Agroecology Update: French farmer groups exploring agroecological methods

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The French national agroecology programme has taken firm root over the last two years, since the Ministry of Agriculture introduced an ambitious legal framework for promoting more sustainable farming in 2014, with more emphasis on environmental and social pillars of sustainability (see PAN UK's Sept 2016 *Update on the French national agroecology programme).*

Topics for agroecological group experimentation

In November 2016, the Ministry announced that over 300 Economic & Environmental Interest Groups (GIEEs in their French acronym) across the country and in France's overseas territories are now actively involved in developing and trialling agroecological methods. These groups involve a set of farmers who come together with technical experts and support organisations, to explore how they can start to put into practice one or more elements of agroecological techniques on their land. These organisations may be local research institutes, provincial agricultural Chambers of Commerce, grower associations or NGOs. Groups can apply for modest funds for joint research or other collaborative activities for 2-6 years, as long as their proposals address at least one of the topics under the agroecological programme. These include:

Waste & energy: Biogas production for heating/energy from crop, food or animal wastes; Renewable energy; Energy saving; Managing farm effluents; Climate change & greenhouse gases

Livestock: Exchanges between crop and livestock farmers; Livestock health management & alternatives to antibiotics; Improving self-sufficiency in livestock feed; Improving protein self-sufficiency; Meadow management

Soil & water: Soil conservation; Quantitative water management ; Water quality

Reducing & replacing external inputs: Efficient management of fertilisers; More economic & self-sufficient input systems; Pest management & alternatives to pesticides

Biodiversity & Ecosystem Services: Seed self-sufficiency & diversity; Pollinators; Domestic & cultivated biodiversity

Cropping systems: Maximising soil cover & reducing tillage; Cover crops; Organic agriculture; Nitrogen self-sufficiency via legume integration; Field level biodiversity; Diversified farming systems via longer rotations

Food supply & marketing: Shorter chains for local food supply; Marketing & supply chain creation & quality labels

Social capital: Sharing production equipment; Job creation; Working conditions on-farm; Reducing rural isolation; Work-sharing & joint mechanisation

The emphasis is very much on joint experimentation and learning, developing new skills and partnerships and innovative ways for farmers to collaborate for environmental improvement, while maintaining or improving farm incomes.

Pesticide reduction components

Specific pesticide reduction aims feature as one of the main components of around 20 of these 300 farmer group projects, often along with measures to reduce synthetic fertiliser inputs and agrochemical pollution, and/or methods to expand or diversify cropping systems. The table below summarises eleven of these pesticide-related projects. Vineyards are the most frequently concerned cropping systems: French viticulture has suffered negative public image due to its high reliance on fungicides and herbicides so some of the farmer projects have specific aims to address concerns about farm worker exposure and pesticide run-off into water courses, as well as tackling soil erosion or drought stress. For example, in the hilly Haut-Rhin area in north-east France, increasing soil erosion problems, especially after heavy rain, prompted vinegrowers in recent years to use vegetation cover to protect their soils. However, this has led to an increase in herbicide use, both within and between vine rows, and triggered ground flora dominance by highly competitive species more tolerant of water stress, causing problems for the vines in dry periods. In 2015, 18 vinegrowers of the Westhalten vineyard syndicate formed a GIEE to explore ways to replace herbicides over a six year period, while improving soil protection and vine health. After consultation with agronomic experts, conservation NGOs and researchers, the group's first field trials are experimenting with mouse-ear hawkweed *Hieracium pilosella*, a short height, rosette forming plant already used by some Swiss and French organic vineyards to quickly establish ground cover within rows without competing with the vines. A second set of trials will test specially adapted hoes for cutting weed roots with only very superficial soil disturbance, using equipment obtained by the local agricultural co-op. A third trial is assessing effectiveness of several local plants of dry conditions sown between rows to make the vineyard less susceptible to water stress and to promote functional biodiversity. The technical and economic results of the trials will be evaluated and useful practices disseminated via the Alsace Vinegrowers Association. Replacing herbicides and the frequency of mowing should improve water quality around vineyards and reduce growers' production costs.

Cropping system/Farmer group	**No. farmers**	**Region**	**Project**
Vineyards /Westhalten Vine Syndicate	18	NE: Haut-Rhin	**Towards zero herbicides and stress tolerant vineyards, using ecological ground cover plants** Trials with: -alternative within-row ground cover using low growth species. -adapted hoe for superficial working of inter-rows -local plant species tolerant of water stress & which build ecosystem resilience to drought
Arable & Livestock / GVA l'Amezule	11	NE: Meurthe et Moselle	**Strengthening farm self-sufficiency in fertiliser and crop protection inputs** Farmer group with above regional average use of agrochemicals now exploring how to reduce reliance, via: -wider rotations (peas, temporary catch crops, sunflower) -companion cropping (oil seed rape undersown with cereal-legume forage mixes) -wheat variety mixes -mechanical weeding, with herbicides in micro-dose -fertilisation using anaerobic digestate
Arable & Livestock / CUMA Vieux Moulin	12	NE: Meuse	**Communal cropping for ecologically intensified farming** Farmer group with joint management of cereal production equipment, storage & marketing look to closer integration via: -Diversified rotations with spring sown crops and legumes to disrupt weed reproduction

			-combined mechanical with chemical weeding -reducing weed seed banks by improved collection of straw & waste post-harvest, exchanging straw for manure with livestock farms - set up of biogas digestion unit to reduce fossil fuel use in cereal drying
Vineyards / GIEE cave Tutiac	7	SW: Gironde	**From pesticide reduction to more competitive economics** Pilot project with pioneers in a 450 member wine grapes co-op, to reduce agrochemical inputs & improve water quality, biodiversity, soil protection & better relations with local residents. Via: -biorational alternatives to synthetic fungicides for Botrytis rot & mildew control -establishing green manure crops between vine rows, testing different species & mixes -hedge planting along water courses & next to residential areas -organising green manure seed production & cover crops at co-op level
Vineyards / GIEE SME Vin de Bordeaux	7	SW: Gironde	**Evaluating methods for pesticide reduction in local supply chains** Assessing methods for reducing use & exposure, via: -better field mapping, identification of no-spray priority areas, improved decision making -use of biological pesticide alternatives -measuring Treatment Frequency Index reduction & cost savings
Maize & Livestock / GDA Pouillon Peyrehorade	4	SW: Landes	**Developing mechanised weed control** In an area with 60% maize cultivation and serious herbicide run-off into water courses. Via: -joint purchase of suitable equipment for maize -economic & impact measurement (runoff reductions into streams) -local promotion of mechanical methods
Vineyards / SCV Vignoble Dom Brial	36	S: Pyrenees-Orientales	**Diversified viticulture approaches** Reducing agrochemical, energy & water use + improving soil & water quality via: -ground cover plants to reduce herbicide need & boost biodiversity -mating confusion technique for control of grape moth -establishment & assessment of agroecological infrastructures (hedges -building soil organic matter
Apples / GIEE CoopLim	23	C: Corrèze	**Varietal diversification towards agroecological orchards** Widespread reliance on Golden Delicious variety now incurs marketing challenges & high use of pesticides, especially fungicides. Via: -promotion of varieties resistant to apple scab & other fungal diseases -methods to reduce pesticide use and farm worker exposure
Apples / GIEE Arbonovateur	15	S: Tarn et Garonne	**Fruit growers producing differently** Grower group in the national apple network for pesticide reduction. Via: -mating confusion method for codling moth -methods to reduce apple scab disease incl. varieties more resistant -reducing pest, disease & weed pressure via careful selection of apple varieties + methods to conserve biodiversity & soil fauna +targeted fertiliser & irrigation 40-60% TFI reduction achieved in more innovative systems
Sugarbeet/ Communes du Cambrésis et du Valenciennois	3	N: Nord Pas de Calais	**Reducing herbicides in sugarbeet while maintaining productivity & profits** Experienced farmer group in pesticide reduction in wheat & oilseed rape now aim to reduce herbicide use by 66% collectively, via:

			-mechanical weeding with jointly owned harrow equipment -expanded rotations with more legumes -spot application of herbicides where unavoidable
Horticulture/ PhytoBioMar	17	S: Pyrenees-Orientales	**Joint management of biological control for organic greenhouse crops** -Joint mass rearing of beneficial insects to reduce costs & rely less on externally sourced products -Shared cultivation of plants useful as refuges for beneficials -Joint network for crop protection forecasting & alerts -Collaborative transfer of natural enemies between sites & experience exchange

Several GIEES in arable systems are exploring how expanded rotations, often with legume crops, can help reduce weed pressure and the need for herbicides, combined with more mechanical weeding. In orchard projects, reducing fungicide use by replanting with varieties more tolerant of apple scab disease is a key objective, as is trialling mating confusion methods for codling moth pests using the female moth sex pheromone to attract and trap males and thus disrupt reproduction.

Diversifying farming systems and improving organic

Numerous GIEEs involve refinements or innovation to improve organic systems. For example, in the Landes area in south-west France, 7 cereal and livestock farmers, organic or in conversion, have joined forces to grow and process organic soya as a locally sourced high protein livestock feed. The aims are to diversify rotations on the arable land, reduce the use of nitrogen inputs and enable farmers to become more self-sufficient in protein fodder. Motivations for this project were: (i) the gradual disappearance of traditional livestock rearing in the Rion des Landes community, (ii) high risk of nutrient pollution of water courses and ground water in the leachable sandy soils and (iii) a desire to conserve biodiversity in the Barthes Natura 2000 site. The project includes soil conservation techniques for organic crops using strip-till. To support the profitable introduction of soya into their crop rotations, the farmers have gained a communal grain store and separator and access to a mobile unit to 'toast' soya beans into a form that can be added to animal feed rations. Resource exchange between livestock, arable and vegetable growers is encouraged. The GIEE will assess the agroecological performance of the joint production systems in terms of: increased acreage under organic production; reduced reliance on external inputs and feed; reduced production costs through jointly owned and managed equipment and resource-sharing.

Other GIEEs are re-integrating livestock and cereal production at local level, including growing lucerne and undersowing cereals with forage legumes, moving away from high input and narrow rotations dominated by maize, towards more diverse and less polluting systems. By 2020, the results from these many different agroecological experiments over the range of French farming conditions should provide a wealth of experience and proven techniques for making European agriculture much more sustainable.

References

France: over 300 GIEEs now involved in agroecology, Min Ag PR 30 Nov 2016 (in French). Via: http://agriculture.gouv.fr/plus-de-300-giee-qui-sengagent-dans-lagro-ecologie *Links on this page provide access to details of some of the 300 GIEE projects by region.*