Considerations and Raw Material Usage When Preparing Mixed Feeds for Laying Hens

Raw materials	Usage in the Mixed Feed (%)		Explanation
	Least	Most	
High-Energy Grains: Corn Wheat Sorghum	10	60	Corn can be problematic in terms of mycotoxins and should be handled carefully before use. It is recommended to use at least 10% wheat to improve pellet quality. If used excessively, it should be enzyme-supported, and problems caused by arabinoxylans should be prevented. Excessive use can cause issues with egg yolk color. Sorghum should be used at a maximum of 30% due to its tannin content (which reduces feed intake).
Medium Energy Grains: Barley,, Rye, Triticale, Oats		40	Due to beta-glucans and arabinoxylans, they can cause sticky feces. Due to their high cellulose content, they are coarse in texture and can physically limit feed consumption. Barley: can be used up to 40% in the ration without problems with the addition of enzymes. Rye: should not be used more than 15%, as rye ergot can cause issues. Barley, oats, and triticale can be used more than 30% in the ration; however, they should be supported with enzymes.
Mill industry by-products: Wheat bran, low-quality flour, razmol,etc.	10	25	Wheat bran should not be used in amounts greater than 25%. Excessive use may cause coarsening in the feed structure and problems in consumption. Bonkalite should be used at least 5% to improve pellet quality. Excessive use of Razmol and Bonkalite in powder feed causes dustiness.
Plant Protein Sources: Oilseeds and their meals, Corn gluten meal	5	30	Soybean meal should be used at a minimum of 5%. Using more than 30% can lead to electrolyte imbalance due to excessive potassium intake. Cottonseed meal should not be used, as gossypol causes deterioration in white and yellow discoloration. High-protein sunflower meal can be used up to 25%, and canola meal up to 10% (erucic acid, glucosinolate can cause fishy or sawdust odor in brown-egg layers' eggs). Soybeans cannot be used directly without heat treatment. Oilseeds (such as soybean and canola) may cause rancidity in feed due to their high fat content, so caution is required. Corn gluten meal can be used at rates up to 10-15% as a protein source and to achieve a suitable yellow color.
Animal Protein Sources Fish meal, meat and bone meal, poultry meal		7	Fish meal can be used at a rate of 2%, contributing to the balance of amino acids. If used at more than 5%, stony erosion and odor problems in eggs may occur. Meat and bone meal can be used at a maximum of 7%. Chicken meal may cause rancidity in feed due to its high fat content and can be used at a maximum of 5% depending on protein quality.
Feed Fats Vegetable oil Animal fat Acid oil		5	It can be used up to a maximum of 5% in the ration. Excess reduces pellet quality. It disturbs the distribution of feed ingredients and decreases the bioavailability of minerals. Cottonseed oil deteriorates egg internal quality and some physical properties. The energy content of animal fats is lower compared to vegetable oils. Attention should be paid to achieving a homogeneous mixture. The peroxide value of acid oil should be monitored, and the feed oils and quality section should be read for quality characteristics.
Molasses		3	Improves the feed form, adds flavor, can be used up to 5%. However, excessive use can cause clumping in the feed. High potassium content may cause problems. More than 3% increases water consumption.
Mineral feeds Marble dust, limestone, DCP, Salt, Soda	2	12	The total of mineral feeds should not exceed 12% in the ration. The acid digestibility of marble dust or limestone should be at least 70% and it should be free of fluoride. Soda can be added to the ration at a rate of 0.2% as a source of sodium or as a buffer.
Vitamin and Trace Mineral Premixes	as to the prospectus		It must be used in accordance with the law and should be utilized considering the notifications of the manufacturing companies.
Feed Additives	as to the prospectus		Different feed additives can be used for purposes such as maintaining feed, improving pellet quality, enhancing digestibility, protecting animal health, and increasing product quality. The notifications from the manufacturing companies should be taken into account during use.

Raw Material Usage and Considerations When Preparing Broiler Chicks-Chicken Mixed Feeds

Raw materials	Usage in Mixed Feeds (%)		Explanation
	Least	Most	
High-Energy Grains Corn, Wheat, Sorghum	40	65	Corn may be problematic in terms of mycotoxins and should be handled carefully before use. Excessive use can cause softening of body fat. Using about 10% wheat is recommended to improve pellet quality. Sorghum should not be used in chick feed due to its tannin content (which reduces feed intake) and can be used up to a maximum of 30% in broiler feed.
Medium Energy Grains Barley,, Rye, Triticale, Oats		40	Due to beta glucans and arabinoxylans, they can cause sticky feces. They are coarse in texture because of their high cellulose content and can physically limit feed intake. Rye, barley, oats, and triticale should not be used in chick feed. In poultry feed, they should not exceed 30%; however, with the addition of enzymes to the ration, they can be used up to 40% in chicken feed.
Milling by-roducts: wheat bran, bonkalite, razmol, etc.		8	Wheat bran should not be used in chick and chicken feed. If used, it can cause problems in balancing the ration, as well as lead to coarseness in the feed structure and issues with feed consumption. It can be used at 5-7% to improve the pellet quality of Bonkalite or Type 5 flour. Excessive use of these floury products, such as Razmol and Bonkalite, in powdered feed causes excessive dust.
Plant Protein Sources: Oilseeds and their meals, Corn glüten meal	5	35	Soybean meal should be used at a minimum of 5%. Using more than 30% can lead to electrolyte imbalance due to excessive potassium intake. Sunflower and cottonseed meals should not be used in chick feed, and high-protein extraction meal should be used in chick feed at a maximum of 10%. Canola meal, because of its erucic acid and glucosinolate content, should be used at a maximum of 5% in chick feed and at a maximum of 10% in broiler feed. Whole soybeans cannot be used directly without thermal processing. Oilseeds (such as soy and canola) may cause rancidity in feed due to their high oil content, so care should be taken. The total amount of soybean products used in the ration should not exceed 40%, and potassium levels should be monitored. Corn gluten meal can be used as a protein source and for achieving proper skin color at rates up to 10-15%.
Animal Protein Sources Fish meal, meat and bone meal, poultry meal	2	15	Fish meal should be used at least 2% in chick feed, as it helps to maintain amino acid balance. If used more than 7%, it may cause odor problems in the meat. Meat and bone meal can be used up to 10%. Due to its high fat content, chicken meal can cause rancidity in the feed and should be used at a maximum of 7%.
Feed Fats Vegetable oil Animal fat Acid oil		5	It can be used at a maximum of 8% in the ration. Excess fat impairs pellet quality and the distribution of raw materials in the feed, and reduces the availability of minerals. Cottonseed oil deteriorates meat quality and causes an unpleasant odor in boiled chicken meat. The energy content of animal fats is lower than that of vegetable oils; however, they provide the desired firmness in carcass fat. Attention should be paid to a homogeneous mixture. The peroxide value of acidic oil should be monitored, and feed oils and the quality section should be read for quality characteristics.
Molasses		3	Improves the feed form, adds flavor, can be used up to 3%. However, excessive use can cause clumping in the feed. High potassium content may cause problems. More than 3% increases water consumption.
Mineral feeds Marble dust, limestone, DCP, Salt, Soda	1	3	The total of mineral feeds should not exceed 3% of the ration. The acid digestibility of marble powder or limestone must be at least 70% and it should be free of fluorine. Soda can be added to the ration at a rate of 0.2% as a source of sodium or as a buffer.
Vitamin and Trace Mineral Premixes	as to the prospectus		It must be used in accordance with the law and should be utilized considering the notifications of the manufacturing companies.
Feed Additives	as to the prospectus		Different feed additives can be used for purposes such as maintaining feed, improving pellet quality, enhancing digestibility, protecting animal health, and increasing product quality. The notifications from the manufacturing companies should be taken into account during use.

Raw Material Usage and Points to Consider When Preparing Milk and Fattening Compound Feeds

Raw materials	Usage in the mixed feed (%)		Explanation
	Least	Most	
High-Energy Grains Corn, Wheat, Sorghum	20	60	Corn can be problematic in terms of mycotoxins and should be handled with care before use. Excessive consumption can cause softening of body fat. Excessive use of wheat carries a risk of acidosis.
Medium Energy Grains Barley,, Rye, Triticale, Oats	20	50	It must be used to ensure an appropriate ratio of gramine in milk and feed for fattening. Excessive use carries a risk of acidosis. Barley causes crumbliness in milk fat and hardening in carcass fat.
Milling by-products: wheat bran, bonkalite, razmol, etc.	10	35	The use of coarse bran can cause coarseness in the feed structure and problems in feed consumption. Bonkalite or Type 5 flour should be used at a maximum of 10% to improve pellet quality. Excessive use of floury products such as fine bran, razmol, and bonkalite in powdered feed causes dustiness.
Plant Protein Sources: Oilseeds and their meals, corn glüten meal	5	35	Using soybeans directly without thermal processing is not recommended. Soybean meal or full-fat soy should be used at a minimum of 10% in rations prepared for high-producing cows. Excessive use of full-fat soy is not recommended as it will increase the fat content of the ration. Cottonseed meal should be used at a maximum of 20% in milk rations; excessive use can cause infertility. Canola meal should be used at a maximum of 10%. Attention should be paid to the combined use of cottonseed meal and wheat bran due to the risk of urinary stones. If necessary, NH4Cl should be added for preventive purposes.
Animal Protein Sources Fish meal, meat and bone meal, poultry meal	2	15	The use of animal protein other than fish meal is prohibited in ruminant feeds. Fish meal, which has a high bypass protein value, can be used up to a maximum of 3% in dairy feeds. Excessive use creates a fishy smell in the milk.
Feed Fats Vegetable oil Animal fat Acid oil		3	The total crude fat content of the ration should not exceed 5%, and taking into account the fat content naturally present in the raw materials, no more than 3% feed fat can be used in the ration. Excess fat reduces pellet quality, cellulose digestion in the rumen, and milk fat content, and inhibits mineral utilization. Special attention should be paid to milk feeds with high calcium content. For the quality characteristics of the fats to be used in the mix, the feed fats and quality section should be read.
Molasses		8	It improves the feed form and adds flavor. It can be used up to 8%. However, excessive use may cause caking in the feed. High potassium content may cause problems.
Mineral feeds Marble dust, limestone, DCP, Salt, Soda	1	5	The total of mineral feeds should not exceed 5% in the ration. The acid digestibility of marble powder or limestone must be at least 70% and it should be free of fluoride. Soda can be used in the ration up to 0.5% as a source of sodium or as a buffer. The use of animal-origin organic DCP and TCP is prohibited.
Urea		1,5	Excessive use increases blood ammonia levels, leading to toxicity, infertility, miscarriage, early embryo death, and excessive urination. Attention should be paid to homogeneous mixing in the feed. It should be adjusted to a maximum of 100 grams per animal per day.
Filling Ingredients: Cotton seed hulls, Peanut shells, Soy hulls, Sunflower seed hulls		2	According to Feed Law No. 1734, the use of such substances in compound feed is prohibited; however, they can be used to balance the mixture and protect the health of the animals consuming the feed in cases of density or crude fiber issues. They have high crude fiber and NDF contents.
Vitamin and Trace Mineral Premixes	as to the prospectus		It must be used in accordance with the law and should be utilized considering the notifications of the manufacturing companies.
Feed Additives	as to the prospectus		Different feed additives can be used for purposes such as maintaining feed, improving pellet quality, enhancing digestibility, protecting animal health, and increasing product quality. The notifications from the manufacturing companies should be taken into account during use.