or working them in, so that mineralisation would not occur. „This salvages the nitrogen during the winter," he explained. Conversely, a member of the audience reported increased Nmin values in her trials with higher proportions of legumes, which could be explained by the surplus from the previous crop. The general conclusion was

„OVER THE COURSE OF TIME WE HAVE BECOME VERY FAR REMOVED FROM THE SOIL AND IT IS TIME TO GET TO GRIPS WITH IT AGAIN.“

Rolf Kern

Extract from the German magazine „Innovation“

„AS WELL AS THEIR MANY BENEFITS TO PLANT CULTIVATION, COVER CROPS ALSO CONTRIBUTE TO BOOSTING THE IMAGE OF AGRICULTURE.“
Anja Schmidt

that the cover crop mixture must be adjusted to suit the location, the climate and the crop rotation.

Key crops in modern agricultural systems

In Saxony the cultivation of cover crops is encouraged with a price of 58€/ha. „The cultivation of cover crops is an agri-environmental measure with a variety of uses,“ explained Anja Schmidt from the Saxon State Office for the Environment, Agriculture and Geology.

She cited the plant cultivation adviser, Dietmar Näser's remark that cover crops should be grown as main crops. They are not cover crops, but have a place as a key crop in modern agricultural systems between the crops. When sowing cover crops the remaining growing season must be used to the best advantage, a day in July is like a week in August or the whole of September. One of the audience made the critical remark that they also react to the phytosanitary aspects. For example, mustard and phacelia may transmit the soil-borne rattle virus, in oilseed rape crop rotation the mustards harbour the risk of club root, species of oats favour oat crown rust and oat red leaf and the barley yellow dwarf virus can infest barley, wheat and rye. However pests can be minimised by the use of crop rotations with winter, summer and mixed crops. Bad experiences have been encountered, according to Ms Schmidt, with the pre-harvest sowing, which has been overrun by mice. It has not been possible to see exactly where the problem lies. The advantages of pre-harvest sowing cannot be denied, however, in particular the saving in costs, the early development of the plants and the good suppression of volunteer grain and weeds. As her last point she stressed the use of water. Ms Schmidt concluded her talk with the remark, „It is often thought that cover crops compete with the main crops for water, but our trials have not confirmed this. Soil humidity on the cover crop areas was always higher than that on the fallow land.“

Progress in soil fertility over a generation

The practitioner's lecture was given by Bernd Starick from Bauern AG in Neißetal. The lecture was entitled, „Agriculture between open-cast mining and border demarcation.“ He identified the circulation philosophy of the firm as the foundation of solid production, in which plant production in arable farming is coordinated with the feed requirements of livestock production and livestock production (1,200 cattle, 16,000 pigs), geared to the agricultural area (2,500 ha LN). Balanced cover crops, a balanced nutrient supply with a suitable pH value, the humus supply in the soil and a soil-conserving technique were cited by Bernd Starick as steps on the way to good soil fertility on the open-cast mining surfaces to be re-cultivated. Thus, caterpillar tractors were used to reduce the pressure on the soil and cover crops and lucernes were planted along with cereals and maize. When questioned on the costs of growing cover crops, Mr. Starick replied, „Increasing the fertility of the soil is a great challenge, which must be tackled over generations. Every farmer decides for himself what is important to him.“

Integrating catch crops intelligently into crop rotation

„Grass catch crops with only one species of grass may be registered as ecological priority areas in accordance with the greening regulations, if they remain until 15th February of the subsequent year.“ In his lecture DSV adviser, Dieter Hübner dealt with grasses in the first instance and cited as their advantages their climatic adaptation, the exploitation of growth potential, the good use of farm manure and fermentation residues and planting green plants all year round. Grass catch crops in cereals may, for example, be sown with the cereals or as winter catch crops may be applied until December with the pneumatic spreader. Hübner maintained that several grasses also keep down weed grasses, such as bent grass and slender foxtail. By selecting

„SEVERAL GRASSES USED AS CEREAL CATCH CROPS CAN KEEP THE PROBLEM OF WEED GRASSES SUCH AS BENT GRASS AND SLENDER FOXTAIL IN CHECK.“
Dieter Hübner

the right species of grass in conjunction with appropriate sowing times and a suitable seed rate the yield of the cover crop is not affected; lack of light for the catch crop, for example by storage in the cover crop, must however be avoided Cereal grain whole-plant silage with grass catch crops can be used in a variety of ways in cattle feed, or as a biogas unit and contributes to soil conservation, nitrogen fixation and reduction of erosion, explained the advisor.

„MAINTAINING AND INCREASING SOIL FERTILITY IS A GREAT CHALLENGE FOR THE FUTURE.“
Bernd Starick