

## CERES Policy

### Minimum Requirements for Crop Rotation, Cover Crops and Legumes

1	<b>Aims</b>	Establish clear rules for all inspectors, certification officers, and farmers, concerning minimum requirements for crop rotation and legumes.
2	<b>Background</b>	Crop rotation, legumes and cover crops are crucial to maintain soil fertility and prevent pests and diseases. In spite of this, deficiencies in this area are very common among organic farms.
3	<b>Normative framework</b>	<p><b>EU-regulation:</b> Reg. (EC) 834/07, Preamble (13): <i>"The essential elements of the organic plant production management system are soil fertility management, choice of species and varieties, multiannual crop rotation, recycling organic materials and cultivation techniques."</i></p> <p><b>Art. 5: Specific principles applicable to farming:</b> <i>"(f) the maintenance of plant health by preventative measures, such as the choice of appropriate species and varieties resistant to pests and diseases, appropriate crop rotations, mechanical and physical methods and the protection of natural enemies of pests;..."</i></p> <p><b>Art. 12: Plant production rules:</b> <i>"b) the fertility and biological activity of the soil shall be maintained and increased by multiannual crop rotation including legumes and other green manure crops,..."</i></p> <p><b>NOP:</b></p> <p>§ 205.2: <b>Crop rotation:</b> The practice of alternating the annual crops grown on a specific field in a planned pattern or sequence in successive crop years, so that crops of the same species or family are not grown repeatedly without interruption on the same field. Perennial cropping systems employ means such as alley cropping, intercropping, and hedgerows to introduce biological diversity in lieu of crop sequencing.</p> <p>§ 205.205: The producer must implement a crop rotation including, but not limited to, sod, cover crops, green manure crops, and catch crops that provide the following functions that are applicable to the operation:</p> <ul style="list-style-type: none"> <li>(a) Maintain or improve soil organic matter content;</li> <li>(b) Provide for pest management in annual and perennial crops;</li> <li>(c) Manage deficient or excess plant nutrients; and</li> <li>(d) Provide erosion control.</li> </ul>
4	<b>Terms</b>	<p><b>Annual crop:</b> Crop, which remains on the field for one year or less.</p> <p><b>Perennial crop:</b> Crop, which remains on the field more than one year.</p> <p><b>Intercrop:</b> Association of several crops on the same field at the same time.</p> <p><b>Cover crop:</b> Crop used for soil cover, in interrow spaces of perennial crops, or during periods, where no harvested crops are grown in annual crops.</p> <p><b>Legumes:</b> Plants of the family Fabaceae. Can be herbaceous plants, shrubs, or trees, cultivated or spontaneous.</p> <p><b>Green manure:</b> Plant biomass is incorporated to the soil as a source of organic matter and nutrients.</p>
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	The following should be seen as a general guideline. Appropriate solutions to comply with organic standards must be agreed with the operator in every given situation.
<b>5.1</b>	<p><b>Minimum requirements for rotation of annual field crops:</b></p> <ul style="list-style-type: none"> <li>At least three different crops should be rotated, belonging to three different botanical families. In case the three different crops belong only to two different botanical families, the predominant family should not cover more than two thirds of the crop rotation. Botanical families that are particularly prone to rotation derived pests or diseases (e.g. Brassicaceae or Solanaceae) should not cover more than one third of the rotation. Among the crop rotation elements, cover or green manure crops can be counted. Spontaneous fallow vegetation can also be counted as a crop rotation element. We do not establish minimum requirements for the time-share of each crop: Some crops may remain on the field significantly longer than others may (exception: Minimum time for green manure crops or fallow periods, see below). CERES will allow special conditions for polyculture farming systems or crop rotation systems with integrated special compensation effects as the cases arises (e.g. legumes integrated as under sown crops in cereals, mixed or intercropping systems with legumes, etc.).</li> <li>To avoid excessive degradation of soil organic matter, row crops with intensive manual weed-ing (vegetables, potatoes, etc.) should not cover more than 50% of the total crop rotation. Ex-ception: intensive horticulture on small farms.</li> </ul>
<b>5.2</b>	<p><b>Minimum requirements for legumes in rotations of annual crops:</b></p> <ul style="list-style-type: none"> <li>Legumes should cover at least 25 % of total crop rotation, one third is desirable.</li> <li>Since grain legumes (beans, peas, soybeans, etc.) usually leave little nitrogen on the field, or even have a negative N-balance in some cases, forage or green manure legumes should make up at least part of the total share of legumes. On farms with arable crops larger than 100 ha, the percentage of crops that contribute to building up soil organic matter (ley crops, forage or green manure legumes) should not be less than 10%.</li> <li>Exceptions to these general rules can be made for small farms up to 2 ha. Soil organic matter in these cases should be conserved or increased by other means, e.g. organic manure from external sources.</li> </ul>
<b>5.3</b>	<p><b>Cover crops in annual rotations:</b></p> <ul style="list-style-type: none"> <li>To protect soil from erosion, increase soil organic matter, promote soil life and nitrogen fixation, prevent nutrient leaching, green manure or cover crops should be grown, whenever there is a period without crops of six weeks or more, if climatic conditions allow.</li> </ul>
<b>5.4</b>	<p><b>Soil cover in perennial crops:</b></p> <ul style="list-style-type: none"> <li>Wherever possible, interrow spaces should be covered by vegetation.</li> <li>One exception to this rule can be made for agroforestry systems, where soil is covered through several vegetation storeys.</li> <li>A second exception can be made for agroecosystems, where water is scarce, and cover crops would compete with the main crop for water. Mulches should be used as an alternative in such regions, wherever possible.</li> </ul>
<b>5.5</b>	<p><b>Legumes in perennial crops:</b></p> <ul style="list-style-type: none"> <li>Wherever possible, legumes should be used as cover crops.</li> <li>Legume shrubs or trees can replace herbaceous legumes.</li> <li>Low intensity crops with low yield levels, low nutrient export, and without or with very low levels of nitrogen fertilisation from external sources, can usually be considered as sustainable. Planting of legumes other than those, which grow spontaneously, is not compulsory in these situations (e.g. low input cocoa or coffee plantations, or fruit orchards in temperate climate). In crops, however, where considerable amounts of nitrogen are applied from external sources (e.g. as poultry manure), at least part of this should be replaced through significant efforts to promote biological nitrogen fixation by legumes.</li> </ul>

5.6	<p><b>Special cases:</b></p> <p><b>Bananas:</b></p> <p>Legume cover crops should be planted when new plantations are established. Usually, however, most legumes will disappear, when banana plants are big enough to overshadow the whole surface. As long as no satisfying systems for combining legumes with intensive banana plantations have been found, legume planting is not compulsory there.</p> <p><b>Sugarcane:</b></p> <p>In the period between harvest and re-sprouting, green manure legumes can and should be grown. Exception: small-scale production, where only small quantities are harvested at a time (often only harvesting the ripe canes, distributed all over the field).</p> <p><b>Pineapples:</b></p> <p>If producers plant new suckers or slips after each production cycle, then pineapples should be handled like an annual crop – even though one cycle is normally longer than a year. If plants are left to grow for several years, then removing the pineapple plants, at least one other crop plus one legume green manure crop should be grown, before pineapples are newly planted.</p> <p><b>Extreme pedo-climatic conditions:</b></p> <p>There may be cases where soil or climate do not allow growing more than one or two crops, such as e.g. alkaline / saline soils at 4,000 or more meters above sea level in the Andean Altiplano. In such regions, setting the land aside for several years can be accepted instead of crop rotation.</p>	
6	<p><b>Related documents</b></p>	<p>3.2.1 Brief information on organic crop production (Inf)</p> <p>4.1.1 CERES Policy Third Country Certification (Pol)</p>