Pinto Bean

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Varieties
Arapaho, UI 114

Soil Preferences
Deep, well drained, fertile sandy loam. Avoid clay loams unless well drained.

Optimum Growing Conditions
Day temperatures 80-90°F and night temperature above 65°F, use windbreaks.

Establishment Methods

Planting Method	Direct seeded
Optimum Time	4-6 weeks after last average frost date or seed zone soil temperatures above 60°F
Seeding rate	60-80 lbs/acre (70,000-90,000 plants/acre)
Approx seed/oz	50-100
Seeding depth	Sandy loams - 2-2.5" Loamy sands - 2.5-3" Clay loams - 1-1.5"
Seedling spacing	2 rows on 40" wide bed 3-5 plants/row ft.

Fertility/Fertilization
Rates presented as actual lbs/acre N_2, P_2O_5, and K_2O (base actual rates applied on soil test results).

Generalized rate: 70-80-100 lb/acre* (depending on plant population)	
N*	60 to 80
P**	80
K**	100

* Ammonium nitrate is very stable and least likely to evaporate. Urea and ammonium sulfate evaporate if not incorporated.

** Soils testing high to very high in P and K do not usually respond to further applications. Addition of P to soils high in this element can cause iron and zinc deficiency.

Water/Irrigation
15 to 20". Adapted to furrow or sprinkler irrigation. Use of tensiometer 12" depth to monitor available water and schedule irrigations is suggested. Irrigate at 30 centibars.

Pest Management

Bean Diseases and Common Name of Fungicidal Controls

DISEASE	FUNGICIDE*	OMRI LISTED FUNGICIDE**
Bacterial blight	Copper Hydroxide, Hydrogen Dioxide	
Bean rust	Azoxystrobin	Clove, Rosemary and Thyme Oil
Fusarium root rot	1,3-Dichloropropene	Clove, Rosemary and Thyme Oil, Copper Hydroxide, Hydrogen Dioxide
Nematode	1,3-Dichloropropene, Aldicarb, Chloropicrin, Metam-Potassium, Metam-Sodium, Sesame Oil	Azadirachtin

Bean Insect Pests and Common Name of Insecticidal Controls

INSECT	INSECTICIDE*	OMRI LISTED INSECTICIDE**
Aphid	Acephate, Aldicarb, Beta-Cyfluthrin, Bifenthrin, Dimethoate, Endosulfan, Gamma-Cyhalothrin, Imidacloprid, Lambdacyhalothrin, Malathion, Methomyl, Methyl Parathion, Naled, Petroleum Oil, Phorate, Potassium Salts of Fatty Acids, Sodium Tetraborohydrate Decahydrate, Soybean Oil, Thiamethoxam, Zeta-Cypermethrin	Azadirachtin, Neem Oil, Peppermint and Rosemary Oil, Pyrethrins
Beet armyworm and cutworm	Beta-Cyfluthrin, Bifenthrin, Chlorantraniliprole, Cyfluthrin, Esfenvalerate, Gamma-Cyhalothrin, Lambdacyhalothrin, Methomyl, Piperonyl Butoxide, Zeta-Cypermethrin	Azadirachtin, *Bacillus thuringiensis*, Pyrethrins
Mexican bean	Acephate, Aldicarb, Beta-Cyfluthrin,	Azadirachtin, Kaolin

beetle	Bifenthrin, Carbaryl, Cyfluthrin, Dimethoate, Endosulfan, Esfenvalerate, Gamma-Cyhalothrin, Lambdacyhalothrin, Malathion, Methomyl, Methyl Parathion, Novaluron, Phorate, Piperonyl Butoxide, Pyrethrins, Thiamethoxam, Zeta-Cypermethrin	
Mite	Aldicarb, Dimethoate, Methyl Parathion, Paraffinic Oil, Petroleum Oil, Phorate, Sodium Tetraborohydrate Decahydrate, Soybean Oil	Azadirachtin, Neem Oil, Pyrethrins
Seed Corn Maggot	Bifenthrin, Phorate, Thiamethoxam, Zeta-Cypermethrin	
Thrips	Acephate, Bifenthrin, Carbaryl, Gamma-Cyhalothrin, Imidacloprid, Lambdacyhalothrin, Malathion, Methomyl, Novaluron, Petroleum Oil, Phorate, Piperonyl Butoxide, Potassium Salts of Fatty Acids, Sodium Tetraborohydrate Decahydrate, Soybean Oil, Spinetoram, Thiamethoxam, Zeta-Cypermethrin	Azadirachtin, Kaolin, Neem Oil, Peppermint and Rosemary Oil, Pyrethrins, Spinosad, Sulfur

Weeds and Common Name of Herbicidal Controls

WEED	HERBICIDE*	OMRI LISTED HERBICIDE**
Preplant incorporated	Clomazone, DCPA, S-Metolachlor, EPTC, Alachlor, Pendimethalin, Imazethapyr, Trifluralin	Corn Gluten Meal
Preemergence	DCPA, S-Metolachlor, Alachlor, Pendimethalin, Imazethapyr	
Postemergence	Carfentrazone, Quizalofop, Bentazon, Oxyfluorfen, Paraquat, Halosulfuron, Sethoxydim, Imazethapyr, Fomesafen, Glyphosate, Pelargonic Acid, Clethodim	D-Limonene, Clove Oil, Cinnamon and Clove Oil

* The above is a partial listing of controls intended as examples. Some labels may have been revoked since the publication of this guide. Refer to product labels for specifics and use accordingly. Ensure that products with one of the listed active ingredients are registered for the crop it is to be used on. Failure to do the above may result in crop injury, death and/or citation for law violation. Humans, animals and the environment may also be adversely affected by misuse.

** As stated in §205.206 of the National Organic Standards, pest management decisions should follow a hierarchical approach, which should be defined in a farm's organic systems plan. Please ensure that you have followed the appropriate steps and any product to be used in certified organic production systems has been approved by your certifying agent.

Harvest

Days after planting	75 to 95
Normal method	Direct combine or knife undercut and combine
Containers	Usually sold in 50 lb bags
Grades	Processors require < 5% cracks and check-coat. Dry pack tolerates higher percent defects but downgrades quality and price.
Packaging / Handling	Sold in consumer carton packs and loose measure by weight in supermarkets
Anticipated yield/acre	1,000-2,500

Storage/Transit Conditions

Dry, 12 to 13% moisture

Comments/Production Keys

- Less tolerant of heat, wind, and drought than southern peas (cowpeas)
- Use of windbreaks is suggested
- Use of bush type varieties recommended to help reduce losses from soilborne diseases.
- Use of tensiometer 12" depth to monitor available water and schedule irrigations is suggested
  Irrigate at 30 centibar stress threshold (tensiometers work best in light, sandy loam soils, and may give false readings in heavier soils).
- Undercutting as harvest maturity approaches is suggested in southern part of state due to occurrence of untimely rainfall, which can initiate regrowth
- Uniform moisture distribution required to reduce incidence of hard seed coat factor