

Growing Green Feed For Poultry



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GROWING GREEN FEED FOR POULTRY

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High standards of production of poultry and poultry products can be more easily attained by the use of succulent green feeds in the feeding program. Forage crops, maintained in a rapidly growing, immature condition, are high in digestible proteins, minerals, and vitamins. Green feeds, supplied to poultry either as pasture or freshly cut material, reduces the amount of supplemental ingredients, such as the vitamin concentrates and dehydrated grasses, needed to balance the basic cereal grain ration.

The relatively high quality protein of green forage in its early stages of growth is an important addition to the ration. Rapidly growing green feeds usually contain considerable calcium and phosphorus, minerals which are essential for the proper development of feather and bone.

Much of the vitamin requirement of poultry can be met through the use of green feeds since seven of the nine vitamins essential to poultry are found in varying amounts in forage crops. Carotene or pro-vitamin A, particularly abundant in green feeds, is necessary for proper growth, egg production, hatchability and also aids in preventing infection of the eyes and respiratory tract. Since this vitamin is relatively unstable and may disappear rapidly from feed mixtures, green feeds are a highly valuable source of vitamin A. Riboflavin, thiamin, and vitamins K and E also are found in fresh, green feeds in important quantities. Vitamin D, made available through the action of ultra-violet light on certain substances in the skin of birds, is necessary for proper bone and feather growth. Birds reared on range in the sun-light will be assured of a sufficient supply of this important vitamin.

Bare yards, used year after year, are likely to become contaminated with various disease organisms detrimental to the health of the birds. The use of ranges in a well-planned rotation system of grazing does much to eliminate this hazard to profitable poultry production. Growing birds must be kept separate from adult birds, and turkeys should not use the same range as chickens.

The use of green feeds will result in material savings to the poultryman in the form of reduced feed costs, higher production, and better health of the birds. Succulent green feed is an important part of the diet for chickens, turkeys, ducks, geese, guinea fowl, and pigeons. The choice of proper annual and perennial forage crops and the use of winter succulents such as yellow carrots and silage will provide green feed the year around.

LOCATION AND USE OF PASTURES

In the case of laying flocks the pastures should be adjacent to the laying house. Pastures for growing flocks should be at least 500 feet from the permanent buildings. When green feeds are to be harvested daily and fed by hand, it is desirable that the fields be as near the poultry as possible. Size and shape of the pastures will be dependent upon the number of birds and the land available. Narrow fence corners and irregular shaped pastures should be avoided as much as possible to make seeding or mowing more

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economical. It also is necessary to consider the source of the water supply in locating ranges. When constructing new poultry houses, attention should be given to their accessibility to adjacent areas suitable for pasture.

Choice of crops for use in the pasture system is largely a matter of individual preference. For maximum production of green feed, a combination of annual and perennial pastures will probably be most satisfactory as green succulent feed will be available over a longer period of time. It is advisable to divide the permanent pasture into several lots to be grazed in rotation. Three ranges are commonly used, and the birds rotated every 4 or 6 weeks. Where annual crops are used to supplement permanent pastures, they also should be considered in planning the rotation system. Figures 5, 6, and 7 will give some idea of the length of time each of the various crops can be expected to provide green feed during the growing season. Mowing some of the rotation ranges during the summer may be necessary to keep them producing green succulent material for the birds. (Poultry Pointers No. 16 contains suggested plans for rotation grazing of turkeys; similar plans may be used for other poultry.)

Disease problems make it important that turkeys and chickens be kept on separate ranges. Blackhead, a common disease of turkeys, can be transmitted through chickens although the organism seldom causes serious loss among chickens under Washington conditions. A range that has been grazed by chickens should not be used for turkey pasture for at least two years or until the area has been plowed and reseeded.

Corn and sunflowers can be used in annual plantings or along fence rows in permanent pastures to furnish shade for the grazing birds. As the season progresses they may be utilized as feed by cutting a few stalks each day.



FIGURE 1. Lanes cut through the sunflowers encourage turkeys to forage and provide shade throughout the day.

GENERAL CULTURAL METHODS

There are certain cultural methods which must be followed to secure satisfactory stands and maximum production from pastures, regardless of the section of the state in which the poultry enterprise is located.

Seedbed Preparation: A good seedbed is of primary concern in establishing forages on poultry ranges. Performance of the pasture will depend largely on the care and thoroughness of seedbed preparation. Small-seeded crops such as alfalfa or the perennial grasses are best established on a firm, fine textured, and moist seedbed. Packing the finely pulverized seedbed will bring the soil particles into close contact with the small seeds. This will result in good germination because of rapid moisture absorption. A desirable seedbed can best be secured on land that has been cropped to annual or inter-tilled crops the year previous to planting the pasture. When permanent pastures must be reseeded, it is advisable to grow an annual or inter-tilled crop on the area before attempting re-establishment of the perennial crop.

Early spring seeding is recommended for the perennial grasses and legumes. The most satisfactory method of preparing a seedbed is to plow the area in the late summer or early fall, leaving it rough over winter. Cultivation should begin as early as possible the following spring and the soil should be worked sufficiently to destroy any weeds on the area. Two or three cultivations usually will be needed to kill existing weeds; this will leave the seedbed in the proper condition for seeding. Additional cultivations may delay seeding to such an extent that summer drought may reduce stands.

The seedbed for crops like cereal grains and sunflowers, does not need such careful preparation. These crops are relatively large seeded and consequently are less difficult to establish. Plowing, followed by disking or harrowing, usually will be sufficient to put the ground in satisfactory condition for seeding. Since seeding of such crops as sudan grass is delayed until late spring, additional cultivations may be necessary as weed growth develops.

Fall seeded crops should be planted on summer fallow since soil moisture is the limiting factor in securing stands. Late summer rainfall will not be adequate, except in occasional years, to assure establishment of fall seedings on areas that have been cropped during the current season.

Seedings may be made at any time during the season that water is available, in irrigated sections. The application of water following the seeding operation is necessary for the establishment of the new range. Irrigation should be continued as needed after the pasture has been established.

Seeding: The time for seeding the various crops in Eastern, Central, and Western Washington is shown in Tables 1, 2, and 3. It should be emphasized that these are optimum dates for seeding. Climatic conditions may vary so much from year to year that it may be advisable to seed earlier or later than the dates given. Practical experience and results of study at the various Experiment Stations in the state have shown that the dates given are best for securing satisfactory stands.

Seed may be drilled or broadcast. Drilling is recommended if the equipment is available and the fields are large enough to make the use of a drill economical. This method has the advantage of placing all the seed in the

soil at a uniform depth. It is recommended that the drill be equipped with packer wheels or that the ground be rolled after seeding to remove air pockets and to bring the soil into close contact with the small seeds.

The seed may be broadcast by hand or with the "whirl-wind" type of broadcast seeder on small areas or when a drill is not available. It is advisable to divide the seed into two equal portions. One lot should be broadcast over the area at right angles to the other. This will result in a more uniform distribution of the seed. The ground should then be harrowed lightly to cover the seed and rolled with a cultipacker or heavy roller. Small-seeded grasses and legumes should be covered with less than one inch of soil, regardless of the method of seeding. Cereals and other large-seeded crops may be covered two inches deep.

When legumes are included in the pasture mixture they should be inoculated with the proper nitrogen-fixing bacteria if the legume has not been grown previously on that area. Suitable inoculants can be obtained from the Division of Agronomy, Washington Agricultural Experiment Station, Pullman, or from seed dealers.

MANAGEMENT OF ANNUAL PASTURES

Poultry pastures must be kept in a green, succulent, growing condition to be of maximum value for poultry feed. Most forage plants are highly palatable in their early stages of growth but become coarse and unpalatable as they develop to the blossom or heading stage.

The utilization dates suggested in Tables 1, 2, and 3 provide sufficient time between seeding and use for the crops to become firmly established under average conditions. After grazing is started the annual pasture crops should be utilized heavily since it is not possible to maintain such pastures in a succulent condition once they have started to head or blossom. However, if the annual cereals and sudan grass can be kept from developing stems, they furnish good pasture for a considerable period during the summer. It may be advisable during the course of the grazing season to increase or decrease the number of birds on the range according to the condition of the forage plants. If it is not possible to increase the number of birds on annual pastures which are being under-grazed, they should be clipped or grazed with other livestock to prevent the plants from heading and to stimulate new growth.

Succulent greens that have been frozen will make poultry sick. Care should be used to prevent birds from ranging on greens that have frozen and thawed, and none should be carried to birds in that condition.

MANAGEMENT OF PERENNIAL PASTURES

Most permanent pasture plants are small-seeded and rather slow in becoming established. Use of these pastures during the year of seeding should be delayed until the plants are firmly rooted and growing vigorously. Turning birds into a perennial pasture too soon after seeding may result in poor stands as many plants will be killed by trampling and others will be pulled out by the grazing birds. Late fall grazing of new seedings should be avoided. It usually is necessary to mow new perennial pastures once or twice during the first year to control weeds. This mowing should be done when the weeds are flowering or before seeds develop. The cutter-bar of the mower should be set three or four inches above the ground to cut

the weeds with a minimum of injury to the young forage plants.

The maintenance of perennial pastures in a high state of production the years following establishment is very important. Portions of perennial plants, usually the roots and crown, remain alive over winter. Even during the dormant period these living parts need some food material for various life processes. The first growth in the spring must come from food stored



FIGURE 2. Turkeys feeding on baled hay. Excess growth from rotation pastures can be used in this manner.

in the roots. Unless perennial forages are given an opportunity to store food during the late fall, they may not survive the winter, or at best, spring recovery will be slow. As a result, yields the following year will be low, and in some cases stands may be so reduced that reseeding may be necessary. It usually is necessary for perennial plants to have a month of growing weather without grazing, before the first killing frost, to store sufficient food in the roots for use during the winter period.

If the pastures make considerable growth before spring grazing is started, they should be mowed so that fresh, succulent growth will be available to the birds. The mowed material may be put in the silo, cured for hay which can be subsequently chopped, or in the case of alfalfa ground into meal. The number of birds in the pastures during the grazing season should be regulated to avoid overgrazing. If the number of birds is so small that they cannot utilize the available feed in the pasture, then these pastures should be mowed at intervals or grazed by other livestock to keep the forage in a succulent condition. Pastures to be used by growing turkeys may be profitably grazed by livestock until the poults are old enough to be turned on the range.

Roosts, feeders, and range shelters should be moved to new locations in the pasture each week during the grazing period to prevent killing the

grass. At the time the roosts and shelters are moved, the droppings should be collected and removed from the ranges if there is evidence of disease or parasites in the flock.



FIGURE 3. Good pastures will reduce disease hazards and make production more profitable. No bare spots will develop in the pasture if feeders, roost, etc., are moved at frequent intervals.

CARRYING CAPACITY OF PASTURES

The condition of the pasture will be the most important factor in regulating the number of birds that can be carried per acre. One acre of alfalfa-grass pasture maintained in a vigorously growing condition will supply sufficient green feed for approximately 125 growing turkeys, 400 growing chickens or 200-300 laying hens. With these figures as a guide, the carrying capacity of other crops listed in Tables 1, 2, and 3, can be estimated by referring to the columns on yield. The carrying capacity of the different crops, together with the probable dates of utilization, should be considered in determining the crops and type of rotation used.

IRRIGATION

Irrigation is necessary in Central Washington to provide good pastures for poultry. Irrigation used to supplement the natural rainfall in Eastern and Western Washington will greatly increase the production of succulent green feed during the dry summer period. If irrigation is used, light, frequent applications should be avoided. The soil should be thoroughly soaked to a depth of one or two feet with each irrigation for the most economical use of water and proper root development of the pasture plants. Water should be applied as often as necessary to keep the pastures green and succulent. Poultry should not be on the range when the water is being applied.

SUPPLEMENTAL GREEN FEEDS

Poultry raisers in some areas may have available certain green feeds other than those suggested in Tables 1, 2, and 3. Lawn clippings, if cut

short and used fresh, can be an important source of green feed for poultry. In areas where cabbage and cauliflower are raised commercially, the green leaves remaining after the removal of the saleable portion may be used for poultry feed. These leaves are succulent, high in nutritive value, and are readily eaten by all classes of poultry. Where pea vines can be used directly from the vines they offer a source of green feed for a short time. Sprouted oats or barley are a source of green feed during the winter months, especially for laying hens or chicks. The amount produced will be limited by the space available for the germinators. The germinated grain should be fed when the sprouts are from two to six inches long.

STORAGE OF SUCCULENTS FOR WINTER USE

It is possible to have succulent feed for poultry during the winter months by proper storage of certain crops. Surplus forage from the annual or perennial pastures may be stored in the form of silage or fields may be seeded primarily for this purpose. Good silage can be made from grass-legume mixtures, corn, sudan grass, cereals, and millet. The grasses, including cereals, should be cut when the first heads appear and the legumes in the early blossom stage. The green material going into the silo should have between 60 and 70 per cent moisture. Since most forages will contain 80 per cent moisture when cut, they should be allowed to wilt thoroughly before being ensiled. It is essential that the silo be airtight and that the silage be firmly packed at the time of filling.

Silage is fed at the rate of three to four pounds per 100 laying birds per day; turkeys can be fed from 10 to 12 pounds per 100 birds per day. It is necessary that at least two inches of silage be removed from the entire surface daily to prevent spoilage. The number of poultry and other livestock should determine the diameter of the silo, while the length of the feeding period would govern the height.

Root crops such as carrots are an important source of succulent feed for the winter period. These root crops should be dug before frost and the tops removed. They should be allowed to dry thoroughly on the ground and then placed in cool, dark, well ventilated storage. If adequate storage space is not available, the roots may be placed in a pit and covered with straw. Any injury to the roots due to freezing or handling will reduce their quality. Most successful storage has been on slatted floors which allow for ventilation through the pile of roots.

Special Considerations for Eastern Washington: The grazing period for each of the crops, as given in Fig. 5, is based on the average dates of the last killing frost in the spring and the first in the fall. This grazing period may be shortened or lengthened depending upon the occurrence of these frosts in any one year. Rainfall received during September will have a marked influence upon the amount of grazing obtained from the pastures during the fall. In years when summer and early fall rainfall is light, there will be a shortage of green feeds, unless irrigation is practiced.

Tall, coarse growing crops such as sweet clover and sunflowers are used largely for turkey pasture. Second year sweet clover should be clipped frequently during the season to prevent its becoming so tall and coarse that only a small amount can be used by growing turkeys.

Fertilizers are not generally recommended for the crops listed in Table 1

in Eastern Washington. Droppings and litter can be spread on fields used to produce succulent greens that are fed in the yard or house.

Special Considerations for Central Washington: The period of utilization of the various pasture crops shown in Fig. 6 is based on the assumption that irrigation is used in all cases. The grazing season may be shortened or lengthened depending upon the time frosts occur.

It is often possible to grow two crops on the same field in one year in Central Washington. For example, sudan grass or Swiss chard may be grown in the same field that was seeded to fall cereals the previous year.

Swiss chard can be seeded in the spring and the crop harvested at various times during the grazing period.

Kale is an excellent late fall and winter pasture for growing turkeys, except when cold weather is more severe than normal. When cut and fed in the poultry house the use of this crop can be continued through the winter into the early spring in normal years.

Corn and sunflowers are recommended for turkey pastures. These crops are rather coarse growing and for most efficient use should be cut so the birds can get at the entire plant.

Production of alfalfa or legume-grass mixtures can be increased or maintained at a high level by the application of 125 pounds of treble superphosphate and 200 pounds of ammonium sulfate per acre, or comparable amounts of other nitrogen fertilizer, broadcast in the early spring. For various leaf crops such as kale and Swiss chard, the equivalent of 400-500 pounds of ammonium sulfate and 80-100 pounds of treble superphosphate per acre should be broadcast and disked in before seeding. Cereals and row crops respond well to an application of 200-250 pounds of ammonium sulfate or its equivalent per acre.

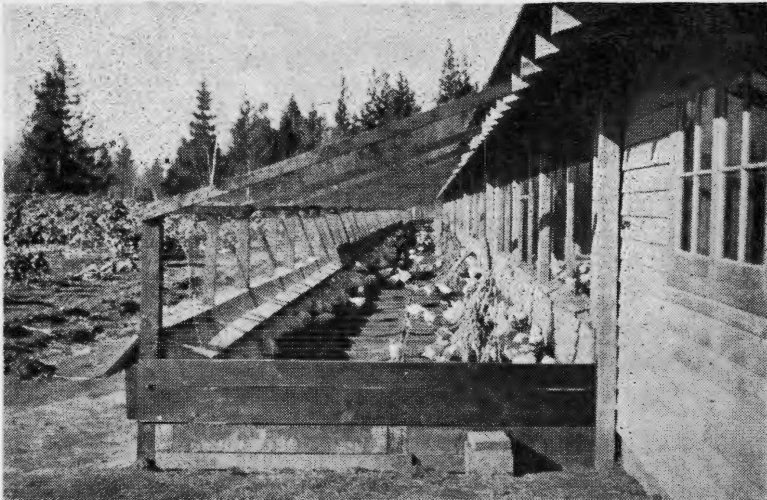


FIGURE 4. Feeding kale to growing birds. Note the kale field close to the poultry house. During the winter months kale can be chopped and fed in self-feeders or the whole plant can be suspended above the floor.

Special Consideration for Western Washington: The grazing period for the various pasture crops recommended for Western Washington are shown in Fig. 7. In mild seasons alfalfa, pasture mixtures, and kale may be grazed throughout the winter. Irrigation during the summer drought period will increase the production of green, succulent feeds. Swiss chard can be harvested at various periods during the grazing season.

Corn and sunflowers should be used for turkey pasture, since they will be too tall and coarse growing for chickens to utilize successfully. Best results will be obtained by cutting these crops so that the birds can readily feed on the entire plant.

General fertilizer recommendations are rather difficult to make for the large variety of soils in Western Washington. Where needed to establish alfalfa, two to three tons of lime per acre should be applied. In addition, 200-250 pounds of treble superphosphate per acre should be disked in before seeding. Boron and potash are necessary in certain areas. For fall cereal crops, corn, and sudan, applications of fertilizer will vary with soil type. In general, three to four tons of poultry litter and 60-80 pounds of potash per acre are recommended for row crops not used for pasture. Cereals respond to 100-150 pounds of treble superphosphate and 60-80 pounds of potash. Application of 150 pounds of ammonium sulfate per acre, or its equivalent, in late May or early June is advisable on clover-grass pastures.

For more detailed information regarding fertilizer recommendations see Washington Agricultural Experiment Station V Circular No. 3.

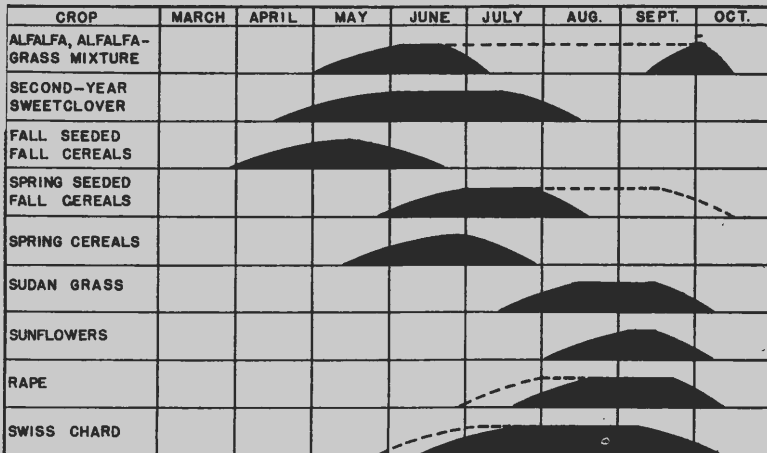


FIGURE 5. Estimated grazing period for various crops in Eastern Washington. (Dotted line indicates expected increase in grazing period with irrigation.)

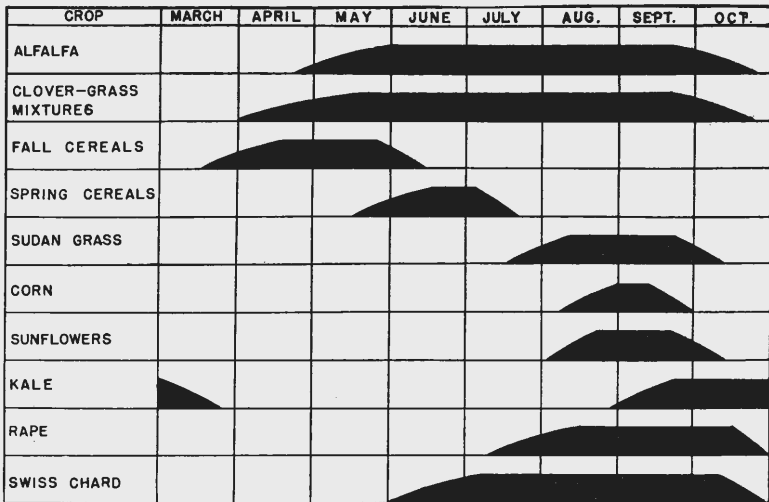


FIGURE 6. Estimated grazing period for various irrigated crops in Central Washington.

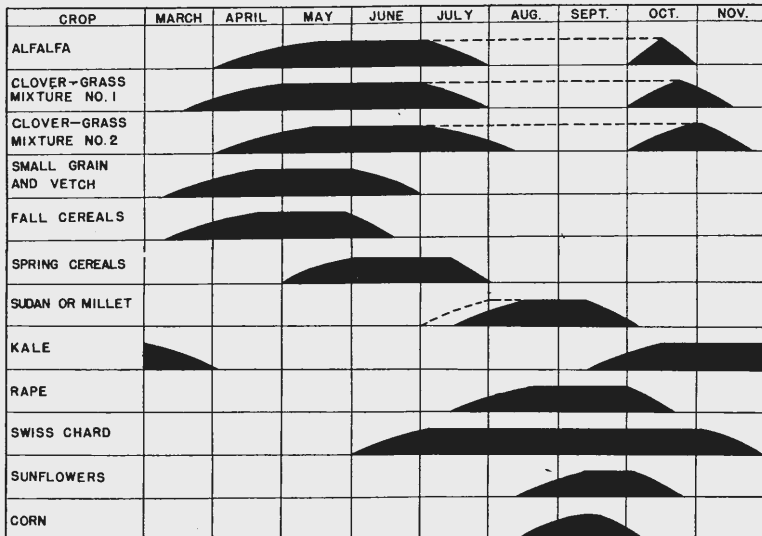


FIGURE 7. Estimated grazing period for various crops in Western Washington. (Dotted lines indicate expected increase in grazing period with irrigation.)

Table 1. Crop Succession of Green Feeds in Eastern Washington

Crop	Variety	Rate		Seeding		Utilization		Yield lbs. per 1000 sq. ft. (e)	Type of Poultry
		(a)	(b)	Date	Method	Time	Method		
Alfalfa	Ladak, Grimm, Northern Common	½	12	Apr. 20 to May 20	Drill or Broadcast	May 1 to Oct. 10	Pasture Chopped	350	All
Alfalfa & Grass Mix.	Ladak Smooth Brome Crested Wheat	¼	5	Apr. 20 to May 20	Drill or Broadcast	May 20 to Oct. 10	Pasture Chopped	300	All
		½	8						
		½	6						
Sweetclover & Grass Mix.	Spanish Mountain Brome	¼	5	Apr. 20 to May 20	Drill or Broadcast	2nd year April 15 to Aug. 15	Pasture Chopped	450	Turkeys
		½	10						
Fall Cereals	Rye, Wheat, or Barley	3	120	Sept. 10 to Oct. 20	Drill	Apr. 1 to June 20	Pasture	125	All
Spring Seeded Fall Cereals	Oats, Barley, or Wheat	3	120	March 10 to Apr. 20	Drill	June 1 to November 1	Pasture	100	All
Spring Cereals	Oats, Barley, or Wheat	3	120	March 1 to April 1	Drill	May 15 to July 20	Pasture	125	All
Sudan Grass		1	35	May 20 to June 10	Drilled or rows spaced 12-18 inches	July 10 to Oct. 10	Pasture	150	All
Sunflowers	Mammoth Russian	½	10	Apr. 20 to May 10	Rows spaced 24-28 in.	Aug. 1 to Oct. 10	Pasture Chopped	400	Turkeys

Rape	Dwarf Essex	¼	6	Apr. 1 to May 10	Drill or Broadcast	July 20 to Oct. 10	Pasture Chopped	250	All
Swiss Chard	Lucullus	½	12	Apr. 1 to June 1	Rows spaced 12-24 in.	June 15 to Oct. 1	Chopped	400	All
Carrots	Chantenay	⅛	3	May 1 to June 1	Rows spaced 18-36 in.	Oct. 1 to Nov. 1 Store for Winter Feed	Chopped or whole	600	All

(a) Rate pounds per 1000 square feet.

(b) Rate pounds per acre.

(c) Yields of green material based on clippings at an immature stage.

Table 2. Crop Succession of Green Feeds in Irrigated Sections of Central Washington

Crop	Variety	Seeding		Method	Soil Adaptation	Utilization		Yield lbs. per 1000 sq. ft. (c)	Type of Poultry	
		Rate (a)	(b)			Date (d)	Time			Method
Alfalfa	Ladak, Northern Common, Hardistan	½	15	Spring or fall	Drill or Broadcast	Well-drained soils	Apr. 20 to Oct. 20	Pasture Chopped	650 to 850	All
Clover and Grass Mixture	White Dutch	⅛	3	Apr. 20 to May 10	Drill or Broadcast	Well-drained soils	Apr. 10 to Oct. 20	Pasture Chopped	425	All
	or Ladino	¼	5							
	Italian Rye- grass	¼	5							
	Meadow Fescue	¼	5							
	Kentucky Bluegrass	¼	4							
	Redtop	⅛	3							

Crop	Variety	Rate		Seeding		Soil Adaptation	Utilization		Yield lbs. per 1000 sq. ft. (c)	Type of Poultry
		(a)	(b)	Date (d)	Method		Time	Method		
Fall Cereals	Rye, Wheat	3	120	Sept. 1 to Sept. 20	Drill	Well-drained soils	March 15 to June 15	Pasture	200	All
Spring Cereals	Oats, Barley, or Wheat	3	120	March 1 to April 10	Drill	Well-drained soils	May 10 to July 10	Pasture	200	All
Sudan Grass		1	35	May 1 to June 1	Drill	Well-drained rich soils	July 15 to Oct. 10	Pasture	350	Turkeys Chickens
Corn	Iowa 939	½	12	May 1 to May 15	Rows spaced 24-36 inches	Well-drained rich soils	Aug. 15 to Oct. 1	Pasture Chopped Silage	650	Turkeys Chickens
Sun- flowers	Mammoth Russian or Manchurian	½	10	Apr. 20 to May 15	Rows spaced 24-36 inches	Well-drained soils	Aug. 15 to Oct. 20	Pasture Chopped Silage	650	Turkeys
Kale	Thousand- Headed	1		April 15 to May 1 in hotbed	Transplant spaced rows 24-36 inches June 1 to July 1	Well-drained fertile soils	Oct. 1 to March 1	Chopped Pasture	450	All
Rape	Dwarf Essex, Victoria	¼	6	April 1 to May 1	Drill or Broadcast	Variety of soils	July 15 to Nov. 1	Chopped Pasture	350	All
Swiss Chard	Lucullus	½	12	March 15 to Apr. 10	Rows spaced 16-24 inches	Well-drained soils	June 1 to Oct. 30	Chopped	1000	All
Carrots	Chantenay	⅛	3	Mar. 15 to April 15	Rows spaced 18-36 inches	Well-drained soils	Oct. 20 to Nov. 10 Store for Winter Feed	Chopped or whole	800	All

(a) Rate pounds per 1000 square feet.
(b) Rate pounds per acre.

(c) Yield of green material based on clippings at an immature stage.
(d) Providing water is available.

Table 3. Crop Succession of Green Feeds in Western Washington

Crop	Variety	Rate		Seeding		Soil Adaptation	Utilization		Yield lbs. per 1000 sq. ft. (c)	Type of Poultry
		(a)	(b)	Date	Method		Time	Method		
Alfalfa	Grimm, Ladak, Northern Common	½	12	May 10 to June 1	Drill or Broadcast	Deep, sweet, well-drained soils	April 1 to Oct. 30	Pasture Chopped Dried	500	All
Clover & Grass Mixture No. 1	Ladino or White Dutch	⅛	3	March 15 to May 15 or	Broadcast or drill	Well-drained soils	March 1 to Dec. 1	Pasture Chopped	370	All
	Italian Ryegrass	¼	5	Sept. 1 to Sept. 20						
	Kentucky Bluegrass	¼	4							
	Meadow fox-tail	¼	5							
Clover & Grass Mixture No. 2	Ladino or White Dutch	⅛	3	Sept. 1 to Sept. 30	Broadcast or drill	Wet, poorly drained soils	April 1 to Dec. 1	Pasture Chopped	350	All
	Lotus	¼	4							
	Red top	¼	3							
	Meadow fox-tail	¼	5							
Small Grain and Vetch	Fall cereals Hungarian or Common Vetch	2	90	Sept. 1 to Oct. 20	Drill or broadcast	Well-drained soils	March 15 to July 1	Pasture	375	All
Fall Cereals	Wheat, oats, barley, or rye	3	120	Sept. 1 to Oct. 20	Drill or broadcast	Well-drained soils	March 15 to July 15	Pasture	200	All
Spring Grain	Oats, Barley	3	120	March 1 to April 1	Drill or broadcast	Uplands or lowlands	May 1 to July 1	Pasture Chopped	250	All
Sudan Grass		1	35	May 1 to June 1	Drill or broadcast	Well-drained soils	July 15 to Oct. 1	Pasture Chopped	350	All

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Crop	Variety	Rate		Seeding		Soil Adaptation	Utilization		Yield lbs. per 1000 sq. ft. (c)	Type of Poultry
		(a)	(b)	Date	Method		Time	Method		
Millet	Japanese Barnyard or Hungarian	1	25	May 1 to June 1	Drill or broadcast	Fertile soils	July 15 to Oct. 1	Chopped Pasture	375	All
Kale	Thousand-Headed		7	April 15 to May 1 in hotbed	Transplant spaced rows 24-36 inches June 1 to July 1	Well-drained fertile soil	Sept. 15 to March 1	Chopped Pasture	450	All
Rape	Dwarf Essex, Victoria	¼	6	April 10 to May 10	Drill or broadcast	Fertile soil	Aug. 1 to Oct. 10	Pasture Chopped	350	All
Swiss Chard	Lucullus	½	12	March 15 April 10	Rows spaced 16-24 inches	Well-drained soils	June 1 to Nov. 30	Chopped	1000	All
Corn	Golden Cross	½	10	May 1 to June 15	Rows spaced 24-36 inches	Well-drained soils	Aug. 15 to Sept. 15	Chopped Pasture	600	Turkeys
Sun-flowers	Mam. Russian or Manchurian	½	10	April 20 to May 15	Rows spaced 24-36 inches	Well-drained soils	Aug. 15 to Oct. 20	Pasture Chopped	600	Turkeys
Carrots	Chantenay	⅛	3	June 10 to June 30	Rows spaced 16-24 inches	Well-drained fertile soil	Oct. 20 to Nov. 10 Store for winter feed.	Chopped or whole	800	All

(a) Rate pounds per 1000 square feet.

(b) Rate pounds per acre.

(c) Yield of green material based on clippings at an immature stage.

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