

Integrated Production Regulations 2024

Technical growing standards for herbaceous crops

AUTUMN/WINTER CEREALS

Preserving Natural Agro-ecosystem

The application of chemical pesticides, herbicides and fertilizers is forbidden in natural areas nearby the farm.

Choice of cultivars and planting materials

The use, where appropriate, of resistant or tolerant cultivars and standard and certified seed and planting material. Concerning the choice of variety, it is recommended to refer to the varietal-list present on the “annex recommended varietal list of Emilia Romagna Region” or Regional reference sites. The use of genetically modified plant material (GMOs) is forbidden.

The seed material must be certified with appropriate certification issued by official center (for Italy: CREA-SCS Seed Testing and Certification Centre).

Soil preparation before transplant or seedlings

Soil preparation for transplanting or sowing must be carried out with the purpose of preserving and improving soil fertility by avoiding erosion and degradation phenomena. These activities should be defined according to the crops involved and site characteristics (soil nature and conditions, site location, erosions risk and climatic condition). Furthermore, employed techniques need to be identified according to the Landscape Unit (UTA/UPA), in which the site is located. For Each UTA/UPA environmental and soil specific characteristics, cultivated crops and limitations to crop management are defined. A proper hydraulic regulation of rainwater it is strongly recommended to maintain a good soil structure that may led to soil biodiversity preservation and enrichment (soil microflora and microfauna).

Crop rotation

- **Durum wheat:**

For this cereal the continuous cropping is not allowed in all Italian Regions except for Sicily Region (one continuous cropping is allowed), thus it could not be cultivated after autumn-winter cereals. To count the total number of DEPAUPERATIVE crops in the five-year cultivation period, durum wheat does not differ from common wheat, spelt and triticale because they all belong to the same botanical genus.

In addition, whenever Durum wheat is cultivated after spring-summer cereals, burial of precession crops residues and soil and material turning-over should be applied to reduce *Fusarium* development.

- **Soft wheat:**

For this cereal the continuous cropping is allowed once in five-year cultivation cycle in all Italian Regions. Thus, once in five years soft wheat could be grown following oats, spelt, durum wheat, barley, rye and triticale.

To count the total number of DEPAUPERATIVE crops in the five-year cultivation period, soft wheat does not differ from durum wheat, spelt and triticale because they all belong to the same botanical genus.

Sowing, transplanting and planting

Sowing is recommended from the second half of October for Northern Italy and November or December for the Southern Region. These sowing seasons are recommended to avoid Foot Rot development and excessive vegetative developments of the crop. It is widely recommended to avoid high seeds density to obtain higher yield production and limit disease development. Sowing is made in simple rows with distances of 15-20 cm between rows with plants up to 6-10 cm on the row. In the case of double rows, 12-15 cm between rows and 25-30 cm distance between the center of the bins. Optimal sowing depth is between 3 and 5 cm. Shallow tiling/ploughing to 20-25 cm are suggested.

(Table below as example)

Durum and Soft Wheat – Sowing density

Triticum aestivum : kg/ha of seed according to the sowing density (seeds/m²) and weight of seeds (g)

| Sowing density (seeds/m ²) | Weight of 1000 seeds | | | | | | | |
|--|----------------------|-----|-----|-----|-----|-----|-----|-----|
| | 30 | 33 | 36 | 39 | 42 | 45 | 48 | 51 |
| 350 | 105 | 116 | 126 | 137 | 147 | 157 | 168 | 179 |
| 375 | 113 | 124 | 135 | 146 | 158 | 169 | 180 | 191 |
| 400 | 120 | 132 | 144 | 156 | 168 | 180 | 192 | 204 |
| 425 | 128 | 140 | 153 | 166 | 179 | 191 | 204 | 217 |
| 450 | 135 | 149 | 162 | 176 | 189 | 203 | 216 | 230 |

Triticum durum : kg/ha of seed according to the sowing density (seeds/m²) and weight of seeds (g)

| Sowing density (seeds/m ²) | Weight of 1000 seeds | | | | | | | |
|--|----------------------|-----|-----|-----|-----|-----|-----|-----|
| | 39 | 42 | 45 | 48 | 51 | 54 | 57 | 60 |
| 275 | 107 | 116 | 124 | 132 | 140 | 149 | 157 | 165 |
| 300 | 117 | 126 | 135 | 144 | 153 | 162 | 171 | 180 |
| 325 | 127 | 137 | 146 | 156 | 166 | 176 | 185 | 195 |
| 350 | 137 | 147 | 157 | 168 | 179 | 189 | 200 | 210 |
| 375 | 146 | 158 | 169 | 180 | 191 | 203 | 214 | 225 |
| 400 | 156 | 168 | 180 | 192 | 204 | 216 | 228 | 240 |
| 425 | 166 | 179 | 191 | 204 | 217 | 230 | 242 | 255 |

Soil management and agronomic practices

For all the cultivation land located in 10% slope areas a constraint of soil management and tillage is present.

Other production methods and issues

In order to prevent the occurrence of mycotoxins it is strictly recommended to observe the autumn-winter cereal guidelines fixed by (the Emilia-Romagna) each Region. The use of plant growth regulators is not admitted.

Fertilisation / Fertilisers application

Before the application of fertilisers, each farmer is expected to dispose of information concerning chemical and physical soil characteristics that could be obtained from:

- Laboratory analyses;
- Consultation (for plain areas) of « Soil Catalogue » at <https://agri.regione.emilia-romagna.it/Suoli/> and other dataset provided by each Region.

In case of fertilizers application, the farm is required to draw up an analytical fertilization plan or to follow Simplified Models according to specific standard dose schedules (Standard Dose Schedule N-P-K for Durum and Soft wheat, respectively). In addition, in case of Standard Dose Schedules application, it is mandatory for the farmer to record the reasons for the increase or decrease of nutrients in soil.

Nitrogen distribution periods

Nitrogen covering distributions are allowed starting from February; in case of slow-released fertilizers application it may be done starting from mid-January.

If the principal crop succeeds a cereal whose residues (straw and stalks) have been buried, it is possible to anticipate the first Nitrogen application, equal to 30% of the total N requirement, from the beginning of January. In addition, in presence of more than 250 mm total rainfall between 1 October and 31 January, it is possible to anticipate a Nitrogen application (equal to the equivalent of ready nitrogen in soil, calculated using the “balance method”) from the beginning of January.

In soils without leaching losses risks the fertilisation might be carried out in pre-sowing or covering period during the winter season with N inputs of less than 30 kg/hectare. Soils with a tendentially clayey texture (FLA, AS, AL and A) and with a high plat rooting depth (100-150 cm) are characterized by a moderate risk of leaching.

Nitrogen distribution

Concerning Nitrate inputs of less than 100 kg/ha, a single application during ear stage (1 cm) is allowed. In case of more than 100 kg/ha inputs it is necessary to split the total N application, in order to not exceed 100 kg/ha quantity for single treatment. The last Nitrogen input must be done within the flag leaf and booting stage. In some Region, if mineral nitrogen fertilisers are used, they must be split into at least two application in the case of doses between 60 kg and 100 kg. For N application higher than 100 kg/ha, the total N amount must be rated in more than 3 times. It is mandatory to adopt a simplify fertilization model following the Standard Dose Scheduled in the Region website.

Concerning Phosphorous and potassium fertilization, it must be applied in pre-sowing season and only if the soil analysis shows a low or normal amount of these elements.

Over-coverage mineral fertilizers application containing P₂O₅ e K₂O is not allowed. Manure fertilization is accepted with a total amount per year lower than the limits fixed in fertilization plans provided by each Region.

Triticum durum

| NITROGEN | STANDARD DOSE: (110-160 kg/ha N) |
|----------|---|
| P2O5 | P2O5 standard fertilization for a total production of: 5-7 t/ha |
| | 60 kg/ha: soil with moderate concentration |
| | 80 kg/ha: soil with low concentration |
| | 0 kg/ha: soil with high concentration |
| K2O | K2O standard fertilization for a total production of 5-7 t/ha |
| | 120 kg/ha: soil with moderate concentration |
| | 150 kg/ha: soil with low concentration |
| | 0 kg/ha: soil with high concentration |

Triticum aestivum

| | |
|----------|---|
| NITROGEN | STANDARD Dose (140-160 kg/ha di N) |
| | Nitrogen standard fertilization for a total production of: 5-7 t/ha |
| | Varieties "biscottiere": 140 kg/ha N |
| | FP/FPS varieties: 155 kg/ha N |
| P2O5 | FF Varieties: 160 kg/ha N |
| | P2O5 standard fertilization for a total production of: 5-7 t/ha |
| | 60 kg/ha: soil with moderate concentration |
| | 80 kg/ha: soil with low concentration |
| K2O | 0 kg/ha: soil with high concentration |
| | K2O standard fertilization for a total production of 5-7 t/ha |
| | 120 kg/ha: soil with moderate concentration |
| | 150 kg/ha: soil with low concentration |
| | 0 kg/ha: soil with high concentration |

Irrigation

For Wheat cultivation irrigation is not allowed in northern Italy, on the contrary, in the southern part irrigation is permitted. When allowed, water management is explained in each regional production specification. Some Regions located in the south of Italy offer an online application. Other southern Regions in case of water availability and economic advantage, one irrigation intervention at the booting stage/swelling phase is allowed in order to increase the total yield.

In general, only emergency irrigation is allowed in this Region in dry and drought years, closing to the earing and pollination stages, in order to promote seeds and grain development. When irrigation is justified by climatic conditions the volume of water used and Agro-meteorological bulletins or other objective evidences (as a proof of climatic conditions and necessity of irrigation) should be indicated.

Weed and Pests management

Concerning weeds management, the chemical soil sterilization is not permitted. The only allowed active substances and their limitation of use are listed in appropriate table on Integrated Weed Management (Specific for each region). The risks of biotic adversity are higher in sensitive wheat varieties, when a dense planting density and high Nitrogen fertilization are applied.

Concerning Pest's management allowed active substances and their limitation of use are listed in appropriate table on Integrated Pests Management (Specific for each region). The maximum volumes in full vegetation for phytosanitary interventions with fungicides, insecticides and acaricides must not exceed a total amount of 500 l/ha.

Concerning pre-emergence herbicides applications only one treatment every two years is allowed. Even in early post-emergence some limits in herbicides application are also applied (some formulates may be used once every 2 or 5 years. As regards Glyphosate and other formulates, the maximum application volumes fixed per year are listed in Regional online Tables, with reference to the specific formulations permitted for each crop. Regardless of the adversity, a maximum of two fungicide applications per year is permitted. A maximum of one intervention per year if SDHI is used. Concerning main diseases (cryptogams and phytophagous pests) preventive agronomic interventions are recommended. (See Table below as example).

| Latin Name | Management: Constraints | Management: Advices | Active Substance | n° Max Treatements with single AS | n° Max Treatements with multiple AS | Limitation use | Limitation for disease |
|--|--|---|---|--|-------------------------------------|----------------|--|
| <i>Rhopalosiphum padi</i> ; <i>Metopolophium dirhodum</i> ; | Action threshold: 80% of infested culms | | Tau-fluvalinate and Potassium salts derived from fatty acids | | | | Max. 1 treatments per year |
| <i>Ustilago tritici</i> | | Use of coated seed | | | | | No Chemical treatments allowed for this disease |
| <i>Tilletia</i> spp. | | Use of coated seed | | | | | No Chemical treatments allowed for this disease |
| <i>Fusarium</i> spp. | | Agronomic treatments: Avoid high plants sowing density - Appropriate fertilization (avoid high N fertilizers) - Use of resistant cultivars. | Pyraclostrobin; Potassium Carbonate; <i>Pythium oligandrum</i> ; Tebuconazol ; Proticonazolo; Bromuconazol ; | | | | Only one anticrittogamic treatment per year. Max two Active Substances candidates for substitution are allowed per year. |
| | | Phytosanitary Measures: Treatments application at the end of earing and at the beginning of booming phases. | Metconazol ; Difenoconazol* ; <i>Bacillus subtilis</i> ; <i>Laminarine</i> | Difenoconazol - admitted only if mixed with Tebuconazol | | | |
| <i>Blumeria graminis</i> | Action threshold: 10-12 spots on the last two leaves | Agronomic treatments: Avoid high plants sowing density - Appropriate fertilization (avoid high N fertilizers) - Use of resistant cultivars. | Bixafen ; Fluxapyroxad; Spiroxamine ; Sulphur; Laminarine; Azoxystrobin; Pyraclostrobin; Tebuconazol; Bromuconazol; Tetrazonazol; Protioconazol; Metconazol; <i>Bacillus subtilis</i> ; Mefentrifluconazol | Bixafen - admitted only if mixed with other AS Spiroxamina - Admitted only if mixed with other SA Mefentrifluconazol - Admitted only if mixed with other SA | | | Only one anticrittogamic treatment per year. Max two Active Substances candidates for substitution are allowed per year. |

Harvest

Harvesting for grain production takes place when the moisture content is less than 14%. Batches of cereals obtained by integrated production fields and intended for sale under the QC mark must be harvested and delivered separately from all other batches obtained by conventional agricultural practices. The minimum requirements necessary for the final products obtained by Integrated Pests Management fields are defined by L.R. (Regional Law) n. 28/99 in the Annex on qualitative requirements.