



Factors for High Yields of Autumn Wheat in the Fergana Valley

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Abstract: The key factors in cultivating autumn wheat and increasing its productivity. Based on recommendations from scientists, the experience of skilled farmers, and the results of advanced grain-producing farms, the implementation of key agrotechnical measures is advised to enhance yield.

Key terms: Nutrition, tillering phase, heading period, primary soil tillage, irrigation, winter irrigation, nitrogen fertilizers, weeds, pests, diseases.

At the beginning, as our President stated, "Grain is the foundation of our economic independence." Today, the increasing grain yield in our republic is proving itself through the correct implementation of grain policies and the practical results of farmers.

In the early years of independence, wheat yields were only 21–23 centners per hectare, whereas today, yields of 80–90 centners per hectare have been achieved. This progress is undoubtedly due to the hard work of grain-producing farms, the correct guidance of regional leadership, cluster activities, and the recommendations of scientists [1].

Experienced farmers, regardless of annual weather conditions, achieve high yields by applying their own agricultural methods not yet incorporated into scientific practices [2].

Nutrition

One of the most important agrotechnical measures for obtaining high-quality grain from autumn wheat is fertilization with organic and mineral nutrients [3].



After heading, cereal crops begin flowering within 2–3 days. Depending on wheat variety, soil, and climatic conditions, flowering lasts 7–12 days. Autumn wheat is a self-pollinating plant, but under warm conditions, cross-pollination can also occur, leading to relatively higher yields.

If autumn wheat varieties are cultivated following high agrotechnical standards, an additional 1.5–2 grains per spike can increase yield by 3.5–4 centners per hectare. Thus, timely and high-quality execution of each agrotechnical measure ensures high productivity.

Key Factors in Autumn Wheat Cultivation and Yield Increase

Based on recommendations from scientists, experienced farmers, and advanced grain-producing farms, the following agrotechnical measures are suggested:

1. Preparation of high-quality seed wheat suitable for the region.
2. Primary soil tillage: The goal is to loosen compacted soil layers and create porosity. Using two-layer plows (PYa-3-35, PD-3-35), tillage should be conducted at a depth of 30–35 cm.
3. Pre-sowing field preparation:
 - Apply 500–700 kg/ha of superphosphate or 200–300 kg/ha of ammophos, along with 60–100 kg/ha of potassium fertilizer.
 - Alternatively, fertilizers can be applied directly during sowing using seed drills.
 - If the field is uneven or has poor water supply, pre-irrigation should be done before plowing. After soil maturation, the field should be plowed, leveled, and fertilized before sowing. This ensures 95–100% germination even in uneven fields.
 - Furrow irrigation should be done after full seedling emergence.
4. Intercropping with cotton:
 - Before sowing wheat in cotton fields, the area must be cleared of weeds and defoliated. Otherwise, weak wheat seedlings due to insufficient sunlight will result in poor growth.



- Farmers often use 350–400 kg/ha of wheat seeds for intercropping, which is incorrect. In practice, only 250–300 seedlings per m² survive, while the rest are lost due to improper seeding techniques (e.g., using unsuitable seed drills without depth control).
- Seeds planted too deep (7–8 cm) fail to germinate, whereas optimal depth (4 cm) ensures full emergence.
- Seeds remaining on the surface dry out in winter or early spring cold, leading to reduced yields due to weak root systems.

Autumn Wheat Cultivation Practices

1. Irrigation:

- Maintaining soil moisture at 65–75% is crucial for high yields.
- In fields with less than 50% moisture, pre-sowing irrigation should be done carefully to avoid waterlogging.
- Subsequent irrigations:
 - After full tillering and nitrogen fertilization.
 - Winter irrigation is beneficial for saline-prone fields.
 - Irrigation in March (tillering phase), April, early May, and 8–10 days before harvest (10–20 June) to prevent grain shedding and improve straw quality.

2. Fertilization:

- Pre-sowing: 500–700 kg/ha phosphorus, 60–100 kg/ha potassium, 200–300 kg/ha ammophos.
- Nitrogen fertilization:
 - 150–200 kg/ha by 10 November.
 - 200 kg/ha urea by 1 March.
 - 300 kg/ha ammonium nitrate by 10 April.

3. Weed, Pest, and Disease Control:



- Weeds can reduce yields by up to 50%. Herbicide application before 10 October or between 10–25 March is effective.
- Pest and disease prevention:
- Chemical treatment of field borders in October.
- Pre-spring (before 1 March) and anti-rust/fungal treatments (by 20 April).
- Additional treatments in wet years (5–10 May).
- Bio-stimulants (2–3 applications in spring) enhance growth and yield.

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