

# Pack #112, Item 4

# Type: Backgrounder

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**Backgrounder: Production of Irish potatoes**

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**Introduction**

***Why is this subject important to listeners?***

Because Irish potato farmers should know:

* How to prepare land before planting Irish potatoes.
* The right types of soil for Irish potatoes.
* Crops that can be rotated with Irish potatoes to encourage high production and reduce the spread of pests and diseases.
* How to select the right-sized tubers for planting.
* The right spacing of potato tubers during planting.
* Recommended cultivation practices for Irish potatoes.
* How to protect growing Irish potatoes from pests and diseases.
* The right time to weed Irish potatoes after germination.
* How to produce the maximum yield of good quality Irish potatoes.

***What are some key facts?***

* Irish potatoes mature 10-14 weeks after planting. At maturity, the leaves begin to wilt.
* If soil testing and advisory services are available in their area, farmers should arrange to have a soil tests conducted to help them know which nutrients to add to the soil before planting Irish potatoes.
* Irish potatoes perform better in well-drained soils like sandy or sandy loam soils.
* Irish potatoes can be rotated with maize and with legumes like peas, beans, and soybeans that increase nutrients such as nitrogen in the soil.
* During planting, the recommended spacing between potato tubers is 30 centimetres.
* Plant tubers on top of ridges with a depth of 10 centimetres and cover well.
* Cover tubers completely to avoid sun scorching.
* If potatoes are planted on poorly-drained clay soil, add organic matter such as mulch and use raised beds encourage water drainage.
* Potatoes can be planted on furrows or ridges.

***What are the big challenges in Irish potato production?***

* Late blight disease.
* Bacterial wilt disease.
* Planting diseased tubers, infected with viruses or bacterial wilt.
* Re-using seed from crops infected with bacterial wilt and viruses.
* Failure to rotate and intercrop Irish potatoes with other crops. This can encourage buildup of pests and diseases.
* Poor soil fertility management results in low yields.

*For further information, see documents 1, 2, 3, 8, and 13.*

***Gender aspects of Irish potato production***

* In Malawi, potato marketing economically benefits men more than women. The men also benefit more from agriculture commercialization than women.
* Across sub-Saharan Africa, women are heavily involved in producing and supplying potatoes.
* In parts of Guinea, women are responsible for most of the manual labour and post-harvest operations on potatoes.
* In Uganda, women are more involved in on-farm potato production and less in marketing and choosing which crops to grow.

*For further information, see documents 9, 10, 11, and 12.*

***Predicted impact of climate change on Irish potato production***

* In the North and Central regions of Nigeria’s Plateau state, Irish potato production has stagnated due to the effects of climate change-related phenomena such as drought, floods, and off-season rains.
* In South Africa, drought and hot conditions have reduced Irish potato yields in all production regions of the country.
* In Njoro, Kenya, researchers have discovered that rising temperatures increase the incidence of pests in Irish potatoes.
* In South Africa, researchers are predicting that aphid populations in some farming areas of South Africa will increase by 2050, which could increase viral potato diseases.
* In the Mekelle area of northern Ethiopia, prolonged dry spells and late rains have resulted in decreased yields of Irish potatoes.

*For further information, see documents 4, 5, 6, and 7.*

**Key information about production of Irish potatoes**

**1. Selecting and preparing land**

Farmers should consider the following factors when selecting and preparing land for planting Irish potatoes:

* Irish potatoes grow better in well-drained soils such as sandy or sandy loam soils.
* Potatoes are normally grown on ridges. However, they can be planted flat on well-drained land, and ridging done after emergence. On poorly drained land, they need to be planted in ridge at the start to ensure good drainage.
* Do not grow potatoes on land where the following crops have been grown in the last year or two seasons to avoid buildup of bacterial wilt and nematodes: tomatoes, peppers, garden eggs (eggplants), or potatoes.
* Deep plough land for planting Irish potatoes to a depth of about 30 centimetres to remove weeds and break the soil for better drainage and aeration.
* Add furrows to the land after ploughing.
* Gather weeds in one heap after ploughing, then burn after they dry up.
* Farmers should test their soils before planting potatoes to ensure that soils are neutral to slightly acidic, with a pH range of 5.5 to 7, and have the needed nutrients.
* Lime should be applied to soils that are extremely acidic.
* Potato researchers recommend that, if no specific advice on fertilizer is available, 500 kg of NPK 17:17:17 be applied per hectare on the furrows at planting and thoroughly mixed with the soil to prevent scorching of sprouts during planting. If NPK is not available farmers can use NPK 15:15:15 or a combination of NPK fertilizers to approximate these values.
* CAN fertilizer can also be applied during ridging as top dressing to provide nitrogen at 300 kilograms per hectare. CAN may be unavailable, in which case other fertilizers can be substituted.

**2. Planting**

Irish potato tubers for planting should be uniform in size. Plant before the rains start. During planting, farmers should ensure that:

* Tubers to be planted are accessed from certified sources to ensure they don’t have diseases and still yield well.
* Tubers are fresh and have no injuries.
* Planting tubers are 25-60 millimetres in diameter, have 4-5 sprouts, and weigh 40-60 grams, the approximate size of a chicken egg.
* Tubers should have 4-6 “eyes,” which are potential sprouts.
* Tubers are placed on furrows or ridges with the sprouts facing up.
* Tubers are planted 8-10 centimetres deep in the soil to protect them from sun scorching.
* Spacing between tubers is 30 centimetres, with rows of normal-sized seed (egg size). When planting very small tubers, (three eyes), reduce spacing to 20 cm, and when panting large tubers (6-7 eyes), increase to 40 cm.

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| --- | --- | --- |
| **Tuber size** | **No. of sprouts** | **Planting distance (in the row)**  |
| **Small** | **2 – 3**  | **20 cm** |
| **Normal (egg-sized)** | **4 – 5**  | **30 cm** |
| **Large** | **6 – 7**  | **40 cm** |

**3. Ridging and weeding**

Ridging and earthing up provide growing potatoes with enough loose soil to grow in. Both practices protect tubers from sun scorching which turns them green. They also protect them from potato tuber moth and reduce internal brown spot caused by high soil temperatures.

* It’s recommended that ridges for planting potato seed tubers be 25 centimetres in height or higher.
* Farmers should earth up potatoes when plants are 15-20 centimetres high, burying half of their height with soil.
* Earthing up stimulates the plant to make more tubers, rather than growing more leaves. Timely earthing up is essential for high yields.
* Earth up a second time 2-3 weeks later. It is possible though not necessary to add 3-5 centimetres of soil to restore and increase the height of the ridge.
* Weed Irish potatoes 2-3 weeks after planting when sprouts emerge from the soil.
* Do a second weeding 5-6 weeks after planting and before the leaf canopy closes. Weed lightly to avoid damaging tubers. During the second weeding, heap soil 3-5 cm at the base of the Irish potato plants.

*For further information, see documents 1, 2, 3, 8, and 13.*

**4. Diseases and pests**

Irish potatoes are prone to attack by pests and diseases. Farmers can minimize damage by planting healthy tubers, rotating with grains, and not intercropping. Some of the pests and diseases that attack Irish potatoes are:

*Late blight:* This fungal disease attacks the leaves and stems of Irish potato plants, which turn black and die. Late blight produces a white mould on the underside of leaves.

* The disease is severe when rain is plentiful, humidity is high, and temperatures are low. Late blight fungi thrive at temperatures of 16 to 20 degrees Celsius.
* Late blight can be spread by infected Irish potato tubers and plant residues.
* Wind can spread the spores of the late blight fungus to other Irish potato plants.
* Late blight poses a problem only during the rainy seasons. During the rainy season potato *must* be protected with fungicides against late blight. Otherwise, it is not recommended to grow potatoes, as farmers risk losing their entire crop. Outside of the rainy season or very early in the rainy season, less intensive spraying is needed.

*Control*

* During the rainy season, farmers should spray a preventative contact fungicide containing mancozeb or copper shortly after emergence and continue to spray weekly.
* Farmers can control late blight by spraying fungicide when the black spots first appear. For best management, they should spray both the tops and undersides of leaves.
* Farmers should check for signs of late blight from the time that plants emerge.
* Spray regimes:
	+ For varieties with partial resistance (no varieties have full resistance):
		- Use a contact fungicide one week after emergence;
		- Use a systemic fungicide when more than 1% of plants show symptoms;
		- Use a contact fungicide three weeks later if the harvest is more than two weeks away.
	+ For varieties with no resistance during the rainy season:
		- Use a contact fungicide weekly, starting one week after emergence;
		- Switch to a systemic fungicide every third week.
		- Stop spraying two weeks before harvest.
	+ For varieties with no resistance very early in the rainy season:
		- Use a contact fungicide one week after emergence.
		- Use a systemic fungicide when more than 1% of plants show symptoms.
		- Follow with a contact fungicide every two weeks.
		- If more than 1% of plants have symptoms, switch once to a systemic fungicide.
		- Stop spraying two weeks before harvest.

*Bacterial wilt:* This disease is spread through infected seed tubers, farming tools, livestock, or soil, and can remain in the soil for four years or longer. Bacterial wilt spreads quickly in warmer temperatures. Symptoms include ooze from the eyes and tuber rotting, spreading from the vascular ring,

*Control*

* Use clean land, seed, and tools
* Rotate Irish potatoes with maize and legumes. At a minimum, rotate to another crop for one season if there is no bacterial wilt, for two seasons if less than 5% of plants have wilt, and for three seasons if more than 5% of plants have bacterial wilt.
* Remove all tubers from sick plants and carry them out of the field in a bucket or bag without spilling soil, then throw them in a pit.
* Put two hands full of ashes or one hand full of lime in the hole after removing an infected plant.
* When potatoes are grown with irrigation, dig channels to ensure that water drains off the farm rather than forming puddles.
* Rogue\* field areas affected with bacterial wilt.

*Blackleg or soft rot:* This bacterial disease causes potato plants to wilt and die off. It affects the stem and tubers during growth and storage. Blackleg or soft rot spreads through infected materials such as Irish potato tubers, air, water, soil, farming tools, and livestock.

*Control*

* Rotate potatoes with crops like maize and legumes like soybean and peas.
* Isolate and destroy infected Irish potato tubers and plants, and plant only healthy tubers.
* Avoid planting tubers on wet, waterlogged, or flooded farms with stagnant water since these conditions encourage the outbreak and spread of blackleg.
* Protect Irish potato tubers from damage during weeding, earthing up, ridging, and harvesting.
* Harvest mature Irish potatoes in dry weather.
* Use clean certified tubers.
* Sanitize tools used during planting or weeding.

*Golden cyst and root knot nematode:* These are small worms that reduce potato yields, result in poor growth, are invisible to the naked eye and stay in the soil for many 30 years. They spread to potato fields through farming tools and diseased potato tubers.

*Control*

* Rotate at least two crops before coming back with potatoes.
* Plant clean seed, if it is available.

*Viral diseases:* There are a variety of viral diseases. Symptoms include leafroll, mosaic, stunted growth,erectness (stems and leaves pointing upwards), crinkling at leaf edges, and chlorosis (yellowing of leaves).

*Control*

* Plant healthy and disease-resistant tubers. Practice *positive selection*, which means selecting the best potato plants as mother plants for the next potato crop. Mark plants that look healthy when the first flowers appear. Then check the number, size, and shape of tubers of marked plants before accepting their tubers as seed. Choose potato plants that:
	+ are large,
	+ have many thick stems,
	+ have dark green leaves,
	+ have many, large, and well-shaped tubers, and
	+ do not show symptoms of bacterial wilt or viral diseases.
* For potatoes which will be consumed, it is not recommended to spray against vectors of viral diseases unless the vectors themselves cause direct damage.

*For further information, see documents 1, 2, 3, and 8.*

**Definitions**

*Rogue:* Removing inferior or defective plants.

*Spores*: Tiny biological particles produced when fungi reproduce.

**Where can I find other resources on this topic?**

*Documents*

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