



# Average Daily Gain (ADG)

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## Goal (learning objective)

*Note: Conduct the Frame Size & Market Ready Weights lesson first*

Youth will:

- Learn about feeding to market ready weights
- Learn to monitor feed rations during feeding periods
- Learn what “market ready” means
- Learn how to monitor if their animal is on track to be market ready

## Supplies

Members will need to bring the following items:

- Animal initial weight information and timely weight information (every 30, 15, or 7 days depending on species) during the feeding period
- Beginning Planning & Record Worksheet (from the Frame Size and Market Ready Weights activity)
- Side photo of their market animal at the beginning of their project
- Copies of Market Animal Growth Charts (distribute the appropriate growth chart to what each member is raising)
  - a. Handout 1 - “Market Beef Growth Chart”
  - b. Handout 2 - “Market Goat Growth Chart”
  - c. Handout 3 - “Market Lamb Growth Chart”
  - d. Handout 4 - “Market Swine Growth Chart”
- Handout 5 “Market Projects Photo Page” (enough copies for group)
- Pencils, pens (enough for group)
- Rulers and calculators (enough for groups to share )

## Pre-lesson preparation

- Average Daily Gain (ADG) can be defined as the average amount of weight a market animal will gain each day during the feeding period.
- ADG can be calculated by taking the amount of weight an animal has gained since the last weight and dividing the weight by the number of days since that last weight.
- Conduct the Frame Size and Market Ready Weights Activity first to determine animals target market weight.
- Have members bring a side-view photo of each project animal, preferably from the beginning of the project. Side view images will help members see the change in their animal over time.
- Make copies of the Handouts 1-5.
- Review the activity and refer to the resources section to familiarize yourself with the activity and information covered.

## Lesson directions and outline

Begin by asking members what they think “Average Daily Gain: is (if they youth struggle, define each word separately. Share the definition from the pre-lesson preparation section before moving on). Discuss what information is needed to calculate ADB (see pre-lesson preparation).

Share the following information with the youth:

Plotting change in weight over time will help you determine if your market animal is on track to be what is called “market ready” at fair time. It is important to set project goals and identify a target final weight.

Weight gained should be monitored and documented (on the growth chart) from the beginning of the project to fair time. Regular weighing intervals are typically every 10, 15, or 30 days depending on the species.

Monitoring weight gain can help you determine if feed rations need to be adjusted so that animals make it to fair, market ready.

Industry average for average daily gain (adg) for each species is as follows: Beef 2.5 lbs/day, Swine 1.7 lbs/day, Sheep .5 lbs/day and Meat Goat .3lbs/day.

### **Conducting the activity (DO)**

1. Follow the directions on the growth chart to determine a predicted growth rate using the initial weight and estimated final weight of each animal.
2. Have youth calculate what his/her animal's required average daily gain needs to be to reach the estimated final weight.
3. Encourage members to determine which feeds help animals grow faster; which results in slower growth rates?
4. Have members attach his/her animal's beginning side-view picture to Handout 5; have them share how his/her animal's condition has changed since the beginning picture was taken.
5. As part of an ongoing activity, have members weigh project animals every 10, 15 or 30 days (depending on species), record those weights on the Market Growth Chart and plot the "actual" growth of each animal.
6. Help members determine if animals are above or below the predicted growth rate and what changes (if any) are needed in their feeding program.
7. Work with members to finish the growth chart and take an ending photo of their animal.

### **What did we learn? (REFLECT)**

- Ask: What is ADG and how is it calculated?
- Ask: What are some factors that influence how fast an individual animal will grow?
- Ask: What can a livestock producer do to speed up or slow down an animal's growth rate?
- Ask: What is your species minimum industry standard for ADG

### **For the on-going activity**

- Ask: Is your predicted ADG from the Market Growth Chart achievable?
- Ask: Why might your animal's actual growth be above or below the predicted ADG?
- Ask: How should you adjust your feeding if they are below your predicted ADG?
- Ask: How did your animal change over the feeding period? Are there any changes you would make next year?

### **Why is that important? (APPLY)**

- Ask: What could happen if you try to change your animal's ration too quickly?
- Ask: Besides raising livestock, where else might you need to track change and make gradual changes over time?

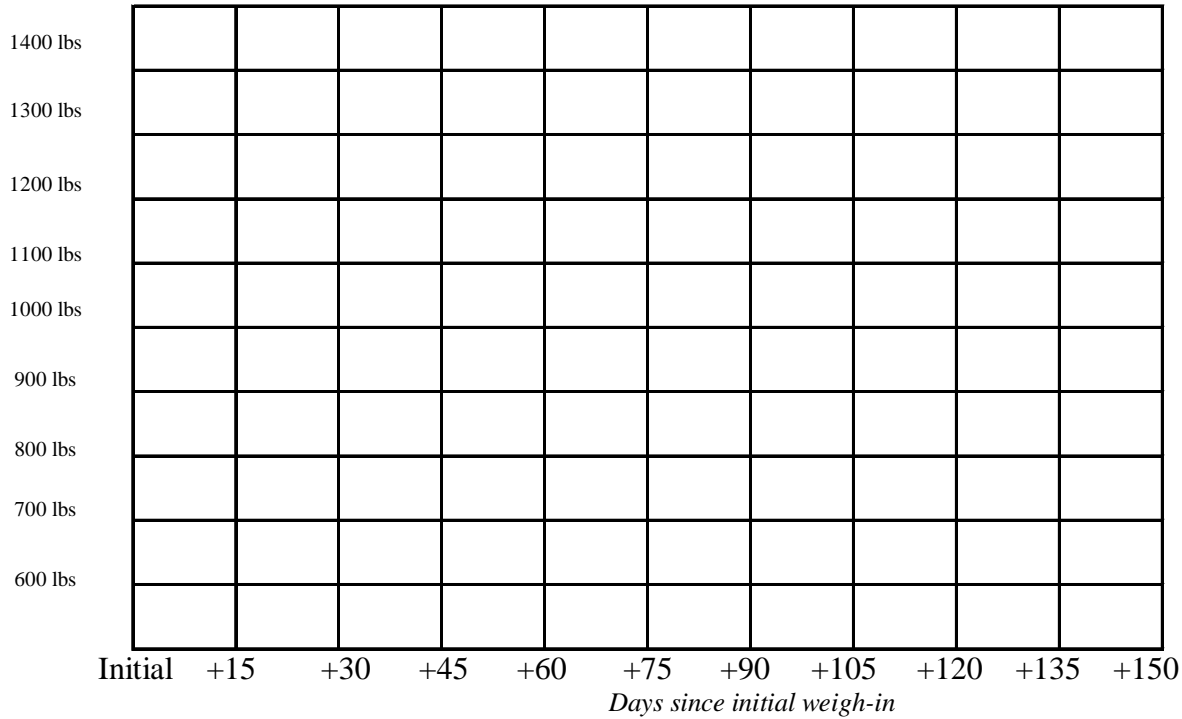
Monitoring and adjusting the feed program, based on actual growth, is important to insure that a member's project animal is in market ready condition come fair time.

## Resources

- Kinder, C.A. & Williams, S. (2013). Livestock Science Experiment. *Average Daily Gain (ADG) Market Weight, Feed Conversion*. University of Idaho Extension. Retrieved from <https://www.uidaho.edu/~media/UIIdaho-Responsive/Files/Extension/county/Gooding/4-H/animal-science/Experiment-Topics-for-club-work.ashx>
- Ohio State University Extension. (2011). Nutrition and Feeding. *Beef resource handbook* (pages 7-19 through 7-30).
- Ohio State University Extension. (2008). Nutrition. *Goat resource handbook* (pages 55-66).
- Ohio State University Extension. (2011). Nutrition. *Sheep resource handbook for market and breeding projects* (page 51-56).
- Ohio State University Extension. (2000). Nutrition. *Swine resource handbook for market and breeding projects* (pages 8-11 through 8-13).

## Market Beef Growth Chart

To achieve success with your 4-H Market Beef project, it is important you know the estimated final weight of your animal and your progress toward that goal throughout the feeding period. The chart below enables you to plot the predicted growth curve (immediately after the initial weigh-in) and then plot the actual weight of your animal at various times during the feeding period to determine if you are “on target.”



Initial weight: \_\_\_\_\_ Estimated final weight: \_\_\_\_\_

1. Mark the initial weight at the appropriate location on the left-hand side of the table.
2. Mark the estimated final weight at the appropriate location for the number of days in the feeding period.
3. Connect these two points with a straight line. Label this your “predicted” rate of growth.
4. Record your animal’s weight in the table below and the chart above each time it is weighed during the feeding period. Connect this point with the previous actual weight. Is the actual growth curve above or below your predicted growth line? Why?

## Progressive Project Weight Record

<b>Weigh date</b>										
<b>Days since last weigh day</b>	XXXXXX									
<b>Current weight</b>										
<b>A.D.G. (since last weigh date)</b>	XXXXXX									

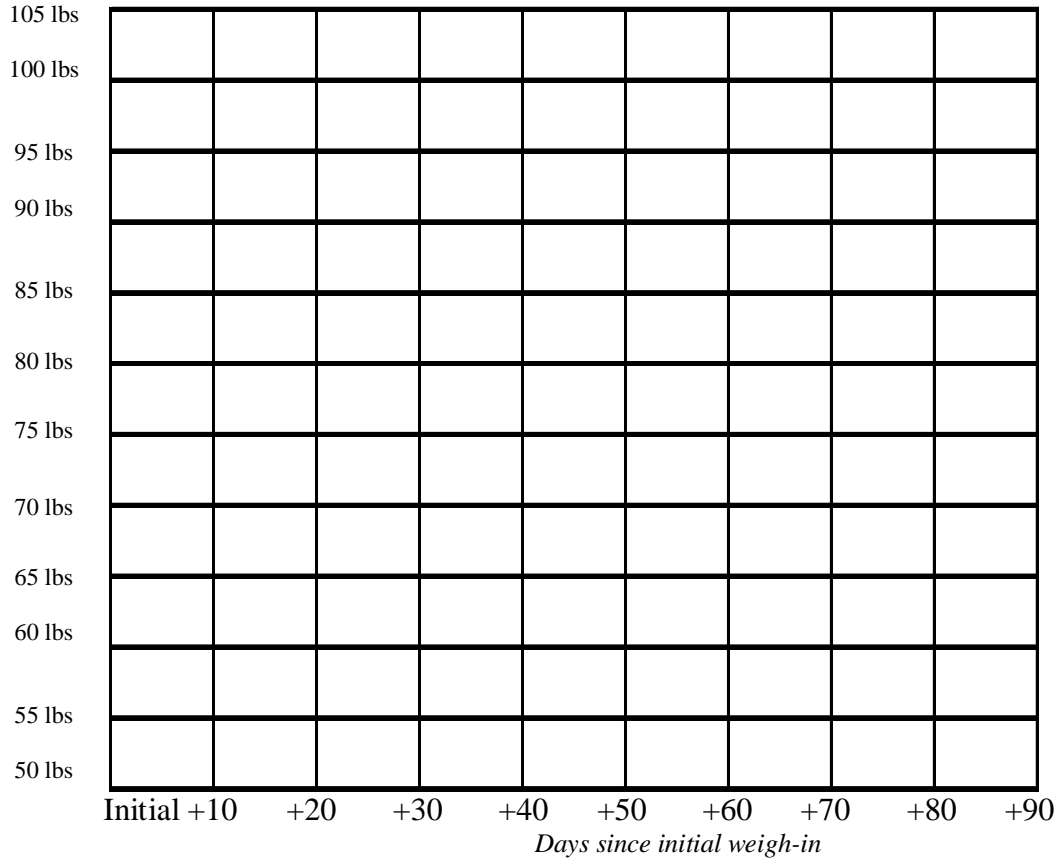
Tracking animal weight can tell you where your animal is compared to your goal. After each weigh day ask yourself; do you need to feed more grain or hay?

Typical influences in A.D.G. can be feed, water, weather, and illness. Ask yourself is the A.D.G. normal? What caused any problems?

**NUTRITION: AVERAGE DAILY GAIN – HANDOUT 2**

## Market Goat Growth Chart

To achieve success with your 4-H Market Goat project, it is important you know the estimated final weight of your animal and your progress toward that goal throughout the feeding period. The chart below enables you to plot the predicted growth curve (immediately after the initial weigh-in) and then plot the actual weight of your animal at various times during the feeding period to determine if you are “on target.”



Initial weight: \_\_\_\_\_ Estimated final weight: \_\_\_\_\_

1. Mark the initial weight at the appropriate location on the left-hand side of the table.
2. Mark the estimated final weight at the appropriate location for the number of days in the feeding period.
3. Connect these two points with a straight line. Label this your “predicted” rate of growth.
4. Record your animal’s weight in the table below and the chart above each time it is weighed during the feeding period. Connect this point with the previous actual weight. Is the actual growth curve above or below your predicted growth line? Why?

## Progressive Project Weight Record

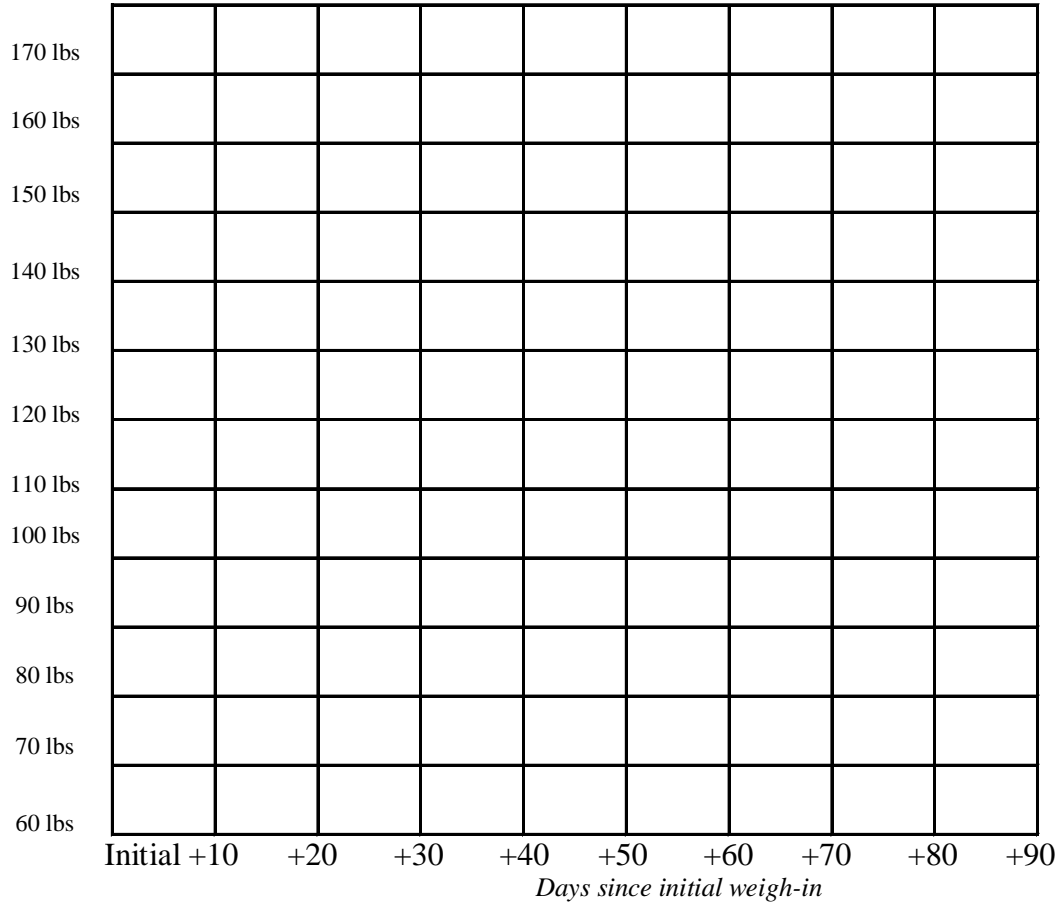
<b>Weigh date</b>									
<b>Days since last weigh date</b>	XXXXX								
<b>Current weight</b>									
<b>A.D.G. (since last weigh date)</b>	XXXXX								

Tracking animal weight can tell you where your animal is compared to your goal. After each weigh day ask yourself; do you need to feed more grain or hay? Typical influences in A.D.G. can be feed, water, weather, and illness. Ask yourself is the A.D.G. normal? What caused any problems?

**NUTRITION: AVERAGE DAILY GAIN – HANDOUT 3**

## Market Lamb Growth Chart

To achieve success with your 4-H Market Lamb project, it is important you know the estimated final weight of your animal and your progress toward that goal throughout the feeding period. The chart below enables you to plot the predicted growth curve (immediately after the initial weigh-in) and then plot the actual weight of your animal at various times during the feeding period to determine if you are “on target.”



Initial weight: \_\_\_\_\_ Estimated final weight: \_\_\_\_\_

1. Mark the initial weight at the appropriate location on the left-hand side of the table.
2. Mark the estimated final weight at the appropriate location for the number of days in the feeding period.
3. Connect these two points with a straight line. Label this your “predicted” rate of growth.
4. Record your animal’s weight in the table below and the chart above each time it is weighed during the feeding period. Connect this point with the previous actual weight. Is the actual growth curve above or below your predicted growth line? Why?

## Progressive Project Weight Record

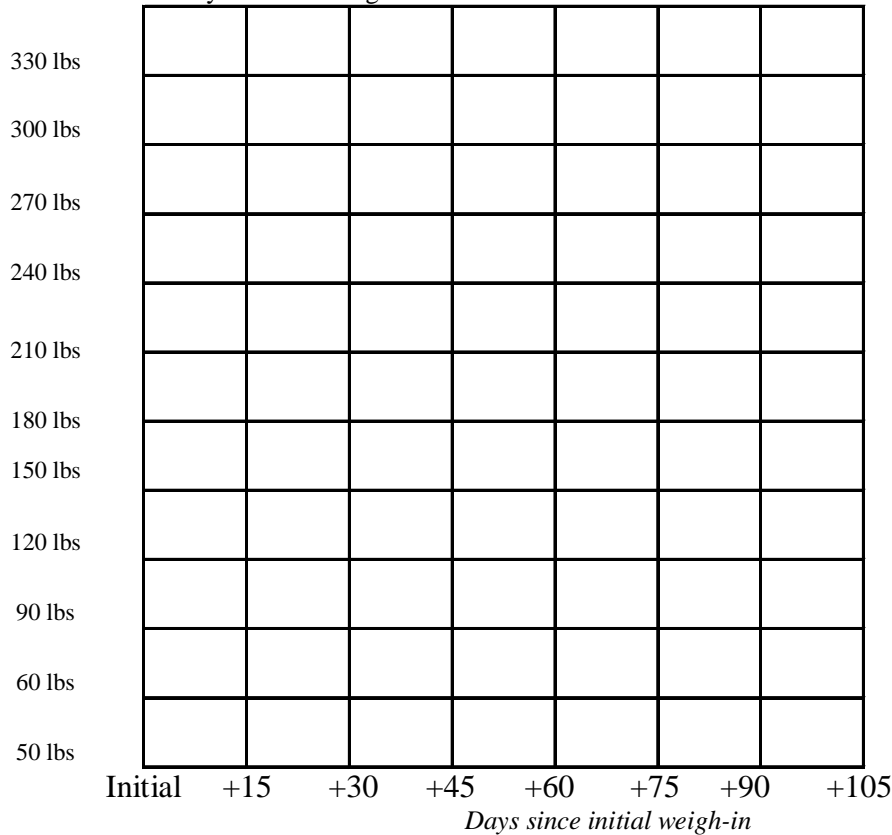
<b>Weigh date</b>									
<b>Days since last weigh date</b>	XXXXX								
<b>Current weight</b>									
<b>A.D.G. (since last weigh date)</b>	XXXXX								

Tracking animal weight can tell you where your animal is compared to your goal. After each weigh day ask yourself; do you need to feed more grain or hay? Typical influences in A.D.G. can be feed, water, weather, and illness. Ask yourself is the A.D.G. normal? What caused any problems?

**NUTRITION: AVERAGE DAILY GAIN – HANDOUT 4**

## Market Swine Growth Chart

To achieve success with your 4-H Market Swine project, it is important you know the estimated final weight of your animal and your progress toward that goal throughout the feeding period. The chart below enables you to plot the predicted growth curve (immediately after the initial weigh-in) and then plot the actual weight of your animal at various times during the feeding period to determine if you are “on target.”



Initial weight: \_\_\_\_\_ Estimated final weight: \_\_\_\_\_

1. Mark the initial weight at the appropriate location on the left-hand side of the table.
2. Mark the estimated final weight at the appropriate location for the number of days in the feeding period.
3. Connect these two points with a straight line. Label this your “predicted” rate of growth.
4. Record your animal’s weight in the table below and the chart above each time it is weighed during the feeding period. Connect this point with the previous actual weight. Is the actual growth curve above or below your predicted growth line? Why?

## Progressive Project Weight Record

<b>Weigh date</b>									
<b>Days since last weigh date</b>	XXXXXX								
<b>Current weight</b>									
<b>A.D.G. (since last weigh date)</b>	XXXXXX								

Tracking animal weight can tell you where your animal is compared to your goal. After each weigh day ask yourself; do you need to feed more grain or add any supplements? Typical influences in A.D.G. can be feed, water, weather, and illness. Ask yourself is the A.D.G. normal? What caused any problems?

## Market Projects Photo Page

Place Beginning Photo Here

**Beginning Weigh-in Date** \_\_\_\_\_ **Beginning Weight** \_\_\_\_\_  
**Ending Weigh-in Date** \_\_\_\_\_ **Ending Weight** \_\_\_\_\_  
**Average Daily Gain** \_\_\_\_\_

Place Ending Photo Here