The specific operating procedures for the tillage treatments were as follows:

Conventional tillage: maize mechanical harvesting→straw return/straw removal→base fertilizer application→disc harrow stubble removal→plowing (tillage depth 20 cm)→ridge building→wheat no-tillage planter direct sowing→wheat mechanical harvesting→straw return/straw removal→maize no-tillage iron stubble sowing.

Subsoiling: maize mechanical harvesting→straw return/straw removal→base fertilizer application→subsoiling shovel subsoiling (tillage depth 35 cm)→wheat no-tillage seeder direct sowing→wheat mechanical harvesting→straw return/straw removal→maize no-tillage stubble sowing.

Rotary tillage: maize mechanical harvesting→straw return/straw removal→base fertilizer application→rotary tillage with rotary tiller (tillage depth 10 cm)→wheat no-tillage planter direct sowing→wheat mechanical harvesting→maize no-tillage iron stubble sowing.

No-tillage: maize mechanical harvesting→straw return/straw removal→base fertilizer application→wheat no-tillage planter direct sowing→wheat mechanical harvesting→straw return/straw removal→maize no-tillage iron stubble sowing.