# Raisins for Turkeys

## fed at will with no harmful effects on growth and quality

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**Raisins may replace** 30% of the grain portion, or 16% of the entire ration for turkeys in the late growing periods without markedly affecting the gains in body weight, efficiency of gain or market grade of the birds.

Cull raisins are frequently available—and in times of surplus—top grade raisins are relatively inexpensive for livestock feeding.

Raisins contain 3% to 4% crude protein and about 80% carbohydrate. Their value in animal feeding depends on their carbohydrate content which makes them a possible substitute for cereals.

An experiment was conducted in which various levels of raisins were fed to growing turkeys to test their value as substitutes for cereals in the ration.

Crossbred turkeys were divided into four groups ranging from 30 to 33 birds per group. The turkeys were started on the feeding trial at 18 weeks and were continued until 30 weeks of age.

The control ration was a practical growing mash plus a mixture composed of 60% whole barley and 40% whole wheat. During the first four weeks of the trial 40% of the total ration was grain; for the remaining period a mixture of equal parts of grain and mash was fed.

In the second group 10% of the grain was replaced by raisins; in the third group the replacement was 30%; and in the fourth group the turkeys were fed the grain and mash mixture, and also were allowed to eat raisins at will from a separate feeder.

The levels of raisins consumed by the various groups were 4.7% for group two, 14.3% for group three, and 16% for group four.

Some difficulty was experienced early in the trial in getting the turkeys in group four to eat the raisins. When they were mixed in the feed the birds selected them out but when they were fed alone the turkeys were reluctant to eat them. After some raisins were scattered in the feed for a few days the birds started consuming them and no more difficulty was experienced.

The gains for the experimental period were similar in all the groups, showing no reduction in growth even when the turkeys were permitted to eat the raisins at will. Nor was the efficiency of gain significantly different in the other groups.

Breast measurements were taken at the completion of the experiment, and no significant differences between groups were found in the width of the breasts.

The toms were dressed and market grade data obtained for them. There was little difference in the percentage of grade *A* birds between the groups fed high levels of raisins and the control group—group *1*.

No deleterious effects were observed during the feeding trials even among turkeys in group *4* which were allowed to eat the raisins at will and as much as 16% of the total ration.

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**Effect on Growth, Feed Efficiency and Market Grade of Feeding Various Levels of Raisins to Turkeys from 18 to 30 Weeks of Age**

| Group | Levels of raisins fed (as per cent of grain replaced) | Raisins consumed (as per cent of total feed) | Number of birds | Average gain in weight of males and females (pounds) | Pounds gained per pound of feed | Av. breast width at 3 cm from tip of keel (cm) | Per cent of males in A grade |
|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 31 | 7.3 | 0.143 | 7.68 | 83 |
| 2 | 10 | 4.7 | 33 | 7.7 | 0.137 | 7.66 | 100 |
| 3 | 30 | 14.3 | 33 | 7.5 | 0.142 | 7.38 | 84 |
| 4 | At will | 16.0 | 30 | 7.5 | 0.132 | 7.46 | 82 |

## FIRE

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occurred because fires could not be started when and where the landowner wished. This ignition problem is reduced when fire lines are located in grass, for this fuel usually burns rapidly when relative humidity is less than 30%. Rate of spread in grass is rapid and rate of combustion is rapid—thus the effective fire line is widened rapidly and flame is adjacent to the line for just a few minutes.

Ideal fuel conditions within the burn—the fifth characteristic—should be such that the fire will spread over the area in the desired manner. Fuel characteristics which may limit or promote the effective spread of fire within the burn are moisture content, size, amount, and distribution of fuels.

Many different fuel moistures exist in wildland areas and each changes at varying rates. The moisture content of dead fuels varies directly with relative humidity. Moreover the moisture content of fine, dead material—grass or leaves—reacts almost immediately to changes in relative humidity. Under normal summer weather conditions, when relative humidity is above 35%, the moisture content of fine fuels is above 12% and they will rarely carry fire. Thus an effective burn seldom can be obtained when relative humidity is over 35%. Relative humidity measured on the fire line is useful in predicting fire behavior. However, caution should be exercised in using relative humidity as an absolute indicator of how fire will behave. Changes in moisture content of larger fuel particles such as large twigs and brush limbs lag several hours behind changes in relative humidity. When humidity is falling these fuels may not be dried out enough to burn well though fine fuels are ready to burn. They will, however, continue to burn well after fine fuels become noninflammable as humidity increases. Fuels like down logs and snags progressively dry out all through the summer and ordinarily do not burn very well until late in the season.

In contrast to dead fuels, green leaves and other living plant materials have a high moisture content. The water content of new foliage in the spring lies between 150% and 300%. This drops steadily until in July or August it reaches a minimum between 65% and 85%, to rise back to about 100% through the winter. The fact that at its minimum moisture content green material has four to 10 times as much water as comparable dead material shows how important the percentage of dead material in a brush stand may be in the carrying of fire.

There must always be sufficient quantities of fine, dry, dead fuels to carry the flame. A stand of dry grass, an inch or two of dry leaves and twigs on the ground, dead leaves and small stems in

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